

DAVID AND THE DAVID-CLASS OF AMERICAN CIVIL WAR ERA
TORPEDO BOATS OF CHARLESTON, SOUTH CAROLINA

A Dissertation

by

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ABSTRACT

On 5 October 1863, the small cigar-shaped Confederate torpedo boat *David*, with a crew of only four men, exploded a torpedo against the hull of the US frigate *New Ironsides*. It was a stealthy and shocking blow. *New Ironsides* was one of the most powerful warships of the time, mounted a tremendous armament, and had a crew of seven hundred men, yet it was put out of commission by the experimental semi-submersible *David*. The attack conveyed an element of psychological terror for it utilized a technology, torpedoes, seen as uncivilized by the entrenched institutions of a powerful navy. This event has been cited as the beginning of the age of torpedo warfare, and provided the impetus for the modern-day torpedo boat, if not also the modern submarine. Yet little is known of *David* and its ilk.

The small vessel was conceived and built as a private venture in Charleston, South Carolina. Just months after the attack on *New Ironsides*, other David-style vessels were produced in the region by private parties seeking to create a flotilla to be used by both the Confederate Navy and Army. The exact number of David-type vessels built during the American Civil War has, to this point, been a matter of highly varying speculation. Due to the necessarily secretive nature of these craft, their non-government origins, and the loss of several key archival record collections, most published accounts of these torpedo boats are filled with inaccuracies, inconsistencies, and conjecture. This dissertation draws upon a plethora of sources, many previously unknown or under-utilized, including diaries, memoirs, photographs, and newspaper articles, to supplement the official records of the Union and the Confederacy. It is the first attempt at a truly comprehensive history of the David-style torpedo boats.

In the course of collating the story, surprising conclusions have been reached. Contrary to previous conjecture, it is clear that fewer than one-dozen David-style vessels were produced, they were built only in the Charleston area, and their construction and deployment involved a limited number of key participants. Once quantified, the ultimate fates of most of the vessels have been traced with an eye towards potential archaeological assessment.

DEDICATION

Without the love and support of my amazing wife, Tuba Ekmekçi Littlefield, this work would have much less meaning.

This work is dedicated to her: my best friend, my wife, my everything.

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Contributors

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NOMENCLATURE

ACW	American Civil War
ORA	<i>The War of the Rebellion: a Compilation of the Official Records of the Union and Confederate Armies</i>
ORN	<i>Official Records of the Union and Confederate Navies</i>
SCHS	South Carolina Historical Society
STC	Southern Torpedo Company
ft	feet
in	inches
m	meters
cm	centimeters
lbs	pounds
kg	kilograms

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CHAPTER I

INTRODUCTION

A sailor of the early nineteenth century who observed a naval fleet coming into port would have seen a parade of wooden-hulled vessels with a vast expanse of clean, white canvas stretched across long yards suspended from multiple masts. By the end of the nineteenth century the same sailor would hardly have recognized a returning fleet, as the vessels had transformed into mostly metal-hulled, soot-belching steamers whose decks no longer sprouted masts and sails, but heavily armed barbets and turrets instead. Sparked by technological advances stemming from Europe and its ongoing industrial revolution, the nineteenth century was a time of creative innovation, experimentation, and transition in naval technology.¹

Naval warfare of the nineteenth century adopted and adapted, initially at a conservative pace, the technological fruits of industrialization. Ship propulsion shifted from canvas to steam-driven paddle wheels and then to screw propellers on deep-water. Ship hulls transitioned from purely wood construction to wooden vessels buttressed with internal iron components, to wooden vessels clad in iron, to fully iron construction, and finally to steel. Ordnance was strengthened with improved designs and production techniques, evolving from muzzle-loading guns with relatively close-range accuracy of a few hundred yards to ordnance with ranges over eight miles (13 km). Ammunition evolved in size as well as function, from relatively small round shot to solid shot and exploding shell projectiles weighing several hundred pounds. These technological advances, and others, were in various stages of development and available to navies the world over by the third quarter of the nineteenth century. The advent of the screw propeller² and a series of inter-related technologies in the 1840s also permitted the rise of semi-submersible, submersible, and submarine vessels.³ During the central decades of the nineteenth century, torpedo (more accurately called mine) underwent rapid technological developments and widespread deployment.⁴ The aforementioned technologies

¹ For a discussion of naval technological change from a European perspective, see Gardiner 1992.

² For a description of the advent of the screw propeller and development up to 1851, see Bourne 1855, 1-85.

³ Semi-submersible vessels do not fully submerge, but operate from the surface in a mostly submerged state. Submersible vessels operate beneath the water's surface, yet not in a self-sustaining manner, with a limited supply of breathable air. Submarine vessels are capable of extended operations beneath the water's surface, with capacity for renewing breathable air.

⁴ Note that in the mid- to late-nineteenth century, the terms 'mine' and 'torpedo' were often used interchangeably as there was no clear distinction at that point (Bell 2003, 471). For an etymological analysis of the term, *torpedo*, see

originated prior to the American Civil War (ACW), yet this conflict's naval campaigns ensured their rapid implementation.

At the beginning of the war, the United States Navy possessed a relative handful of steam-powered vessels to augment its largely sail-powered fleet. As the war progressed, the service increasingly depended on steamers, particularly for blockading and raiding campaigns being fought in shallow coastal waters of the Southern states. As historian William H. Roberts describes the US forces, "they began the war with a sailing navy that contained a few steamers and built a technologically up-to-date steam navy that had some leftover sailing ships."⁵

The rapid acquisition and use of steam warships by the US Navy was spurred by the fledgling Confederacy adopting steamers to overcome the naval blockade placed on the Southern states. Thus, the impetus for naval innovation was necessity on the part of the US Navy, and necessity and opportunity for the Confederacy. Although many Confederate naval officers like Franklin Buchanan were steeped in the traditions of the US Navy and reluctant to experiment with untried technologies, others were more eager to embrace innovative ideas for improved weapons of war.⁶ Not all these ideas were fruitful, and many were tested for only a short period before abandonment, but the ACW was unquestionably a proving ground for naval technologies that would become standard in subsequent decades. As former South Carolina Congressman L. Mendel Rivers notes, "Despite the incomparable tragedy which follows when a people resolve their differences by the arbitrament of arms, science and invention inevitably are accelerated."⁷

One vessel that laid the foundations in the naval sphere for further development was the Confederacy's cigar-shaped, semi-submersible experimental torpedo boat *David*, which, on 5 October 1863 in its first sortie, delivered a stealthy and shocking blow to USS *New Ironsides*. It was the first successful attempt to explode a torpedo against the hull of an enemy warship. The element of terror conveyed by the attack was vividly articulated by Union Navy Lieutenant Commander John

Barnwell 1872, 534. Alternatively, Roland (1978, 127) and Schafer (1996, 63) reported the term *torpedo* was coined by Robert Fulton in 1801. Fulton had certainly used the term by the time of his publication of *Torpedo War and Submarine Explosions*, (Fulton 1810, original held at the National Archives, Record Group 45, Confederate Navy Subject Files, Mines and Torpedoes, entry 502, box 150; reprinted in Abbatt 1914).

⁵ Roberts 2002, 79.

⁶ Buchanan served the US Navy from 1815 until his resignation in 1861. He proposed the creation of the US Naval Academy and was appointed as the first superintendent of the academy and is famously known for being the inaugural commander of *CSS Virginia*, and ultimately the only full admiral of the Confederate Navy.

⁷ Solomon 1976, Foreword to the first edition of 1970 (vii).

S. Barnes, “A curious and novel spectacle— a mighty frigate with her tremendous armament and crew of seven hundred men absolutely put to flight by four men in a little boat of less than a ton burden, whose only armament was a few pounds of powder extended on a spar ahead of her!”⁸ This event has been cited as the beginning of the age of torpedo warfare and an inspiration for the submarines and torpedo boats of the future.⁹ Naval historian Milton F. Perry wrote, “torpedo-boat warfare was beginning to spread like ripples from a stone cast into a pond.”¹⁰ In this case, the stone was cast in Charleston, South Carolina.

The torpedo strike by *David* did not sink *New Ironsides*, but the warship was heavily damaged.¹¹ This strike would be the closest *David* would come to achieving the goal for which it was designed: sinking Union warships engaged in the blockade of Charleston harbor. Although the attack fell short of being an unqualified success, it spurred the building of more *David*-like vessels. Union Rear Admiral John A. Dahlgren fully understood the significance of such a weapon, noting in a journal entry after the attack, “It seems to me that nothing could have been more successful as a first effort, and it will place the torpedo among certain offensive means.”¹²

By delivering its torpedo directly to *New Ironsides*, *David* crippled a formidable ship. The greater achievement of the mission was the after-shock that reverberated throughout Union blockading forces. Historian Louis S. Schafer concludes, “The North’s response to such an innovative strategy was precisely what the South had hoped for— one of apprehension and caution.”¹³ Although the vessel was eponymously named for its creator David Ebaugh (see Chapter VI), the boat earned its biblically-based sobriquet “Little David,” for it was seen to have much in common with the story of young David who slew the giant Goliath.¹⁴

Despite the initial successes achieved by *David*, the vessel was still an experimental weapon. Maneuverability, engine reliability, and protection from small arms fire and swamping were all aspects that needed further improvement for effective deployment. The problems experienced by

⁸ Barnes 1869, 137.

⁹ For examples crediting *David* as predecessor of the modern torpedo boat and submarine, see Sass 1943, 625; Wells 1914.

¹⁰ Perry 1965, 125.

¹¹ For a report of actual damage by the ship’s carpenter, see United States Naval War Records, *Official Records of the Union and Confederate Navies in the War of the Rebellion* (ORN hereafter), Vol. 15 (1902), 17-8.

¹² Extract from the diary of Rear Admiral Dahlgren, 30 November 1863, ORN Vol. 15 (1902), 19.

¹³ Schafer 1996, 3.

¹⁴ 1 Samuel 17 (King James Version).

David's crews demonstrated that although the craft was a brilliant idea, it was a hurried project prematurely pressed into service by a desperate Confederate Navy. The Confederate Navy kept the boat in service for at least six more months in 1864, during which time it was updated and at least three more sorties were attempted. These sorties have received little attention and when *David* is mentioned in historical accounts, it is inevitably only in reference to its first mission, the attack on *New Ironsides*. No comprehensive study of the vessel's military service has been written and no effort has been made to examine and correct the erroneous details of the boat found in official records or later historical accounts.

A reward of \$100,000 offered by Charleston merchant firm John Fraser and Company for the sinking of *New Ironsides* or USS *Wabash*, and the \$50,000 offered for sinking a monitor became the catalyst for other Charlestonians to produce similarly designed vessels.¹⁵ Private entrepreneurs rapidly began construction of similar *David*-style torpedo boats, some of which were deployed by the Confederate army.

Historians have estimated that several dozen *David*-like vessels were proposed or begun, although the actual number put into production or completed is certainly much smaller, likely fewer than one dozen (see Chapter VIII).¹⁶ No attempt has previously been made to quantify the vessels that comprised the *David* class of torpedo boats. This is due in part to a lack of standardized terminology for the Confederate torpedo-boats, the poor understanding of the differences between the various types, and to the paucity of reliable historical sources or archaeological evidence.

This dissertation examines the rapid development of one naval technology during the Civil War that was often interdependent with other technologies as well as with socio-economic restraints, resource availability, financial incentives, and the desire for glory. All contributed to the creation of a class of vessel that was relatively short-lived but played a significant role in the creation of modern navies.

It took years after the war's end for the rapidly developing naval technology to acquire a standard terminology, and when this was applied retroactively to the several different types of

¹⁵ United States War Department, *The War of the Rebellion: a Compilation of the Official Records of the Union and Confederate Armies* (ORA hereafter), Theodore Wagner to General Beauregard, 13 August 1863, Vol. 28 pt. 2 (1890), 280.

¹⁶ For example, Hovgaard (1887, 20) states "at least twenty"; Schafer (1996, 103) suggests "there were several dozen" while Still (1969, 19) simply states, "a large number of these small vessels were laid down."

Confederate torpedo boats much confusion resulted. For example, there were three Charleston “torpedo boats” available for operations or under construction in August 1863, yet each had a unique form: Francis Lee’s *Torch*, a mostly-submerged steam-powered ram with a traditional-style hull covered with an iron shell; the iron-hulled manually powered submarine, called the “Fish boat” at the time, but later dubbed *H. L. Hunley*; and the cigar-shaped wooden-hulled semi-submersible steamer *David*. Often the confusion was due to writers, historians, and even military officials lacking familiarity with naval vessels and the distinguishing terminology with the specifics lost on non-specialists. This is exemplified in an 1864 article in *Scientific American*, “They [torpedo boats] are all mentioned in the reports as long and low, and almost indistinguishable; the time of attack is generally at night, when darkness is likely to favor the operation.”¹⁷ This basic description was widely applied throughout official records, in popular accounts of naval activities, and in contemporary historical accounts. Further, few modern historians have attempted a more precise classification. *David*-type vessels could have been referred to as ‘Davids,’ torpedo boats, torpedo steamers, torpedo rams, or submarine vessels. The lack of standardized descriptions leaves readers of historical accounts questioning which vessels were true *David*-class torpedo boats and which were merely vessels with spar-mounted explosives; the latter existed in many guises, *i.e.*, rowed open-hulled boats, traditional steam-powered launches, or ironclad rams, all of which were surface operated.

Surviving official records of *David* and similar torpedo boats are limited. This paucity of records started at the top of Confederate leadership. Confederate President Jefferson Davis believed that “no printed paper could be kept secret,” and often opted for verbal planning instead.¹⁸ Meager details of the clandestinely-constructed *David* are dispersed throughout a few of the 30 volumes of the *Official Records of the Union and Confederate Navies in the War of the Rebellion* and in several of the 70 volumes of *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies in the War of the Rebellion*. The information contained within these records should be viewed through a skeptical lens as the descriptive material often lacks consistency and accuracy.

Post-war documents can be equally elusive and unhelpful. Fearing post-war consequences for generating a weapon of war seen as uncivilized at the time, the builders and crews of *David* and

¹⁷ Submarine Warfare, *Scientific American* (1864) Vol. 10, No. 18, 282.

¹⁸ Schiller 2011, 5.

later torpedo vessels predictably left few written records of their activities.¹⁹ The earliest research starting just after the conclusion of the war recognized the problem of source scarcity.²⁰ Fortunately, in this case the passage of time since the ACW has allowed the compilation of sources and over the course of the current research, many obscure references have been located.

Following this introductory chapter, Chapter II offers a brief discussion of sources. Chapter III is dedicated to a biographical sketch of *David* creator David Chenoweth Ebaugh, a historically overlooked individual whose writings provide a primary source for discussions of *David* in the current project. Chapter IV provides a basic, brief synopsis of torpedoes and torpedo boats prior to *David*'s first use in 1863, while Chapter V provides an overview of torpedo technology and early torpedo boats as they developed in Charleston, South Carolina and sets the stage for the creation of *David* and similar vessels. The conception of *David* is discussed in Chapter VI, while its naval deployment is detailed in Chapter VII, including the 5 October 1863 attack on USS *New Ironsides*, the event that spurred the production of more David-type vessels (the topic of Chapter VIII). Chapter IX collates and reviews the information available on the poorly understood construction features of *David*.

In these chapters I strive to accomplish nine discrete goals: 1) to validate the reputed builder as a reliable source (Chapter III); 2) to compile an accurate account of *David*'s military service (Chapter VI); 3) to present a history of the David-class vessels and their origins; 4) to quantify the number of *David*-class vessels produced in the Charleston region; 5) to determine the ultimate fate of as many *David*-class vessels as possible with an eye toward future archaeological survey (Chapter VII); 6) to address the construction of the original torpedo boat by providing reconstruction drawings of the original vessel based on reliable source materials; 7) to identify in photographs the original vessel (Chapter IX); 8) to afford an avenue for highlighting little-known or previously unknown sources including unpublished photographs; and 9) to raise *David* from its current obscurity in the historical record.

¹⁹ *David* employed both torpedoes and underwater technologies, each of which were considered “an engine of war not recognized by civilized nations” Beauregard 1878, 152. There are many expressions of this opinion. For example, Union Admiral David D. Porter wrote, “But it requires time to become reconciled to a system that was looked upon with horror for many years after its invention. Such is the progress of ideas that, now-a-days, so far from being struck with horror at the idea of knocking a hole in a vessel's bottom, all Christian Governments are seeking with avidity the most powerful submarine weapons of destruction.” (Porter 1886, 473-4). See also Roland 1978, 157-60.

²⁰ Barnes 1869, preface.

The reader will immediately notice the extensive use of footnotes in this manuscript to detail exactly where information originated, making data confirmation easier for the interested reader. The reader will also notice that the story of Charleston's torpedo boats is quite noteworthy without added dramatization, which has been kept to a minimum. This project will provide thorough coverage of their place in the Confederacy's war effort and how those boats fit into the early status of such naval technology.

CHAPTER II

METHODS AND SOURCES

One of the earliest and most complete studies of Confederate naval operations of the Civil War is J. Thomas Scharf's *History of the Confederate States Navy* of 1887. Scharf, a Confederate officer, addressed the embargo, the blockade, blockade running, naval tactics and strategies of each side, and resource availability, among other topics, using war records. Although the tome has a distinctly Southern slant, his account is thorough and impressive given the era in which he was accumulating sources and writing, prior to the Federal compilation of the official army and navy records. Scharf's volume remains a staple for every researcher interested in naval topics of the American Civil War. Scharf fleetingly recounts three of *David*'s missions over five paragraphs. Like most historical accounts that followed this one, the story of *David* and the class of vessels it inspired is incomplete, due in great part to the limited sources available at the time of writing, and in part due to the difficulty of attempting to include much about a specific vessel in a comprehensive single-volume history of the entire naval war.

Several other naval historians, most of whom were also former Confederate Naval officers, also present material that is enlightening. In 1872, Major John G. Barnwell, an Assistant Chief of Ordnance stationed in Charleston during the war, published an account of Confederate torpedo use in all forms: terrestrial mines, stationary and floating marine torpedoes, and spar-mounted torpedoes attached to a variety of naval craft. Barnwell provides a few unique details of *David*.²¹ Gabriel James Rains, a Confederate Brigadier General, wrote a post-war manuscript simply entitled *Torpedo Book*, which contains a description of *David* that is erroneous in almost every detail, including its dimensions, its construction material, the description of the torpedo employed, and the method of its activation.²² Rains, however, does include useful anecdotal material that, if inaccurate, would have to be complete fiction. Yet, he buttresses or amends other accounts of the vessel's military use, thus illustrating the need for multiple sources to be highly scrutinized for accuracy.

²¹ Barnwell 1872, 534-40.

²² Rains's *Torpedo Book*, an unpublished manuscript, along with *Notes Explaining Rebel Torpedoes and Ordnance as Shown in Plates Nos. 1 to 21 Inclusive* by Peter S. Michie were published jointly in Schiller 2011.

Some of the most useful information pertaining to David-class vessels was written from the Union side. US Lieutenant Commander John S. Barnes's 1869 volume *Submarine Warfare* is one of the earliest treatises on torpedo use and development.²³ The focus of Barnes's work is torpedo development for the United States military, a notably modest endeavor during the ACW. Barnes did allot one chapter to advances in torpedo warfare by the Confederates that includes a cursory mention of *David*.

All the aforementioned publications are more than a century old and none are solely dedicated to the story of *David* or the David-class boats. In most later books on torpedo development *David* receives passing mentions at most. This does not begin to change until 1965 with Milton F. Perry's *Infernal Machines* in which he dedicated a brief section to "Davids."²⁴ Perry's chapter was the first step in advancing an understanding of *David* and the subsequent class of similar vessels. Notable inaccuracies in the chapter, however, have been identified by additional research, notably Perry's inclusion of vessels from outside the David-class.

Raimondo Luraghi recognized the shortcomings in Scharf's 1887 volume and updated the aged work by publishing *A History of the Confederate Navy* in 1996.²⁵ Luraghi's volume has rightfully become the accepted standard for a general history of the Confederate Navy, yet in regard to *David*, it also contains erroneous data.

Louis S. Schafer's *Confederate Underwater Warfare* was also released in 1996.²⁶ Schafer included a chapter entitled "The *Little David*" that is unfortunately peppered with errors and excessive conjecture. One of the most significant errors is crediting the wrong Marylander, Ross Winans, with the conception and construction of *David*.

Historian Mark K. Ragan has produced several well-researched volumes on *H. L. Hunley*, including *Submarine Warfare in the Civil War* (1999, reprinted 2002) and *Confederate Saboteurs* (2015). The former is an overview of submarine development by both adversaries in the ACW, with a brief mention of Confederate use of *David* against *New Ironsides*. It is the most comprehensive book available to date on submarine warfare in the ACW. In *Confederate Saboteurs*, Ragan provides brief

²³ Barnes 1869.

²⁴ Perry 1965.

²⁵ Luraghi 1996, 7; also see xi, 236. Luraghi recounts the history of *David* on pages 260-1.

²⁶ Schafer 1996.

references to *David* although the work is dedicated to the exploits of the Singer Secret Service group and their relationship to the submarine *H. L. Hunley*.

R. Thomas Campbell published *Hunters of the Night* in 2000. Although limited in the number of vessels discussed, this work is the most intensive of the general surveys of Confederate torpedo boats. Campbell includes a chapter on *David* and another on the David-class vessels. Unfortunately, the work has faults, including lack of references, and problematic, often untraceable, citations.

Most recently, in 2015 Donald L. Canney published *The Confederate Steam Navy*. Canney drew heavily from the work of Perry and Schafer as the foundation for a section on torpedo boats, granting the submarine *H. L. Hunley* the lion's share of text. Unfortunately, this section of Canney's otherwise excellent volume suffers from misinterpretation of previous works, and repetition of other historians' inaccuracies.

Publications Dedicated to *David*

In 1943 Herbert Ravenel Sass wrote one of the first accounts dedicated to the story of *David*. This short colloquial history of the vessel emphasized that details of the boat's creation are vague, often inaccurate, and filled with conflicting data. Understanding the shortcomings of historical accounts of the vessel, Sass writes, "Suppressed and minimized at the time for military reasons, these very notable achievements, bearing so directly upon events today [1943], have not yet been rescued from undeserved obscurity by historians."²⁷ Evidence of Sass's research can be found in the National Archives in the form of letters exchanged between him and the research librarians, which includes a request for archival research on *David* to be done by the archive staff for Sass's 1943 article.

Almost ninety years after *David* attempted to destroy *New Ironsides*, *South Carolina Historical Magazine* (January 1953) published a series of letters written by David Chenoweth Ebaugh in which he described the construction features and details of *David* to Charleston Alderman William H. Campbell. The aim of this correspondence was to facilitate the construction of a replica of the torpedo boat for the 1893 World's Columbian Exposition (see Appendix A).²⁸ Ebaugh included

²⁷ Sass 1943, 620; reprinted in Solomon 1976, 3-12.

²⁸ Ebaugh 1953; reprinted in Solomon 1976, 13-27.

information not available from any other sources, and claimed to have been the creator of *David*. No synthesis is offered with the publication of Ebaugh's letters, merely a transcription of the previously unpublished correspondence. These crucial letters have been in the public realm for more than six decades yet remain largely overlooked by Civil War and naval historians.

The first topical publication devoted to *David* is a short monograph compiled and edited by Robert S. Solomon, titled *Little David: The Saga of the C.S.S. David*.²⁹ First presented to the public seventeen years after the Ebaugh letters were published, the pamphlet, published locally in the Charleston area, contains the still obscure Ebaugh letters alongside other collected sources describing the torpedo boat, its origins, and the attack on *New Ironsides*. Sass's 1943 article, reprinted in Solomon's booklet, is markedly divergent from other accounts reprinted alongside it, most notably from the Ebaugh correspondence. Solomon offers no synthesis or new information about the compiled material, nor does he attempt to reconcile the differences in the material that is included. Instead, his goal is to spur interest in the vessel and demonstrate its importance to American naval history prior to the 1970 tricentennial celebration of the founding of Charles Towne (Charleston). Additionally, one other publication bears mention, that of Gerald F. Teaster who published a brief monograph on *David* in 2005.³⁰ While this work has come closest to achieving a history of *David*, it is incomplete, and some of the data are inconsistent with the Ebaugh material.

The brief synopsis presented here represents the bulk of the available source materials on Confederate naval torpedo warfare. From the earliest research on the topics, the problem of limited sources was recognized. An excerpt from the preface of Barnes's *Submarine Warfare* (1869) illuminates the problem:

He [Barnes] has only designed calling attention to a subject so fraught with consequences to the profession of arms, and to collate the history of the Torpedo, and the various advances made in this new system of warfare, in the hope that it may prove interesting and instructive to those who have not found it convenient or practicable to gather together the scanty scraps of information to be discovered,

²⁹ Solomon 1976, amended Bicentennial edition of 1970 first edition.

³⁰ Teaster 2005.

scattered here and there, among the contributions to military arts and sciences at home and abroad.³¹

Archival Research

Pioneering inventions such as torpedoes, submarine craft, and military balloons, among others proliferated throughout the Confederacy. Records of the inventors and the fruits of their work are widely dispersed in local, state, and national archives. These, however, represent only a small portion of the original records of these inventions, as many have been lost in the destruction of various archives, *e.g.*, the 1865 burning of the South Carolina State Archives and the intentional destruction of the Confederate Archives. This is particularly true of records concerning Confederate submarine warfare. Civil War naval historian Mark Ragan observed: “In many cases concerning Civil War submarines [and submarine warfare], all that is known about them is an obscure line in a dispatch or a paragraph in a letter. So little is known about some of these underwater projects that the very existence of some boats may never be discovered.”³²

A handful of specialized historians have collected impressive amounts of information on key persons and topics by perusing personal letters; newspapers; official records and reports written by soldiers, civilians, and spies; collections of timeworn photographs; diaries; telegrams; and ship logbooks. Examples include: R. Thomas Campbell’s *Engineer in Gray: Memoirs of Chief Engineer James H. Tomb*, CSN (2005), which traces the career of *David’s* Engineer, James Tomb; Herbert M. Schiller’s 2011 edited volume, *Confederate Torpedoes: Two Illustrated 19th Century Works with New Appendices and Photographs*, which featured hitherto unpublished manuscripts of Confederate torpedo expert Gabriel J. Rains and Union engineer Peter S. Michie; James P. Delgado’s 2012 effort, *Misadventures of a Civil War Submarine: Iron, Guns, and Pearls*, which was based on the discovery of a small submarine in Panama and traces the history of the vessel back to its origins; and, Mark Ragan’s 2015 book, *Confederate Saboteurs*, which highlights the exploits of Edgar Singer and his group in Confederate Secret Service activities.

³¹ The preface of Barnes’s volume was written by an un-named person at the US Naval Academy but was likely the superintendent at the time, David L. Porter (Barnes 1869, preface).

³² Ragan 2002, 35.

The research for the present volume follows a similar path: utilizing as many sources as possible to rescue a nearly forgotten story. Visits to various archives have proven fruitful, especially those to the US National Archives, the Library of Congress, the Valentine Museum in Richmond, Virginia, and the South Carolina Historical Society, housed at the College of Charleston. The last of these repositories yielded much new material pertaining to David's creator, David Ebaugh.

Another important trove was the War Department Collection of Confederate Records, (Record Group 109, hereafter referred to RG 109) housed at the National Archives. RG 109 consists mostly of Confederate War and Treasury Department files acquired by the US War Department. The files were categorized by subject and mostly used to argue legal claims by Southern citizens stemming from property destroyed or confiscated during or after the war. The US Treasury and Justice Departments, the Southern Claims Commission, the Court of Claims, and congressional claims committees investigated these claims and often used Confederate Records to demonstrate disloyalty of the claimant. Within RG 109 are "Citizens Files" and "Vessel Files." The former are formally known as *Confederate Papers Relating to Citizens of Business Firms, 1861-1865* (M346) and include invoices for payments, shipping costs, merchandise payments, and similar documentation. The "Vessel Files" relate to vessels involved in any way with the Confederate government. An unpublished report from Engineer Francis D. Lee to General P. G. T. Beauregard on submarine warfare development and use in Charleston was discovered in RG 109, and has proven particularly valuable for this study. It is reprinted in Appendix B. Additional Confederate vessel information was found in RG 45 files (Naval Records Collection of the Office of Naval Records and Library), which also has "Vessel Files."

Fortunately for the modern naval scholar, archival sources are more readily accessible than when J. Thomas Scharf assembled his 1887 Confederate naval history. I have, for example, utilized the "Making of America" digital library of Cornell University extensively.³³ Likewise, the National Archives' "Civil War Records",³⁴ the Internet Archive,³⁵ and the Library of Congress' "Chronicling America: Historic American Newspapers"³⁶ online data bases have proven indispensable. These and

³³ <http://ebooks.library.cornell.edu/m/moa/>.

³⁴ <https://www.archives.gov/research/military/civil-war/resources.html#confed>.

³⁵ <https://archive.org>.

³⁶ <https://chroniclingamerica.loc.gov>.

other handy sources allowed me to look further than past chroniclers could using official records only.

Official Military Records: A Question of Reliability

Beyond the problem of scarcity of information contained in the official Confederate records, the reliability of some sources must also be addressed. For example, a recently published manuscript by Brigadier General Gabriel Rains,³⁷ who was for a time the director of the Confederate Army Torpedo Bureau, demonstrates a gross misunderstanding of *David's* construction features.³⁸ Although not published as part of the official records, this contemporary report was created by a key figure in the production and use of similar weapons, and should presumably carry a high level of reliability. Yet to assume so would be a mistake, particularly given Rains's unfortunate blunder-filled experiences with explosives.³⁹ Rains focused primarily on terrestrial mines, electric marine torpedoes, and torpedo fuses, but also offered observations and suggestions for torpedo boat use. Transferred to Charleston on 2 September 1863 to assume responsibility for the preparation and placement of torpedoes, Rains certainly saw *David* at some point, yet his description of the vessel is peppered with so many errors that it could easily be mistaken for another craft.⁴⁰

Often, entries from the 30 volumes of the *Official Records of the Union and Confederate Navies in the War of the Rebellion* (ORN hereafter) and in many of the 70 volumes of *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies in the War of the Rebellion* were gathered and republished without scrutiny, comparison to other records, or analysis. Historians, even naval historians, sometimes lack an understanding of vessel construction and therefore conflate the features of multiple vessels in a single description. Due to the erratic and inconsistent nature of the official military records and other written sources, assembling a narrative of any naval history

³⁷ Schiller 2011.

³⁸ Assignment of Rains to the Army Torpedo Bureau, ORN Vol. 7 (1898), 61.

³⁹ Rains, according to Alex Roland, developed terrestrial mines in the 1840s, but with little success. He ultimately blew up an opossum, injured himself, and frightened friendly troops (Roland 1978, 154). Rains later severely damaged one of his hands while developing fuses.

⁴⁰ Schiller 2011, 78-80. Rains was in Charleston at the time that both *David* and the submarine *H. L. Hunley* were beginning service and was likely an eyewitness to the vessels. Still, gross errors in his descriptions have been identified, attesting to the fallibility of contemporaneous descriptions, errors that have been echoed by military officers and historians over the last 160 years.

topic must be verified with as many other sources as possible, including iconography (sketches, paintings, and photographs), newspaper and journal articles, and contemporary accounts of events and technologies. It is this step of multiple source verification that has been sorely overlooked by many prior researchers of the David-style torpedo boats.

Paintings and Sketches

The celebrated Civil War-era artist Conrad Wise Chapman produced a painting of *H.L. Hunley* that has proven to be surprisingly accurate following comparisons made after the raising of the actual submarine.⁴¹ Chapman also made a dated painting of *David* from sketches drawn while the vessel was docked at Atlantic Wharf three weeks after the attack on *New Ironsides* (25-28 October 1863). Given that both paintings were from the same source, it is safe to presume them to be equally as precise in detail and second only to a photograph as an accurate depiction of the boat. Three decades after the war, Chapman's brother, John Linton Chapman, attempted to sell Conrad's collection of 31 paintings made in Charleston during 1863. In a letter dated 12 July 1896, he stated his belief that they were highly accurate, claiming, "The pictures, apart from their historical value- and military accuracy- have been considered by eminent artists in Europe and America- as most remarkable works of art." He adds, "He [Conrad Wise Chapman] was commissioned by General P. G. T. Beauregard who valued his talent and ability to make drawings and sketches."⁴²

Chapman's painting of *David* is held by the American Civil War Museum in Richmond, Virginia. The catalogue description reads: According to Chapman, "This was the first torpedo boat ever constructed; it is being repaired in one of the docks of Charleston; places may be seen where the boat was struck by bullets. New [iron] plates are being placed in position."⁴³ Although the museum's current website lists the painting as undated, the location and date, "Charleston, 28 Oct 1863" is written in the middle of the left-hand side just above the waterline.⁴⁴

⁴¹ Chaffin 2008, 168, 231. Chapman's painting of *H.L. Hunley* is held by the American Civil War Museum (Richmond, Virginia) and reproduced in Bassham (1998), *Conrad Wise Chapman*, pl. V.

⁴² Letter from John Linton Chapman to E. V. Valentine 12 July 1896, held by the Valentine Museum, Richmond, VA (Conrad Wise Chapman and John Gadsby Chapman, Papers, 1859-1920).

⁴³ Bassham 1998, 136, the painting is reproduced on page 137. American Civil War Museum catalog number-0985.14.00037bb.

⁴⁴ This omission has been brought to the attention of museum staff for correction.

Chapman painted the original *David*, as no other David-class vessels existed at the time the artwork was made. The Chapman painting offers an opportunity to visually confirm or reject written descriptions of the vessel's construction and to compare details to a limited number of photographs of David-style boats.

Likewise, sketches have proven to be a valuable resource. Often, these were roughly made and are less accurate than photographs or paintings, yet still afford augmentation of the current corpus of data. However, sketches, like other records, need to be scrutinized for accuracy and source. Some drawings were obviously made from memory at a date later than the observation, and some were made without direct observation by the artist. It is only upon comparison with photographs, paintings, and written description that inaccurate sketches can be identified. Others however, can be shown to be highly accurate. Notable is a little-known sketch made by George W. Carleton on 9 November 1863, just weeks after *David's* attack of *New Ironsides* and before any other similar vessels had been constructed.

Photographs of David-style Vessels

If a picture is truly worth a thousand words, then images of the original vessel should be at least equally as informative about *David* as any written descriptive material. Supplementing the written records and the Chapman painting are a limited number of photographs of *David*-style boats. Two were taken in Charleston and others were shot in various Northern locations after captured vessels were taken as prizes or for study. Collectively, eleven photographs have been located, exhibiting seven distinct vessels, among which the original vessel has been identified.⁴⁵

Contemporaneous and Other Historical Accounts

Post-war naval historians, most of whom were former Confederate or Union Naval officers and sailors, prepared memoirs or more formal historical accounts that are enlightening. Works by former

⁴⁵ Littlefield (2015) has verified the original vessel in one photograph made in Charleston based on location and comparison to written sources. This is discussed in detail in Chapter VIII.

Confederate officers include those of Stephen Mallory, Matthew F. Maury, Hunter Davidson, Gabriel Rains, Pierre Gustave Toutant Beauregard, John G. Barnwell, J. Thomas Scharf, and Richard L. Maury (son of M. F. Maury). Works by Union officers include those of William R. King, John S. Barnes, and Royal Bradford. These men were often eye-witnesses to the events and technological developments they are describing, and their insights are valuable, but not always unquestionably reliable.

Misinformation generated by early Civil War historians has, in many cases, been perpetuated by later historians. Modern researchers have also generated misinformation or misinterpretation as well. For example, one recent description of a *David*-style boat known as *Midge* states the length was “30 ft long, but had a diameter of 12 ft, making her a shorter squatter version, an adaptation imposed by the lack of suitable engines.”⁴⁶ This statement may seem plausible to the casual reader, but a length-to-beam ratio of only 2.5:1 would be utterly lacking good hydrodynamic qualities for a submersible vessel. Had the author compared this description to the two images of the vessel provided in his own text, it would have been clear that the dimensions listed were not correct.⁴⁷

Newspapers

During the war, Southern and Union newspapers publish surprisingly little pertaining to torpedo boats. Northern papers occasionally reported on torpedo boat activities after the fact. Southern papers reported little to maintain security about boat locations and modes of attack to preserve an element of surprise. A writer for the *Charleston Mercury* wrote on 7 October 1863, just two days after the attack on *New Ironsides*:

Of the character or details of the attacking expedition we deem it best for the present to be silent, and we are requested by the military authorities to extend to the Southern newspapers elsewhere the request to omit all mention of any definite intelligence that may reach them in reference to the affair. We can only inform

⁴⁶ Konstam 2004, 8. This brief treatise (48 pages) has only three entries in the bibliography and lacks any citation of sources, making fact verification impossible. No other known source gives dimensions of the vessel.

⁴⁷ Konstam 2004, 10, 37.

readers that the Yankee ironclad frigate [New] Ironsides is believed to have been injured, though she still rode at her usual anchorage yesterday afternoon.⁴⁸

Consequently, not much concerning torpedo boats is directly conveyed through newsprint of the day. For the Confederacy, secrecy was essential. Northern publications had minimal access to news from the rebelling states. Still, a number of reports of *David*'s use were printed in the United States and abroad. Post-war newspapers, however, are still valuable sources of information. Business advertisements and announcements of legal disputes were informative, particularly pertaining to financial endeavors of key players in the narrative. After the war, prize vessels were seized, including several David-class torpedo boats, and in some cases their movements can be traced from reports made in various newspapers. In at least two instances the loss of a captured vessel en route to a Northern port was documented in newspapers.

Diaries, Memoirs, and Correspondence

Historian Tom Chaffin encountered a similar absence of credible newspaper reports when researching *H. L. Hunley* noting, “Ironically, however, the silence of those newspapers on submarine boats seems to have made the topic all the more intriguing for curious civilians.”⁴⁹ Likewise, a small, but informative array of diaries, memoirs, and correspondence referencing David-class torpedo boats, several by curious civilians, has been located and analyzed for this study. Several first-hand accounts of *David*'s exploits are available. *David* crew members Lieutenant William Thornton Glassell and Engineer James Hamilton Tomb each published accounts of their experiences with Confederate torpedo boats. US Army surgeon Henry Orlando Marcy later recounted his time in Charleston during which he discovered two David-class vessels under construction. “Curious civilians” and Charleston socialites Susan and Harriott Middleton also shared their stories about *David* and key figures in the history of the David-class vessels. Each source contributes not only unique details and insights but does so from varied insider perspectives.

⁴⁸ *Charleston Mercury* (Charleston, South Carolina) 7 October 1863.

⁴⁹ Chaffin 2008, xxiv.

Glassell and Tomb were both Confederates who offered distinctly military slants to their recollections. Glassell was the first commander of *David* and during the first sortie was captured. Unlike many other prisoners of the US forces, Glassell was seen as a substantial threat due to his knowledge of torpedoes and he was subsequently imprisoned for more than a year. In a letter to Secretary of the US Navy, Gideon Welles, Rear-Admiral Dahlgren wrote of Glassell, “It is desirable that this officer should not be allowed to return here [Charleston] until some time has elapsed, as he could not fail to be of great service to the enemy in future operations of the same kind.”⁵⁰ Glassell’s story, published in the pages of *Southern Historical Society Papers*,⁵¹ and later republished by his niece, Eleanor Banning MacFarland in an edited and privately published book, not only expresses the turmoil of Glassell’s wartime experiences, but also supplies matchless details of his association with the torpedo boat.⁵²

Tomb, a native of Savannah, Georgia, had a slightly more agreeable involvement with the Confederate Navy and with torpedo boat service. Tomb served as engineer on CSS *Jackson* and CSS *McRae* during the battle of New Orleans in April 1862, before spending a few months as a prisoner of war at Fort Warren in Boston.⁵³ Upon his exchange in August he was assigned to the gunboat CSS *Chicora* at Charleston while also serving as engineer for Glassell during the first mission with *David*. Tomb was granted command of the vessel as well as a promotion to Chief Engineer after Lieutenant Glassell’s capture. It was in Tomb’s hands that *David* operated for the duration of the defense of Charleston. Tomb spent more time with *David* than did Glassell and that is reflected in his post-war memoirs, speeches, and articles.⁵⁴ Before his death in 1929, Tomb had a small obelisk erected in honor of the crew of *David* in Jacksonville, Florida, beside his own future grave plot, signifying the importance of that period in his life.⁵⁵

Henry Orlando Marcy, a prominent doctor from Boston, commanded the 35th United States Colored Troops when Brigadier General Edward E. Potter’s army occupied Charleston immediately

⁵⁰ Rear Admiral Dahlgren to Sec. of the Navy Welles, 12 October 1863, ORN Vol. 15 (1902), 16.

⁵¹ Glassell 1877.

⁵² Glassell 1937.

⁵³ Campbell 2000, 59.

⁵⁴ Campbell 2005, 173-7.

⁵⁵ Likewise, a memorial monument was erected by the Daughters of the Confederacy to the “Heroic Men of the Confederate Army and Navy First in Marine Warfare to Employ Torpedo Boats 1863-1865” at Battery Park by the waterfront in Charleston, South Carolina

after the city's evacuation by Confederate troops.⁵⁶ Although a medical doctor, Marcy's duties included more than medicine. He tended the sick and wounded but also supervised foraging parties and was tasked with destroying rebel property.⁵⁷ The doctor's hand-written journal is unpublished and archived at the South Carolina Historical Society at College of Charleston. Sections of his journal have been invaluable in confirming the existence of several otherwise-undocumented David-style vessels in early 1865.

Only one civilian source on *David* was extensively used in the current work. Cousins Susan and Harriott Middleton were members of one of the wealthiest families in Charleston and had connections with a variety of politicians, military leaders, and area merchants that afforded them insights into military and social activities. In personal letters, archived at the South Carolina Historical Society, they often exchanged banter about such figures as Confederate States President Jefferson Davis, General P. G. T. Beauregard, as well as many of their wealthy friends and neighbors.⁵⁸ The repartee flows seamlessly from military action, to a recent social event, to the costs of luxury items, and back, presenting oddments about the period and specifically about three distinct torpedo boats operating in Charleston during the late summer of 1863, *David*, *H. L. Hunley*, and *Torch*.

All these sources collectively offer details of a secretive Confederate agenda to destroy Union warships by means of torpedo boats. The primary and secondary sources listed here provide elements from which the present volume has been assembled. Without question the most important source for recounting the story of *David* is the correspondence of David Ebaugh, for it was only after reading this material that I began to question the accuracy of previously written accounts of these boats and to seek for myself a consistent and accurate picture of their development and use during the ACW.

⁵⁶ 4 March 1865, Marcy 1865. Harriott Cheves Leland transcribed the unpublished diary in 1981. For a short biography of Dr. Marcy and description of his medical contributions, see "Editorials" *Journal of the American Medical Association*, 17 March 1969, Vol. 207, No. 11, 2096.

⁵⁷ "Dr. Marcy's March," Opinionator, *New York Times*, 13 February 2015, by Daniel J. Vivian, accessed 09 December 2016, http://opinionator.blogs.nytimes.com/2015/02/13/dr-marcys-march/?_r=1.

⁵⁸ See Leland 1962, 1963a, 1963b, 1963c, 1963d, 1964.

CHAPTER III
DAVID CHENOWETH EBAUGH: A BIOGRAPHICAL SKETCH

Few primary records that directly address the origins, design, and construction of *David* have survived, if such ever existed, with the notable exception of the correspondence of David Chenoweth Ebaugh (Figure 1), the creator of the eponymous torpedo boat. In a series of letters composed in late 1891 and early 1892, Ebaugh described his involvement with *David* to a Charleston alderman, the Reverend William H. Campbell.⁵⁹ Oddly enough, Ebaugh was encouraging city officials to construct a replica of the torpedo boat for the 1893 Chicago World's Columbian Exposition.⁶⁰ Ebaugh wrote Campbell, "I think it would be a good show from Charleston if they would build a Duplicate of the David and sent it to Chicago for the Columbus Exposition it being the first Torpedo boat ever to run by Steam."⁶¹

Ebaugh offered details about *David* and other fusiform (cigar-shaped, tapering at both ends) boats he designed and built near Charleston before the Confederate evacuation of the city in February 1865.⁶² Although almost three decades had passed between the war and the composition of his letters, much of the information they contain has proven accurate when compared to other sources. Time distorted Ebaugh's memory in only a few details.

The Ebaugh letters have been largely overlooked as a source of information by naval historians writing about Confederate torpedo boats, presumably because they have been difficult to reconcile with previously accepted and published material.⁶³ Three important topics are addressed within them: the conception of the boat's design; the ultimate fate of *David*; and, most importantly, information on the boat's construction features, including its dimensions, materials, and principle features. Much of this information is unique to Ebaugh's letters.

Although far from comprehensive, the details supplied by Ebaugh are considerably more complete than any other known source. The following short biographical sketch provides a glimpse

⁵⁹ Ebaugh's correspondence was transcribed by the South Carolina Historical Society (SCHS) and published in 1953 in *South Carolina Historical Magazine*, the journal of the SCHS. All of the letters are reprinted in Appendix A of this dissertation.

⁶⁰ Ebaugh's connection with the 1893 Exposition may have been spurred by his service in Charleston as Chairman of Machinery for the 1872 State Fair. *The Charleston Daily News* (Charleston, South Carolina) 9 November 1872.

⁶¹ Ebaugh 1953, 33.

⁶² Ebaugh 1953, 32-6.

⁶³ Notable exceptions include a partial use of the data by Burton 1970, 373 and Campbell 2000, 53-8; 2005, 68, 93.

into Ebaugh's life as an inventor and entrepreneur, and buttresses his claim as the vessel's progenitor.

Photo # NH 66768 David Chenoweth Ebaugh



Figure 1. David Chenoweth Ebaugh. Reprinted with permission of the Naval History and Heritage Command, Washington, D. C. Photo # NH 66768.

Ebaugh: A Transplanted Marylander

David Ebaugh was born to George and Sarah Ebaugh on 9 July 1824 in Baltimore, Maryland, where he lived until moving to Saint John's Parish in Berkley County, just outside Charleston, South Carolina, in late 1854 or early 1855.⁶⁴ Little else is known of Ebaugh before his move to South Carolina. Shortly after his arrival, Ebaugh served as the Postmaster for Monck's Corner, a position he held until 1859.⁶⁵ During this time, he also purchased forested land and engaged in lumber milling and timber sales.⁶⁶

After 1860, Ebaugh was involved in multiple private business ventures established in and around Charleston to serve, and like many Charlestonians to profit from, the war effort. As early as December 1861, Ebaugh contracted with the Confederate States Engineer Bureau (Figures 2 and 3) to procure and mill lumber.⁶⁷ By October 1862, the Confederate Navy had also contracted with Ebaugh and his partner Henry C. Rice (Figure 4) for lumber.⁶⁸ J. C. Malloone[e], an employee of Ebaugh in late 1862, later became a business partner in a separate venture (Figure 5). Rice, Ebaugh, and Company supplied timber, via the Engineer Department, for bridge construction as late as January 1865.⁶⁹ Independently, Ebaugh also continued to supply timber to the Confederate Engineers Department throughout the war.⁷⁰

⁶⁴ Ebaugh 1941, 35-6; Orvin 1950, 19.

⁶⁵ Orvin 1950, 19.

⁶⁶ Ebaugh 1941, 35. This is likely the same property sold just after the war (1866) at Huger's Bridge in Moncks Corner that amounted to 2500 acres of timbered land (*The Charleston Daily News* (Charleston, South Carolina) 19 February 1866). Other land sold by Ebaugh included 98 acres in Pinopolis, South Carolina, near Monck's Corner, in 1872 (Orvin 1950, 33).

⁶⁷ There are many invoices for payment to Rice, Ebaugh & Co. dating from April 1862 to June 1864. National Archives, Southern Claims Commission, M1407, roll scc-2876-9696-0001, p. 13.

⁶⁸ National Archives, Record Group 109, Confederate Papers Relating to Citizens or Business Firms, 1861-65, M346, Roll 0953. Available online at <https://www.fold3.com/image/249/52503621>.

⁶⁹ National Archives, War Department Collection of Confederate Records, Record Group 109, Engineer Department Letters and Telegrams Ch. 3 Vol. 9, 115, 117, 137, Major W. H. Echols to Rice, Ebaugh, and Co., 23 January 1865.

⁷⁰ National Archives, War Department Collection of Confederate Records, Record Group 109, Engineer Department Letters and Telegrams Ch. 3 Vol. 14, 328, Letter of 17 October 1863 from Major Chief Engineer W. H. Echols to D. C. Ebaugh.

500
6M
ARCHIVE OFFICE,
War Department,
March 31, 1874.
Book 2. Letters Sent, page 500
Case of Claim 439
David C. Ebaugh
or Charles C. Ebaugh
Charleston County
S.C.
Voucherson file
in this office
show that
a firm doing
business under
the style of
Rice Ebaugh
and Co Lumber
Dealers, sold
six hundred
and eleven
dollars and forty
three cents worth
of Lumber to
the Nitre &
Mining Bureau
over

D. C. Ebaugh
Was a member
of the firm of
Rice Ebaugh & Co
Who sold Lumber
to the Nitre &
Mining Bureau
for the purpose
of constructing
Nitre beds

atly notified
June 13/75

Figures 2 and 3. Documents showing sale of lumber to the Confederate Nitre Yard. National Archives, RG 109, Southern Claims Commission, M1407.

The Confederate States, for *Engineer Service*
Rice, Ebaugh & Co.

DATE	DESIGNATION	APPLICATION	COST
1862 Mch 18	10,000 ft 3 in Plank @ 10	Charleston Landing	100 00
" "	10,220 " 2 " "	Entrenchment cut	102 20
" "	18,537 " 8 1/2 "	"	222 37
April 2	9,780 " 2 in Plank @ 10	"	97 80
" "	5,000 " 3 " "	"	50 00
" "	8,520 " 8 1/2 "	"	102 24
" "	5,000 " 1 1/2 Sashes @ 10	"	50 00
" "	2,000 " 4 1/2 Boards	"	20 00
" "	5,000 " 4 in Boards	"	50 00
" "	8,725 " 15 1/2 "	"	104 70
" "	12,900 " 12 1/2 "	"	154 50
Correct <i>Wm. M. Ramsey</i> <i>Eng in Chy</i>			\$1054 11

I certify that the within account is correct and just; the articles
accounted for in my property return, for the _____ quarter, 1862

Received at Charleston, S. C., this 17th day of April, 1862 from
Capt. J. J. Rice Corps of Engineers, the sum of ten hundred and
fifty four Dollars, in full payment of above account.

1054.11 (Signed Duplicates.) *Rice, Ebaugh & Co.*

Figure 4. Invoice from the Confederate Government to Rice, Ebaugh & Co. National Archives, RG 109, "Citizens Files" M346.

NOTICE.

—

FOR SALE,
200,000 FEET
 OF
LUMBER, viz:

<p>1 INCH BOARDS 1½ inch Boards 1¾ inch Boards 2 inch Plank 3 inch Joist 4 inch Joist Flooring, Ceiling, &c., &c., always on hand.</p> <p style="text-align: center;">ALSO,</p> <p>3x3 Scantling 3x4 Scantling 3x5 Scantling Shavings for Fertilizing, in lots to suit purchasers, low for cash, by</p>	<p>3x6 SCANTLING 4x6 Scantling 4x5 Scantling 4x4 Scantling 8x8 Scantling 10x10 Scantling.</p> <p style="text-align: center;">ALSO,</p> <p>2x2 1½x2 1x3 2x4</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

EBAUGH & MALLONEE,
 HORLBECK'S WHARF,
 Near Northeastern Railroad.
 N. B.—OUR PLANING MILL in full operation.
 Orders solicited. mw16 May 14

Figure 5. Ebaugh and Mallonee lumber advertisement, *Charleston Daily News*, 25 May 1866.

When US General Edward Potter and his forces occupied Charleston in March 1865, Ebaugh was arrested at his Moncks Corner home and then immediately paroled as he presumably posed no further threat. Papers found in his home directly linked Ebaugh to wartime production of nitre and torpedo boats.⁷¹ Around that time the federal government confiscated or destroyed a portion of Ebaugh's property, reportedly valued at \$165,000, as a consequence of his role in the war.⁷² This high-figure claim, coupled with Ebaugh's ownership of several large tracts of property, and several businesses, suggest Ebaugh was already a wealthy man by 1865. Although much of his property was lost at the end of the war, the wartime employment with the Copper River Nitre Works later afforded a means to regain wealth. However, it also kept him from winning claims to property lost during the war.

⁷¹ Entries for 3 and 4 March 1865, Marcy 1865. Papers found in the National Archives included payroll receipts for the Cooper River Nitre Works, but included no papers directly linking Ebaugh to the torpedo boats mentioned in Marcy's diary.

⁷² Ebaugh 1941, 35.

Nitre, also known as saltpeter, or more precisely as potassium nitrate, is a constituent component in the manufacture of gunpowder. It had been largely supplied to the United States by British India, but the Federal blockade threatened a shortage in the Southern states during the war. Consequently, the Nitre Bureau was founded in 1862 with Major I. M. St. John serving as chief. St. John instigated a systematic search for nitre deposits in Southern territories.⁷³ By mid-1862, an excellent grade of saltpeter was being produced in great quantities, enough to supply all Confederate forces.⁷⁴ Joseph Le Conte, a geologist with the University of South Carolina wrote a pamphlet explaining the production of nitre and supervised several nitre works for the Confederacy in South Carolina.⁷⁵ These events likely spurred the creation of the Cooper River Nitre Works on the property of Dr. Saint Julien Ravenel. No reference to Ravenel has been found to associate him to the nitre works other than the sheds were located on his property.

Ebaugh, who lived just a few miles from Ravenel's Stony Landing Plantation, served as assistant supervisor of the nitre works for the Confederate Nitre Bureau. This was likely the beginning of Ebaugh's association with the doctor, who is often credited with the conception and design of *David*.⁷⁶ Based on a series of invoices from the C.S. Nitre Bureau (Figure 6), Ebaugh's employment as assistant supervisor at the nitre sheds began on 21 December 1862 and continued through at least December of 1864, and likely through the end of the war a few months later. At some point between January and July 1864, he was promoted to supervisor of the Cooper River Nitre Works although no reference has been found to previous or other supervisors at any point during operations in the nitre sheds.⁷⁷ Ebaugh was apparently the principle engineer and manager of the endeavor, as all references to the nitre works name only Ebaugh as a representative of the company. Even after the war, Ebaugh remained involved with nitre production as well as in phosphate mining, becoming one of the biggest names in the production of phosphates in South Carolina, owning or operating multiple facilities all over the state.⁷⁸ In 1866, Ebaugh joined forces

⁷³ For a thorough discussion of gunpowder production and the state of Confederate powder supplies see Ross 2000, 54-80.

⁷⁴ Schafer 1996, 42-50.

⁷⁵ Armes 1903, 183-4.

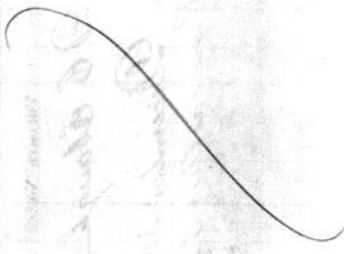
⁷⁶ Ebaugh 1953, 33; Orvin 1950, 19.

⁷⁷ National Archives, Record Group 109, Confederate Papers Relating to Citizens or Business Firms, 1861-65, M346, payroll invoices for Ebaugh dated 21 December 1862 through 31 December 1863, all document Ebaugh as Assistant Supervisor, while invoices for July and August 1864 show his title as Supervisor.

⁷⁸ Ebaugh 1941, 35.

with Ravenel again to form the Wando Phosphate Company (1867-1880), one of the earliest phosphate companies in South Carolina.⁷⁹

Confederate States of America,
To D. C. Ebaugh DP

1862	DESIGNATION.	REMARKS.
Dec. 31	For ten days services as Assistant Superintendent from 21 st to 31 st December inclusive @ \$3.	\$30 00
CONFEDERATE STATES NITRE SERVICE		Assistant-Superintendent Cooper River Nitre Works

I CERTIFY, that the above account is correct and just, amounting to *Thirty Dollars*
 what the services were rendered as charged were necessary
 and that the property has been received and will be accounted for *Frank S. Holmes*
 for the public service —

RECEIVED at *Charleston S.C.* this *31st* day of *Dec* 1862
 of *Frank S. Holmes* C. S. Nitre Service, *Supt. Dist. No. 6*

Thirty Dollars *00* Cents, in full of the above account.
 \$ *30*.....

(SIGNED IN DUPLICATE.) *D. C. Ebaugh*

Figure 6. Ebaugh's first pay statement for Nitre Works service. National Archives, RG 109, "Citizens Files" M346.

⁷⁹ Also referred to as the Wando Fertilizer Company. Chazel 1904, 42, 48, 62; Shuler et al. 2006, 36.

Several of Ebaugh's other business ventures and partnerships continued well past the war years, as evidenced by announcements in the *Charleston Daily News*. Rice, Ebaugh, and Company, which had supplied lumber throughout the war, lasted until May 1869, while Ebaugh and Mallonee Lumber Sales, another wartime partnership, dissolved in 1867.⁸⁰ A third partnership, with N. H. Guyton Co.,⁸¹ survived only through December 1866.⁸²

From 1868 through 1872 Ebaugh received frequent shipments of goods to sell in the Charleston area through several companies in which he was at least part owner.⁸³ Reports show that one of Ebaugh's enterprises furnished steam engines of all sizes for rice mills, cotton gins, sawmills, and machine shops in South Carolina's low country.⁸⁴ His mechanical aptitude and familiarity with small steam engines are significant to his claim as *David's* designer and constructor, if not the boat's conception as well, in contradiction to the belief that this honor belonged to Ravenel, as mentioned.

Ebaugh did quite well financially in the post-war years and owned several homes in the city of Charleston. Purchased in 1871 around the time of his first claim to property lost to the Federal government was filed, Ebaugh's mansion at 18 Drake Street was heralded as one of the finest in Charleston.⁸⁵ In 1874, Ebaugh was listed as a director for Taylor Iron Works, at East Bay and Pritchard Streets, along with Casper A. Chisolm, a founding member of the Southern Torpedo Company that produced several David-class vessels late in the war.⁸⁶ Ebaugh was granted at least one patent for a rock pulverizer, used in the phosphate industry, thus supporting one family member's assertion of his mechanical prowess described in genealogical records.⁸⁷ Ebaugh also served as an alderman of Ward 7 in Charleston from 1879-1883, thus initiating his relationship with

⁸⁰ The partnership was dissolved in early September 1867. *The Daily News* (Charleston, South Carolina) 19 September 1867.

⁸¹ The partnership was dissolved 13 December 1866. *The Daily News* (Charleston, South Carolina) 19 December 1866.

⁸² The partnership was dissolved in late May 1869. *The Daily News* (Charleston, South Carolina) 26 May 1869.

⁸³ As evidenced by dozens of announcements in *The Charleston Daily News* between 1866 and 1876 of shipment arrivals listing D. C. Ebaugh as a consignee.

⁸⁴ Orvin 1950, 19.

⁸⁵ The mansion was purchased in 1871 according to an announcement of city improvements in *The Charleston Daily News* (Charleston, South Carolina) 27 May 1871. Wiley (2008, 58) lists the address of the mansion as 18 Drake Street, Charleston, South Carolina Shipbuilder and iron foundry owner, James Eason, who built the Confederate ironclads *Chicora* and *Charleston* lived at 15 Drake Street.

⁸⁶ *The Charleston Daily News* (Charleston, S. C.) 15 July-31 October 1874. Casper A. Chisolm was also named as the replacement for Francis Lee in overseeing the final stages of construction of Lee's torpedo ram, *Torch*, had Lee been sent overseas to supervise construction of other torpedo rams for John Fraser and Company.

⁸⁷ David C. Ebaugh, Rock Pulverizer. US Patent 312343A, filed 4 August 1884, and issued 14 February 1887; Ebaugh 1941, 35.

Reverend Campbell, a fellow alderman and the person to whom Ebaugh addressed his informative letters.⁸⁸ In 1891, Ebaugh organized and managed a fertilizer factory in upstate South Carolina, the location from which the letters to Campbell were composed, before moving back to Baltimore prior to his death in 1895.

Two other aspects of Ebaugh's professional career deserve brief mention, neither of which substantiate his trustworthiness, but do establish his level of involvement with the creation of *David*. First, as mentioned, Ebaugh was engaged in a legal dispute with the Union government after the war (Figure 7). On 20 February 1865, just after the fall of Charleston, US Army Chief Engineer Towns confiscated the paddle wheel steamer *Hardee*, constructed and owned by Ebaugh, and was valued at \$25,000.⁸⁹ The vessel does not appear on lists of prize vessels confiscated by the Union Navy, for it was confiscated by the Union Army, which did not keep such lists. On 4 October 1892, Ebaugh mentioned this vessel in one of the letters to Reverend Campbell:

I built two more boats at Stoney landing, one was intended to run the blockade, it was 163 feet long 12 feet in diameter, made in shape of a Segar, it was captured in Charleston after the evacuation and carried to Brookland Navy Yard, it cost \$90,000. The other was a flat bottom steam boat, was confiscated and sold by a man that was afterwards sent to the Penitentiary in N.Y. or Boston for fraud.⁹⁰

At the close of the last two letters to Reverend Campbell, written in 1892, Ebaugh requested, "Please do not publish anything about the David until I see you," because Ebaugh was still engaged in the financial claim that was filed in 1872 with the federal government over property lost at the end of the war.⁹¹ Ebaugh died three years after his correspondence with Campbell and presumably the claim was never resolved to his satisfaction.

⁸⁸ Ebaugh is listed as Alderman of Ward 7 from 1879-83. He also served on the Contracts Council, as well as the Public Institutions and Grounds Council (City of Charleston, 1883, ii, 108).

⁸⁹ The claim, as reported by the *Charleston News and Courier* (Charleston, South Carolina) 24 November 1873, was for \$25,000. This figure is supported by a statement in one of Ebaugh's letter's to Campbell dated 31 January 1893. Also see, Moore 1981, 258; and Cauthen 1950, 77 note 71. The vessel was 140 feet in length, 27 feet in breadth, 8 feet depth of hold, with an estimated burden of 250 tons.

⁹⁰ Ebaugh 1953, 35.

⁹¹ Letters dated 18 December 1892 and 31 January 1893, Ebaugh 1953, 35-6.

(Confederate.)
 E | Capt. Simons' Company. | S. C.
 (Etiwan Rangers.)

D. C. Ebaugh
 Major, (Capt. Keating Simons' Company,
 South Carolina Volunteers.
 Age *30* years.

Appears on
 Company Muster Roll*
 of the organization named above, for local defense
 and special service in the District of Charle-
 ton, South Carolina,
 for *Not dated*, 186 .

Joined for duty and enrolled:
 When _____, 186 .
 Where _____
 By whom _____
 Period _____
 Remarks: *Mechanic*

* From copy made in the M. S. Office, War Department, in
 Oct., 1904, from an original record borrowed from Colonel
 M. F. Trinkle, Com. of Confed. Rolls, State Capitol, Columbia,
 S. C.—M. S. 227400.

Book mark:
W. Fenwick
 642: _____ Copyist.

Figure 8. Ebaugh's registration card for the South Carolina Volunteers, Etiwan Rangers. National Archives, RG 109, Compiled Service Records M267.

BEST COPY AVAILABLE
 SOME IMAGES ARE UNREADABLE

D. C. Ebaugh
40 years old
detailed till
1st March 1865
by SA [unclear]
[unclear]
20 March 1865
with [unclear]
to [unclear] for [unclear]

Figure 9. Ebaugh detailed through 1 March 1865. National Archives, Engineer Department Ledgers Ch.3, Vol. 19, p.265.

Ebaugh's appeal to the US government for recovery of his losses included an obviously false statement (Figure 10) of his continuous Union loyalty throughout the war despite his supervising a Confederate nitre production site, producing 'uncivilized' naval weapons, and serving as a volunteer in the Confederate Army for at least three years.

D. C. Ebaugh

Being duly Sworn

Deposes and says that he is the petitioner named in the foregoing petition and who signed the same; that the matters therein stated are true of the deposed own knowledge except as to those matters which are stated on information and belief and as to those matters he believes them to be true; and deponent further says that he did not voluntarily serve in the Confederate army or navy either as an officer soldier or sailor or in any other capacity at any time during the late rebellion; that he never voluntarily furnished any stores supplies or other material aid to said Confederate army or navy or to the Confederate government or to any officers department or adherent of the same in support thereof and that he never voluntarily accepted or exercised the functions of any office whatsoever under or yielded voluntary support to the Confederate government.

David C. Ebaugh⁹³

Ebaugh's claim was equal to the claimed value of the steamship *Hardee* (\$25,000) but was rejected on 24 June 1872 as it exceeded the maximum \$10,000 limit of that particular court. Ebaugh was advised to either reduce the amount or have the case tried by the Claims Commissioners. Ebaugh chose the latter. Two years later, the Commissioners of Claims offered evidence for dismissal of the appeal based on Ebaugh's contracted work with the Nitre Bureau at Stony Landing Plantation.⁹⁴ There was no mention of his involvement with the creation or construction of torpedo

⁹³ National Archives, Record Group 109, Southern Claims Commission, M1407, roll scc-2876-9696-0001.

⁹⁴ On 1 July 1863 Ebaugh sold two barrels of rosin and 250 pounds of cotton to the Nitre Bureau. This may have been for caulking *David*. The next day, 2 July 1863, Ebaugh rented a horse and cart to the Nitre Bureau. From October to December 1863 and from 1 July to 31 August 1864, Ebaugh was paid the sum of \$90 per month for employment at the Nitre shed by the Nitre Bureau. In December 1864, Ebaugh hired three slaves to work at the Nitre works. National Archives, Record Group 109, Southern Claims Commission, M1407, roll scc-2876-9696-0001.

boats, nor of his service as a Confederate volunteer.⁹⁵ As noted, Ebaugh had been arrested and immediately paroled on 4 March 1865 for his involvement with production of torpedo boats and nitre at Stony Landing, with those papers pertaining to the construction of torpedo boats confiscated.

Ebaugh was also frequently involved in private court cases, usually with his own business associates, concerning settlement of property disbursement upon dissolution of business partnerships. Clearly, Ebaugh was first and foremost an opportunistic capitalist, much like David Bushnell and Robert Fulton, seeking personal profits wherever possible, whether those profits came during times of war or peace, and regardless if they came from employment, sales, or lawsuits.⁹⁶ With Ebaugh's demonstrable probity in business matters, his truthfulness with Campbell in their 1891-92 correspondence pertaining to the creation of *David* should not be doubted. Henry Orlando Marcy corroborates this in noting Ebaugh's 1865 arrest for involvement with construction of David-class torpedo boats, which was obviously already known to the US forces. There was also no financial impetus for Ebaugh in producing a replica of *David* for the World Columbian Exposition. The question must then be asked, should Ebaugh's assertion of *David's* paternity be considered anything less than truthful and accurate? Are the Ebaugh letters a reliable source? It would seem so. Yet, there are other claimants to the invention, design, and even the naming of *David*, and this, albeit without convincing evidence, has obscured the factual record.

⁹⁵ Entries of 3 and 4 March 1865, Marcy 1865. Many of Ebaugh's payroll invoices and other papers are held at the National Archives National Archives, Record Group 109, Southern Claims Commission, M1407, roll sec-2876-9696-0001), but no papers pertaining to his torpedo boats are included.

⁹⁶ Roland 1978, 97-8, 106.

D. C. Ebaugh

Being duly Sworn

deposes and says that he is the petitioner named in the foregoing petition and who signed the same; That the matters therein stated are true of the deponent's own knowledge except as to those matters which are stated on information and belief and as to those matters he believes them to be true; and deponent further says that he did not voluntarily serve in the Confederate army or navy either as an officer, soldier or sailor or in any other capacity at any time during the late rebellion; that he never voluntarily furnished any stores, supplies or other material aid to said Confederate army or navy, or to the Confederate government, or to any officer, department or adherent of the same in support thereof and that he never voluntarily accepted or exercised the functions of any office whatsoever under or yielded voluntary support to the Confederate Government

Sworn to before me
this 25 April 1871
J. H. Northcutt
C. C. C. - for P. C.

David C. Ebaugh

Figure 10. Ebaugh's statement of allegiance to the United States. National Archives, RG 109, Southern Claims Commission, M1407.

CHAPTER IV

TORPEDO TECHNOLOGY, TORPEDO BOATS, AND THE CREATION OF *DAVID*

In the first half of the nineteenth century, the Southern states lagged behind their Northern neighbors in industrial development, opting instead for reliance on agriculture and racial slavery as the primary means of economic prosperity.⁹⁷ William Still summarized the resources and available laborers of the Union states versus the seceding states, based on 1860 census data.⁹⁸ According to his figures, industrial workers of the Northern states outnumbered those of the 11 seceding states by a ratio of more than 10 to 1, with the 23 states that remained in the Union producing more than 90 percent of American finished industrial goods.

In the South, raw cotton was king and a major source of revenue. However, Still points out that “At the outbreak of the war, the North produced annually, according to value, seventeen times as much cotton and woolen goods as did the South.”⁹⁹ Regardless, Southerners placed faith in sales of raw cotton as their economic savior throughout the war, even issuing futures for cotton that had not yet been harvested. In a seminal comparative study of Union versus Confederate industry, economist David Surdam offered an overview of the antebellum Southern economy and affirmed its agrarian nature, one largely based on the trade and export of raw cotton, cattle, and corn.¹⁰⁰

The Union Blockade of Southern Waterways

Throughout the war, the Confederacy was at a great disadvantage in terms of resources such as seasoned hardwoods, metals, and the means to convert resources into finished products. Thus, Confederate commodities needed to be moved within the rebel states, and exported to foreign markets for sale or trade for manufactured goods previously obtained from Northern states.¹⁰¹ On

⁹⁷ Still (1998, 136-7) argues that in fact the South did manage to marginally industrialize at least three industries; arms, quartermaster stores, and shipbuilding.

⁹⁸ Still 1969, ix-xi.

⁹⁹ According to 1860 census material and based on value, not volume (Still 1969, ix). Cotton was generally taken by coaster or by rail to large ports, predominantly New Orleans and New York, for export. Still’s comment may be suggestive of Northern export value versus Southern production or value.

¹⁰⁰ Surdam 2001.

¹⁰¹ Still 1998, 133-4.

19 April 1861, less than one week after Southerners gained control of Fort Sumter in Charleston, President Lincoln issued Proclamation 81 that initiated a naval blockade of Southern ports. Creatively dubbed the “Anaconda Plan” by US Army General Winfield Scott, the strategy of the Union forces was to strangle the trade of the seceding Confederacy by blockading ports, harbors, and rivers, thus restricting exportation of cotton and importation of manufactured goods and materials.¹⁰² To cast such a large net over the waterways “from the Capes of Virginia to the mouth of the Rio Grande,” over 3500 miles (5600 km) of coastline, was a lofty goal considering the diminutive number of vessels available to the Federal government.¹⁰³ Scott’s strategy was based on the traditional blockading tactic of attaching a few large vessels to each major port.

In the early months of the war Confederate blockade running was accomplished with relative ease. Secretary of the US Navy Gideon Welles was initially skeptical of the blockade stating, “I had, in the early stages of the War, disapproved of the policy of General Scott—non-intercourse with the insurgents, shut them out from the world by blockade and military frontier lines, but not to invade their territory. The anaconda policy was, I then thought and still think, unwise for the country.”¹⁰⁴ Scott’s strategy, as predicted by Welles, proved disappointing and in time had to be revised as Southern merchants shifted to faster, more reliable steam vessels for blockade running. As Historian Louis Schafer noted, Secretary Welles had a “complete and utter turnaround in his earlier opinion of the blockading of southern ports.”¹⁰⁵ That turnaround equated to an increase in the number and types of blockading vessels, as more ships became available.

The British Navy’s strategic philosophy in the seventeenth, eighteenth, and nineteenth centuries was to outnumber in times of war and out-build in times of peace.¹⁰⁶ The Union Navy would adopt a similar approach in dealing with the Confederate Navy, particularly after losing the Gosport (Norfolk) Navy Yard in mid-1861.¹⁰⁷ The United States

¹⁰² The Anaconda plan also called for capture of the Mississippi River, and the land blockade of Southern lands across the Ohio River, in an effort to get the Confederates to give up the rebellion without major land campaigns.

¹⁰³ Scharf 1887, 430; Campbell (2005, 4) also mentions the small number of Union ships available at the start of the conflict.

¹⁰⁴ Welles 1911, 242.

¹⁰⁵ Schafer 1996, 29.

¹⁰⁶ Gardiner 1992, 9-12; Roland 1978, 157.

¹⁰⁷ National Archives, Record Group 109, War Department Collection of Confederate Records, *Memoir Presented to Department Head Quarters*, Francis Lee, 9 May 1863, “The number of vessels afloat belonging to the Navy of the

had only 42 ships in commission as of March 1861.¹⁰⁸ Of those, 26 were steam vessels; thus, more vessels were needed.¹⁰⁹ By July 1861, Union forces had acquired a dozen more steamers. In August, \$1.5 million was appropriated for the construction of ironclad vessels.¹¹⁰ The Union Navy also acquired a few sailing vessels. By the spring of 1862, the Union Navy was composed of less than 100 ships, including some still under construction, and more than 50 already obsolete sailing vessels.¹¹¹ The number of blockading vessels to execute the Anaconda Plan was still insufficient.

In addition to the small number of large vessels blockading each port, larger numbers of smaller vessels were gradually added. The change in strategy tightened the blockade and resulted, albeit slowly, in proportionally fewer rebel blockade runners penetrating the screen of enemy ships. Those that did get through were mostly involved in mercantile enterprises and thus unable to supply enough materials to meet the needs of the Confederate military.¹¹² By war's end, however, the US naval fleet grew to a total of 650 ships, only 124 of which were sailing vessels; steam ships had increased to make up 81 percent of the fleet, outnumbering sailing vessels by four to one.¹¹³

Prior to the war, the Northern states were home to the greatest number of naval shipyards in the United States and were responsible for most US naval vessel constructions. Even as hundreds of officers resigned from the US Navy to go South, they took with them no naval vessels. As historian Craig Symonds noted of the Confederate Navy, "The wood for the hulls was still in the forests, the

United States already exceeds that of Great Britain. The ship yards are busy building larger and more powerful craft and the founders are casting the heaviest and most terrible ordnance."

¹⁰⁸ Schafer 1996, 26-7.

¹⁰⁹ United States Navy Department 1861, *Register of the Commissioned and Warrant Officers of the Navy of the United States, including Officers of the Marine Corps, and Other, for the Year 1861*, 95-7. Schafer (1996, 26-7) cites only 26 steamers available.

¹¹⁰ Schafer 1996, 27.

¹¹¹ Johnston (1972, 47) likely used the same sources as Still (1969, 6), who offers the same number of available vessels, but without the additional breakdown of sailing craft. Johnston's numbers also mesh well with the *Register of the Commissioned and Warrant Officers of the Navy of the United States, including Officers of the Marine Corps, and Other, for the Year 1861*, which lists 53 sailing vessels (United States Navy Department 1861, 95-7).

¹¹² Several historians (Owlsley 1931; Still 1998; Vandiver 1947) have demonstrated that the blockade was quite porous, citing large numbers of vessels that got through the blockade versus those that attempted to break through. However, other historians (McPherson 1988, 369-92; Surdam 2000 and 2001), have correctly shown that the number of successful runners was low when compared to the number of vessels that were leaving the same ports prior to the blockade effort.

¹¹³ United States Navy Department 1861, 95-7. Paullin (2012, 250, 280) cites slightly different figures; 671 total vessels by 1865, 83.3% of which (559) were steamers.

iron still in the ground, and the guns as yet uncast.”¹¹⁴ In stark contrast to the Union Navy, at the time of secession, the emerging Confederacy had few shipbuilding facilities, no standing navy, and no warships.

The Confederate Department of the Navy was formed on 21 February 1861 around a core of ten vessels acquired by quick purchase or capture.¹¹⁵ To these ten vessels were added nine craft absorbed from state navies, bringing the total to 19, none of which were warships. As a result, the Confederate government pressed private watercraft into military service and contracted for various hurried experimental naval projects. However, the newly emerging fleet remained not only outnumbered, but also heavily outgunned.¹¹⁶ Initially, the lack of a navy was not problematic for the Confederacy as it had few offensive goals against the Union Navy and Confederate leaders understood the limitations facing an enemy trying to physically blockade Southern waterways.¹¹⁷

New Orleans was the most important port for exportation of Southern agricultural goods, and it was an important hub in the conveyance of goods to other American ports, such as Wilmington, Charleston, and Mobile.¹¹⁸ New Orleans had the largest shipbuilding facilities of the early Confederacy, and the loss of the city to Union forces in April 1862 had significant ramifications.

William Still compellingly argued that Southerners established several previously non-existent or minor industries between 1861 and 1865, including shipbuilding.¹¹⁹ Most historians, however, are of the consensus that this industry was unsophisticated at best, and that the South held few resources for iron production. There was a remarkable lack of foundries for rolling iron plate of sufficient thickness for shipbuilding, Tredegar Iron Works in Richmond being the exception.¹²⁰

¹¹⁴ Symonds 1999, 184; paraphrased from Scharf (1887, 31), “The timber for his ships stood in the forests, and when cut and laid was green and soft; the iron required was in the mines, and there were neither furnaces nor workshops; the hemp required for the ropes had to be sown, grown, reaped, and then there were no rope-walks.”

¹¹⁵ Scharf (1887, 24-5) provides a list of the vessels and the manner in which they were acquired; Still 1969, 6-7.

¹¹⁶ Delaney, 1998, 1–12; Luraghi 1996, 6–7; Scharf (1887, 24-25) lists ten vessels mounting only 15 guns.

¹¹⁷ This is evidenced by a limited number of offensive campaigns, almost all of which were fought in areas that the Confederacy wanted to include in their borders (*e.g.*, Maryland), except for General Lee’s failed Pennsylvania invasion campaign of 1863. See Dawson (2009) for an analysis of President Jefferson Davis’ “offensive-defensive” plan, in which Dawson (2009, 607) concludes, “From 1862 to 1865 Jefferson Davis placed emphasis on defense but never put aside the possibilities that a selected offensive might offer when opportunity presented itself—in New Mexico, Maryland, and Pennsylvania”.

¹¹⁸ Surdam 2001.

¹¹⁹ Still 1969.

¹²⁰ For example, see Durkin 1954 and Vandiver 1947.

Joseph Durkin writes that the South, “had neither shipyards (save Norfolk, which was also lost soon after the beginning of the conflict, and Pensacola, which was inadequate and also, later captured) nor workshops, steam mills or foundries, except on the most limited scale.”¹²¹ Therefore, the Confederacy had to employ various means to obtain a fleet: pressing merchant vessels into service, foreign acquisition, and initiating new vessel construction.

Sharing a philosophy similar to that the French adopted toward the dominant British Navy, the Confederates, knowing their subordinate position, opted for less-traditional terms of naval warfare. Just as the French attempted to address the imbalance of European naval power by constructing the ironclad *La Gloire* in 1859, the Confederacy’s Secretary of the Navy Stephen Russell Mallory, thought ironclads to be a naval panacea, arguing that a small number of ironclad vessels could overpower the ships attempting to enforce the blockade of Southern waters.¹²² However, as soon as word spread that USS *Merrimack*, a partially burned frigate recovered by the Confederates at Gosport, was being converted to the rebel ironclad CSS *Virginia*, the federal navy immediately began plans for construction of their own experimental ironclads.

Three types of ironclad vessels were accepted for construction and adoption into the US Navy, each different in size and design: *New Ironsides*, *Galena*, and *Monitor*. *New Ironsides* proved to be a formidable frigate, but of too great a draught for shallow Southern waterways and harbors. USS *Galena* proved to be a grand disappointment.¹²³ One historian wrote, “[the] design was a compromise; like many such, it had the disadvantages of both alternatives and the advantages of neither.”¹²⁴ *Monitor*, however, was a powerful weapon worthy of the resources used in its creation. Before any of the three Union ironclads had been proven in battle, orders were placed for a class of modified ironclads, the Passaic-class vessels, similar to *Monitor*. Before those were tested in combat,

¹²¹ Durkin 1954.

¹²² In an often-quoted passage, Confederate Secretary of the Navy S. R. Mallory wrote to C. M. Conrad, Chairman of the Committee on Naval Affairs on 10 May 1861, “I regard the possession of an iron-armored ship as a matter of the first necessity. Such a vessel at this time could traverse the entire coast of the United States, prevent all blockades, and encounter, with a fair prospect of success, their entire navy. If to cope with them upon the sea we follow their example and build wooden ships, we shall have to construct several at one time; for one or two ships would fall an easy prey to her comparatively numerous steam frigates. But inequality of numbers may be compensated by invulnerability; and thus, not only does economy but naval success dictate the wisdom and expediency of fighting with iron against wood” ORN (1921) Ser. 2, Vol. 2, 67-9.

¹²³ Hackemer 1994. Also see Merrick (1867, 75), who notes that “Her armour was found too light for service, although as heavy as could be carried with her light displacement.”

¹²⁴ Roberts 2002, 15.

another class of modified vessels was ordered, the Tippecanoe-class. And before the Tippecanoe-class was manufactured, a third class of larger monitors was ordered into production. As shown by the last class of monitors, which was not commissioned before the end of the war due to numerous problems, the use of untested and experimental vessels during the war was an accepted risk. On the other hand, as noted by Craig Symonds, “*Virginia*, after all, had been an experiment, and it had been wildly successful.”¹²⁵ As demonstrated in the Battle of Hampton Roads (8-9 March 1862), fought primarily between CSS *Virginia* and USS *Monitor*, ironclads became the dominate vessels of the war, and were demonstrated to be mostly unassailable, even by an opposing ironclad. Clearly the Confederates needed a weapon that could battle the Union ironclads, was inexpensive, and able to be produced with limited available resources.

Marine Torpedo Development and Use

By definition, *ironclads* are wooden vessels covered with iron-plate down to, or slightly below, the waterline, making them hypothetically impervious to attack by all but the largest and most powerful traditional airborne projectiles used by on-shore batteries, and virtually all ordnance used on naval vessels of the time. However, it did not take long for the Confederates to learn that the ironclads had an Achilles heel: the relatively fragile wooden structure below the waterline. US Navy Lieutenant Commander John S. Barnes offered a colorful post-war description of the weakness, “So may it be said to be with [ironclad] ships--their vulnerable parts are submerged, but open to a species of attack which gains fresh importance with every additional layer of iron which coats them above.”¹²⁶

The primary weapon under development for underwater use at the beginning of the war was the torpedo, or mine as we know them today. Like so many other technological developments of the nineteenth century, the torpedo was created earlier, the exact origin of which is unclear. Its initial development was in China in the fifteenth century, and it was developed further in Europe and the United States over the next three centuries.¹²⁷ Americans David Bushnell and Robert

¹²⁵ Symonds 1999, 187.

¹²⁶ Barnes 1869, 62.

¹²⁷ Four significant post-war volumes have been dedicated to torpedo warfare prior to and including the ACW: W. R. King’s 1866 work, *Torpedoes: Their Use and Invention*; Milton Perry’s 1965 *Infernal Machines*; Louis Schafer’s 1996 book, *Confederate Underwater Warfare*; Herbert Schiller’s 2011 edited collection of two previously

Fulton each developed versions of torpedoes in the last quarter of the eighteenth century to be delivered by submarine vessels, another emerging technology of the time.¹²⁸ For at least 15 years prior to and during the Crimean War (1854-55), Russia developed torpedoes for harbor defense and although no vessels were destroyed by torpedo, their use did contribute, at least psychologically, to Russian harbor defenses.¹²⁹ Yet it was during the ACW that development of marine torpedoes and terrestrial mines greatly accelerated, almost exclusively by the over-powered and out-numbered Confederate forces. As in Russian use, the psychological effect was great. According to naval historian James Russell Soley, "The Confederates took it [torpedo technology] up for the same reason that the Russians had adopted it in 1854, and the English had rejected it in 1805. Driven by poverty of their naval resources to the use of every device that ingenuity could suggest, in the fall of 1862 they established a bureau at Richmond to elaborate and systemize torpedo warfare."¹³⁰

Early ACW Torpedo Use

The first appearance of marine torpedoes during the ACW was in July 1861 on the Potomac River below Washington, when a lookout aboard the gunboat USS *Pawnee* spotted a pair of large barrels drifting down the river.¹³¹ Upon their retrieval and inspection, it was found that two metal containers filled with gunpowder were suspended beneath the floating wooden barrels. The two torpedoes, creations of Matthew Fontaine Maury, were linked with a length of rope and set adrift with the current, intended to catch the bow of an unsuspecting vessel. A match, or fuse, was coiled in the floating wooden barrels and ran down to the torpedo via a water-proof tube (this left many avenues

unpublished works of two Civil War officers from opposing sides (Gabriel Rains' *Torpedo Book*, and Union Engineer Peter S. Michie's, *Notes Explaining Rebel Torpedoes and Ordnance*).

¹²⁸ Fulton attempted to sell the technology to England in the early 19th century, but the English rejected the technology as uncivilized at the time, an opinion that was sustained well into the ACW. It is also commonly asserted that the English were only interested in the technology to prevent it being sold to France as torpedoes were believed to "give an advantage to a weak navy over a powerful one, and its adoption could only impair the maritime supremacy of Great Britain." (Soley 1883, 3).

¹²⁹ Lundeberg 1974, 1, 5, 19, 56.

¹³⁰ Soley 1883, 4.

¹³¹ Report of Commander Rowan to Secretary of the Navy Gideon Welles, 7 July 1861, ORN Vol. 4 (1896), 566-7; Roland 1978, 152

for moisture to enter the system and cause the torpedo to fail) (Figure 11). The devices were recognized as explosives and consequently rendered harmless by pouring water into the fuse holes.¹³²

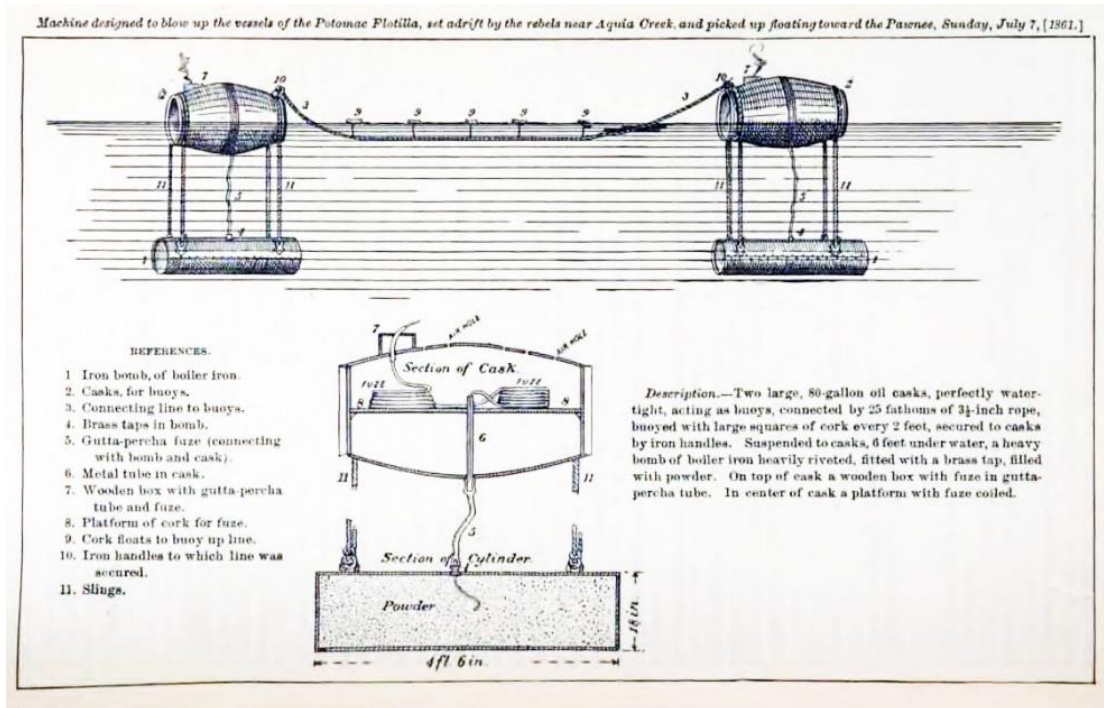


Figure 11. First known torpedo put to use in the ACW. ORN Vol.4 (1896), p. 568.

An argument could be made that drift torpedoes were the first offensive use of the weaponry in the ACW; however, most torpedoes used in this conflict were deployed in a defensive manner.¹³³ Defensive marine torpedoes were stealthy, anchored in the water column, hidden just below the surface or left floating. These were inexpensive in terms of naval technologies and easy to deploy: the cost of a single torpedo was estimated in 1862 to be less than \$100.¹³⁴ Adjusting for

¹³² Report of Commander Rowan to Gideon Welles, 9 July 1861, ORA Vol. 4 (1882), 566-8. Also see Perry 1965, 3-4; Schafer 1996, 13-4.

¹³³ David Bushnell had also employed drift torpedoes in the later part of the American Revolutionary War (Manstam and Frese 2010, 269-71, 288).

¹³⁴ National Archives, Record Group 109, War Department Collection of Confederate Records, Confederate Navy, Ordnance, Mines, Charleston, M1091, Letter of General Charles Frederick Henningsen to Henry S. Foote, Confederate Congress, containing a memorial advocating torpedo use against the rumored iron-clad ships of the Union, 27 September 1862. A separate document shows a torpedo to cost \$132 by mid-May 1864.

inflation, that amount is roughly equivalent to \$2400 in 2018.¹³⁵ More importantly, torpedoes were believed to be the most effective weapons against the ironclad ship, even if the torpedo's reliability was still questionable. Low costs, simplicity, and ease of deployment made torpedo use appealing against an enemy whose number of vessels was steadily increasing.

General Charles F. Henningsen, an early advocate of torpedo use, penned a plea to the Confederate Congress in September 1862 advocating the use of defensive marine torpedoes.¹³⁶ Just weeks later the Torpedo Bureau, headed by Gabriel J. Rains, was established to serve the Confederate Army. At the same time, the Submarine Battery Service was formed for the Confederate States Navy with Matthew Maury as its head. Maury was an early researcher of torpedo technology and the premier supporter of torpedo use in the ACW. His interest in underwater warfare was piqued in the 1850s when he learned that torpedoes were used, albeit with little success, in the whaling industry.¹³⁷ After he resigned his commission in the US Navy in 1861, Maury immediately began to develop underwater warfare technologies for the Confederacy. He was soon thereafter reassigned to duty in Europe and replaced by another torpedo enthusiast, Lieutenant Hunter Davidson.¹³⁸ With the two newly implemented organizations came an almost immediate systematic use of torpedoes in terrestrial and marine environments.¹³⁹

Early ACW torpedoes suffered from unreliability due mainly to the manner of ignition, and the development of waterproof triggering systems thus became a priority for Confederate inventors. Nevertheless, there were a few notable successes of marine torpedoes in the early stages of the conflict. Minor damage was inflicted on a launch of the USS *Susquehanna* near Fort Pulaski on the Savannah River in Georgia in February 1862. The first unqualified success occurred in December of that year, when the ironclad USS *Cairo* of the Western gunboat flotilla was sunk on the Yazoo River,

¹³⁵ Based on an inflation calculator using data from Oregon State University. Accessed online 14 July 2018 (<http://www.davemanuel.com/inflation-calculator.php>).

¹³⁶ National Archives, Record Group 109, War Department Collection of Confederate Records, Confederate Navy, Ordnance, Mines, Charleston, M1091, Letter of General Charles Frederick Henningsen to Henry S. Foote, Confederate Congress, containing a memorial advocating torpedo use against the Union iron-clad ships, 27 September 1862.

¹³⁷ Roland 1978, 150-3.

¹³⁸ Rains had utilized sub-terra mines during the Seminole War in 1840, and was considered one of the foremost advocates of, and experts on, torpedoes during the war, along with Maury and Davidson. Historians continue to debate the early roles of each in implementing torpedo warfare throughout the Confederacy, but all parties considered torpedo use necessary from the early stages of the war.

¹³⁹ The two offices were created on 25 October 1862 (Perry 1965, 31; Schiller 2011, 5).

near Vicksburg, Mississippi. Two months later, in February 1863, the ironclad USS *Montauk* was severely damaged on the Ogeechee River in Georgia.¹⁴⁰ These events induced greater caution in Union naval operations in Confederate controlled waterways. Vigorous searches were made with booms, chains, and grapnels hung from small launches sent ahead of larger vessels to detect hidden or submerged torpedoes.

As Alex Roland notes, “What had been attempted all down the centuries of the age of sail was now finally consummated in the age of steam and iron.”¹⁴¹ Although the first successful uses of torpedo warfare occurred on rivers, marine torpedoes were deployed in every major Southern waterway or harbor during the war, and the Confederacy was more successful with torpedoes, both terrestrial and marine, than any other entity to date.¹⁴² As expressed by Louis Schafer, “Thus the Anaconda Plan provided a breeding ground for the implementation of a radical new defense against the relentless Northern naval forces, namely underwater warfare.”¹⁴³ As a result, the harbor at Charleston, South Carolina, became a hotbed of intense mine development and deployment throughout the war.

¹⁴⁰ *Montauk* had a hole blown in the lower hull, but the crew was able to ground the vessel and make repairs in the field. For a synopsis of reports of each vessel’s misfortune see Barnes 1869, 79-86. Also see Perry 1965, 31-6. For a more comprehensive detailed description of “Vessels Sunk or Damaged by Confederate Torpedoes,” see Schiller 2011, 139-67.

¹⁴¹ Roland 1978, 160.

¹⁴² Roland 1978, 154.

¹⁴³ Schafer 1996, 25.

CHAPTER V
MARINE TORPEDO IMPLEMENTATION IN CHARLESTON

Pierre Gustave Toutant-Beauregard was appointed Confederate Brigadier General on 1 March 1861 and immediately sent to oversee forces in Charleston. He was in command on 12 April when the first shots of the Civil War were fired on Fort Sumter. Thirty-four hours later, Beauregard's longtime friend, Union Major Robert Anderson, surrendered the fort to Beauregard who was quickly elevated to the status of a paladin of Charleston. With this success came greater responsibility, reassignment, and a promotion to full General in July 1861. His replacement in Charleston, Major General John C. Pemberton took a more relaxed approach to the defense of the city, allowing outlying areas to be occupied by Union forces, which the citizens of Charleston found unacceptable under the strengthening blockade.¹⁴⁴

While Beauregard was away from the city, a bright young Charlestonian began to rise among the ranks. Captain Francis Dickinson Lee (Figure 12) was a prominent architect and creative inventor before the war. South Carolina Governor F. W. Pickens appointed Lee to the rank of Assistant Engineer in early 1861 and he quickly rose to Captain in the Provisional Corps of Engineers. Lee would become instrumental in the design, construction, and implementation of underwater explosive weapons for the defense of Charleston.¹⁴⁵

¹⁴⁴ Perry 1965, 49.

¹⁴⁵ In a letter to Captain Walter Gwynn, Chief of South Carolina Engineer Bureau, and P. G. T. Beauregard, Lee wrote of the impossibility of continuing in the Engineer Bureau without "holding some rank commensurate with those responsibilities," (University of South Carolina Library, OCLC# 31060503 *Francis D. Lee Papers, 1861-1874*).



Figure 12. Francis Dickinson Lee, circa mid-19th century. Reprinted with permission of the South Carolina Historical Society, Thomas C. Read Papers, 1087.00.

The Call for Submarine Warfare

In 1861, torpedoes were still considered an unethical means of warfare. Still, some in the Confederacy acknowledged the need for aggressive measures in breaking or weakening the Union blockade. Early in the conflict, inventor and chemist Franklin Gillette Smith publicly advocated the need for private development of a stealthy vessel for Confederate coastal defense and offered suggestions for its design.¹⁴⁶ In a letter to the *Columbia Herald* (Tennessee) written two months after the outbreak of the war, Smith wrote:

¹⁴⁶ Ragan 2002, 5, 92. Smith also served as president of the Athenaeum Girls School in Columbia, Tennessee.

Submarine Warfare.

Messrs Editors: Excepting our Privateers, the Confederate States have not a ship at sea. We may safely originate plans for blowing up the vessels employed in blocking our ports, without danger of being "hoisted by our own petard."

Such an attempt is not to be expected from governmental Departments and Bureaus; projectors, with their "seething brains and shaping fantasies," are a terror to them. Throughout our Southern seaports, men of a mechanical turn and of the right spirit must go to work, maturing the best plans for the destruction or the capture of every blockading ship.

All things invite the enterprize. From the Chesapeake to the mouth of the Rio Grande, our coast is better fitted for submarine warfare than any other in the world. It has all been most minutely surveyed and manned. It has almost no tides, it has uniform currents, and a bottom always sandy, seeming to invite adventurous feet to travel over it. It is probable "submarines" are now traversing these sands, acquiring confidence in their new element and skill in the use of their terrible engines of destruction. Experiments should be multiplied for fixing upon the most effective form for the submarine shell, percussion cap for firing the fuse, and especially the arrangements of the fatal wire-- safe when not in use, and inevitable when drawn upon an enemy. All that art can do, we will do for the destruction of our invaders; but we would rather capture them than kill them. We will, as far as possible, heed the calls of humanity. If, in the course of a week or two, the Niagara should see, by day, such a smoke rise near by from the sea as she never saw before, or by night, a rocket thrown by unseen hands, it will be an invitation to her to come to an anchor under the guns of Fort Morgan.

Even before any "submarines" have been drilled, shells may easily be planted all over the cruising grounds of the blockading fleets, which cannot be sailed over without exploding them.

But I would have every hostile keel chased from our coast, by submarine propellers. The locomotive Diving Bell is well known. The new vessel must be cigar shaped for speed-- made of plate-iron, joined without external rivet-heads; about 30 feet long, with a central section of about 4 by 2 feet, driven by a spiral propeller, a fishtail sculler, or, (far better,) by a steam engine, occupying the after part of the boat. When its bottom is tight, the Torpedo boat takes the surface like any other boat, a part of the top folding back. Closing its top, it sinks on getting a prize fairly in range and within striking distance. A harpoon point, easily separated from the forward end of the boat after being driven into the enemy's side, (some ten feet under water,) carries the wire that holds the shell. The shock of the attack disengages the shell from the bottom of the boat and strikes the percussion cap for igniting the half minute fuse. The air-pump, the inhalation tubes, the eye glasses, are already used. The new Aneroid Barometer, made for increased pressure, will enable the adventurer easily to decide his exact distance below the surface.

If not furnished with steam, the torpedo boat should carry sail when on a cruise. Two of them-- each an outrigger to the other, could spread so much, canvas as to outsail all competitors.

Such-- in briefest terms-- are the efforts which skillful and patriotic men will undoubtedly attempt *forthwith*. These outlines are freely given to our enemies as well as friends-- for in submarine warfare, the invader has no resources.

Robert Fulton failed in 1814, simply for the reason that he had neither friction-match, percussion cap nor safety fuse. In the present state of the mechanic arts and the cognate sciences, it would be a burning shame to the South if hostile ships should continue to venture upon soundings near any of our harbors.

I am preparing a detailed Memoir on Submarine Warfare, discussing matters not proper to be spoken of here, illustrated with engravings. Copies of the pamphlet will be sent to the Mayors and municipal authorities of Southern maritime cities. Applications from individuals must be made through the local authorities.

F. G. SMITH.

Athenaeum, Columbia, Tenn.,
June 22d, 1861.¹⁴⁷

Like David Ebaugh, Smith was an accomplished inventor and had obtained at least three US patents in addition to one for a submarine vessel in the Confederacy. But, as his son acknowledged, “he never seems to care to develop them commercially.”¹⁴⁸ Smith, however, ostensibly acted upon his idea for a submarine vessel and may have brought it to fruition. The value of his ideas was limited by the lack of mechanical facilities in the South, as well as by the problem of maintaining electrical connections under water.¹⁴⁹ Smith’s son also noted that the development of a submarine vessel occupied his time and cost him untold thousands of dollars, as well as months of personal toil and privation. The experimental submarine, whether functional or not, was reportedly sunk at a

¹⁴⁷ “Submarine Warfare” *Columbia Herald* (Columbia, Tennessee), 22 June 1861; reprinted in many Southern newspapers including *Daily Nashville Patriot* (Nashville, Tennessee) 25 June 1861 and *Mobile Advertiser and Register*, 26 June 1861. Partially reprinted in Schell 1992, 165. Researcher Mark Ragan notes of the pamphlet mentioned in the final paragraph that ‘the last known copy of Reverend Smith’s pamphlet on ‘Submarine Warfare’ was reported to have been in the collection of a Mr. P. Hunter of Nashville, Tennessee, in 1919” (Ragan 2002, 277 ‘Notes’ Ch.1 No.11). Efforts to trace that copy have proven fruitless.

¹⁴⁸ Quillen 1960, 62-4. *Patent No.61- Invention: Underwater Battery- Inventor: F. Smith- Residence: Memphis, Tennessee- Date: 8 Jan. 1862*, held at the Confederate Museum of Richmond (Virginia). Ragan states that Smith’s patent was the first of four extant Confederate patents for submarine designs (Ragan 2002, 92).

¹⁴⁹ Quillen 1960, 62-3.

wharf in Mobile by a Union supporter.¹⁵⁰ Unfortunately, no drawings, sketches, or hard evidence of it being constructed are known and therefore, many questions about the vessel remain unanswered. All that can be said for certain is that Smith placed faith in submarine technology and in the use of torpedoes. Notwithstanding, Smith's fiery proposal for private construction was disseminated and inventors dispersed throughout the Confederacy began developing submarine vessels.

Francis Lee was surely aware of Smith's plea and put his own creative talents to work to make a name for himself in the Confederate Engineer Bureau. Just months after Smith's call to arms, Lee designed a torpedo ram sharing design aspects suggested by Smith. Lee presented his plans for building the vessel to the government of South Carolina. "Early in the year 1862 I presented the plans of a torpedo bearing vessel to a commission appointed by the state of S. Ca. to examine into various plans proposed for the defence [sic] of the harbor of Charleston. (The plans presented exhibited a Cigar formed propeller steamer carrying the torpedo at the extremity of a spar) The commission while approving of my plan were unable for want of proper materials to carry it into effect."¹⁵¹ The project was consequently abandoned, but only temporarily.

Torpedo Deployment in Charleston

Late in the summer of 1862, General Beauregard was reassigned to command the forces of South Carolina, Georgia, and, later, Florida. He returned to a hero's welcome at his station in Charleston. Lee was immediately assigned to serve as an aide.¹⁵² Disappointed by the lack of defensive efforts after his departure from Charleston, Beauregard, with the aid of Lee, immediately set to improve the state of affairs.

Beauregard and Lee understood the major weakness of the Union ironclads: the unprotected lower hull.¹⁵³ Beauregard also believed that producing Confederate ironclads was not the most efficient use of resources for ending the blockade, given the ordnance available for ship-to-ship

¹⁵⁰ Ragan (2002, 41-2) suggests this boat was sunk on the Mobile River in early 1862.

¹⁵¹ Report from F. D. Lee to General Beauregard, Letter dated 9 May 1863, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

¹⁵² Report from F. D. Lee to General Beauregard, Letter dated 9 May 1863, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

¹⁵³ Beauregard 1878, 157, 160. Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

combat.¹⁵⁴ Ironclads were expensive and construction materials were limited. Thus, novel means of defensive and offensive warfare against enemy ships became a hallmark of Beauregard's tenure. This was especially true of the Charleston naval squadron.¹⁵⁵ As historian Milton Perry asserts, "Beauregard was perhaps the most receptive to trying new weapons when they seemed to have some basis in practicality. This is borne out by the fact that Charleston saw the combat experiments of more new implements of war than any other battle area of the Civil War"¹⁵⁶

Beauregard and Lee also understood a thought best expressed in the post-war words of Gabriel Rains, "Ironclads are said to master the world, but torpedoes master the ironclads."¹⁵⁷ Charleston's heavily-armed fortifications were soon supplemented with statically positioned lines of torpedoes in the channels passing by the city's forts. By the end of the year, a number of men, including Captain of Engineers Martin M. Gray, who had trained with torpedo authorities M. F. Maury and Hunter Davidson, had been sent to Charleston to assist with torpedo implementation. These torpedoes came in several different versions, *e.g.*, electrical, mechanical percussion, and horological (timed) torpedoes.¹⁵⁸

Generally, the positioning of rows of torpedoes seems to match a plan presented to the Confederate Congress in late September 1862.¹⁵⁹ Union Army Captain John Barnes later observed: "The channels of approach to the ports of Wilmington, Charleston, and Mobile, which then remained to them, were lined with sunken torpedoes of many different forms, and capable of ignition by a variety of agencies and clever devices. Rivers and bays, through which our vessels had passed freely with impunity, now became dangerous ground, to be navigated with caution."¹⁶⁰

¹⁵⁴ Johnson 1890, 445. Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

¹⁵⁵The squadron was ultimately commanded by Beauregard, but under the direction of Captain Duncan N. Ingraham, who was later replaced by John R. Tucker, who oversaw most torpedo boat activity in Charleston. Campbell 2005, 53. Also see Campbell 2005, preface; Perry 1965, 63; Roland 1978, 160.

¹⁵⁶ Perry 1965, 63. Reiterated in Roland (1978, 160), "Beauregard was unusually receptive to innovation; and soon after his assignment to Charleston he became a staunch advocate of underwater warfare."

¹⁵⁷ Rains 1877, 255-6. The vulnerability of ironclads to torpedoes was still being addressed into the late 1870s by British Naval Officers. See *Scientific American* "Wanted-Torpedo Defences" 2 June 1877, 336-7.

¹⁵⁸ Gray, from Delaware, took charge of the Torpedo Service at Charleston and mostly handled statically placed torpedoes in and around Charleston Harbor (Perry 1965, 49-50).

¹⁵⁹ National Archives, Record Group 109, War Department Collection of Confederate Records, Confederate Navy, Ordnance, Mines, Charleston, M1091, Letter of General Charles Frederick Henningsen to Henry S. Foote, Confederate Congress, containing a memorial advocating torpedo use against the rumored iron-clad ships of the Union, 27 September 1862.

¹⁶⁰ Barnes 1869, 63. In Chapter V (pages 61-78), Barnes offers comprehensive discussion and description of the different types of defensive torpedoes and ignition devices employed by the Confederacy.

The addition of these defensive measures was quickly known to Union forces. Nevertheless, it would take a knowledgeable and daring pilot armed with intelligence pinpointing the locations of the torpedoes to safely navigate a vessel into Charleston Harbor, something that Union forces did not possess at this time. A vessel had to get close to the batteries at Cummings Point, Battery Gregg on the northern end of the island, and Battery Wagner 1000 yards (915 m) to the south, to avoid the lines of torpedoes (Figure 13). Confederate Engineer James Tomb described the war-time harbor environment of Charleston in more detail: “There were three lines of torpedoes between Fort Sumter and Fort Moultrie on Sullivan’s Island, and also three ropes attached to floats which had torpedoes attached to them...”¹⁶¹ The first line of torpedoes was directly between Fort Sumter and Fort Moultrie, leaving an open space between the torpedoes and the fort in the channel for ships to pass through.

Charleston, although having limited strategic importance, was more a desired prize for Union forces than any other Confederate port city. Union Rear Admiral S. F. DuPont stated in October 1862, “I hope under Providence that I may continue to meet the expectations of my naval friends. I feel that very heavy work is before me, for there seems a morbid appetite in the land to have Charleston. It is natural it should be for two reasons—it is the cradle of this wicked rebellion; secondly, our armies have been a dead failure, and not for the Navy the nation would now be in sackcloth and ashes, perhaps suing for peace; certainly foreign intervention would have been upon us.”¹⁶² Union Assistant Secretary of the Navy Gustavus Vasa Fox, responding to DuPont, was much more emphatic in his desire to capture the city solely by naval forces, stating, “I pray you give us Charleston if possible, but in any event, the Dept replies upon your judgment. We should be inclined to skip Fort Caswell if you consider it imperative, for the fall of Charleston is the fall of Satan’s Kingdom.”¹⁶³

¹⁶¹ Tomb, 1924, 98-9.

¹⁶² Letter from Rear Admiral DuPont to Commodore Bailey, 30 October 1862, ORN Vol. 13 (1901), 423.

¹⁶³ Fox to DuPont 3 June 1862, in Thompson and Wainwright 1918, 127-8.

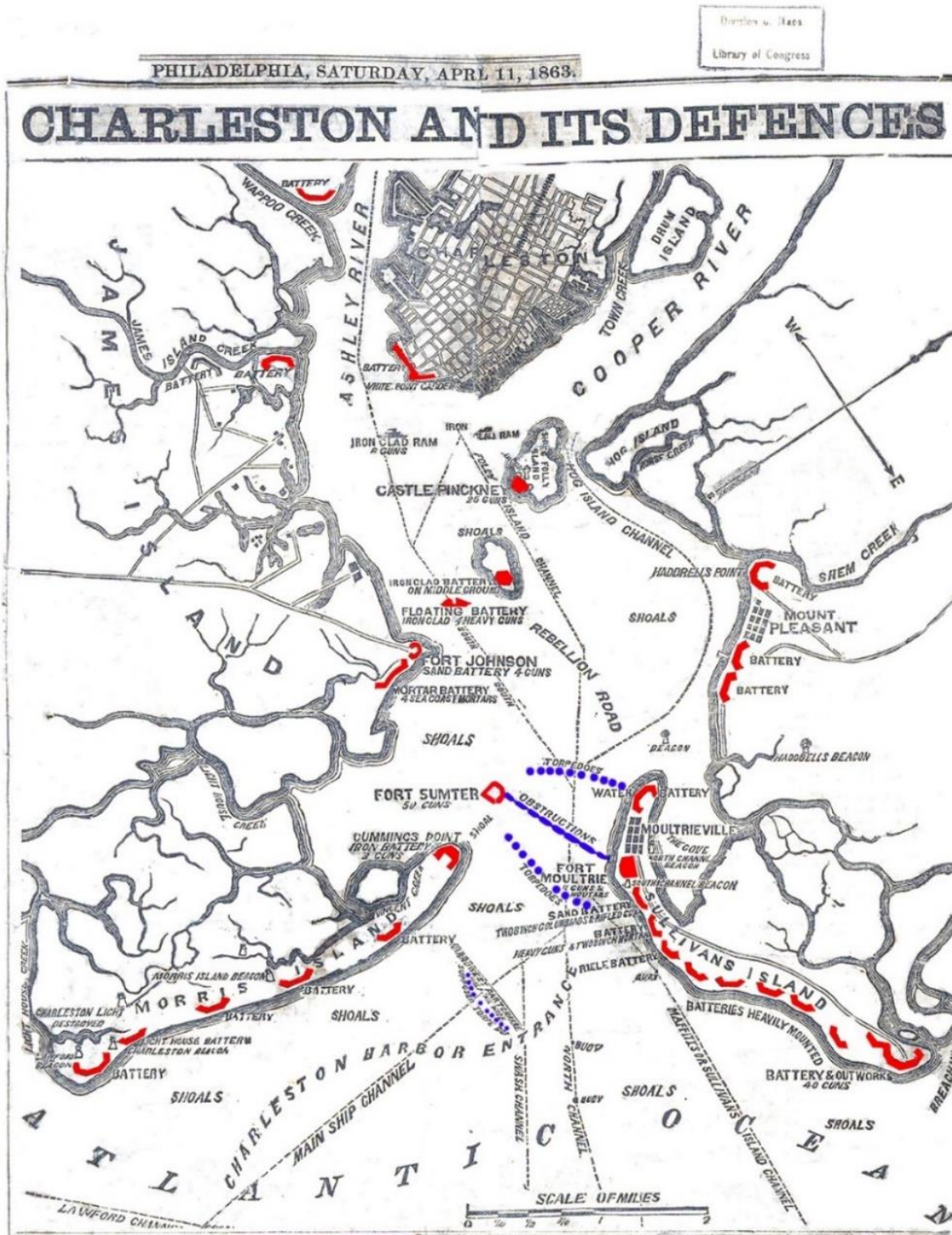


Figure 13. Charleston defenses and position of torpedoes. After a map from *Philadelphia Inquirer* (Philadelphia), 11 April 1863.

Lee's Torpedo Ram

The limited success of fixed and floating Confederate torpedoes made it clear that an offensive weapon was needed. In the fall of 1862, Lee re-proposed his torpedo ram project, this time to Beauregard. The General immediately sent Lee to Richmond to sell the concept as an offensive measure.¹⁶⁴ After meetings with lower-level officials, Lee was finally granted a meeting with Secretary of the Navy S. R. Mallory, a skeptic who doubted the efficacy of a steamer bearing a torpedo at the end of a short spar.¹⁶⁵ Lee left Richmond feeling less than enthusiastic about the discussions and wondering if any support from the Navy would be granted. Regardless of the unresponsive attitude shown in Richmond, by the end of October 1862, the torpedo ram project was initiated by Special Orders No. 210 of General Beauregard with \$50,000 allotted from the state of South Carolina.¹⁶⁶ For the first time in the war, there was a feasible plan to deliver the weapon to the enemy.

Construction of the ram began immediately, building upon an abandoned gunboat hull designed by John L. Porter.¹⁶⁷ The boat, presumed to be one of three un-named Hampton-class vessels built in 1862 by F. M. Jones, had a length of 106 ft (32 m).¹⁶⁸ This was directly facilitated by Beauregard:

Head Qrs Department of SC Ca & Georgia
Charleston S. C. Oct 30th 1862
Hon. Secy of Navy Mallory

Sir,

The Bearer, Mr. J. N. Johnston, is dispatched to receive, and facilitate the transportation hither of the Engines which you have determined shall be used for the

¹⁶⁴ Beauregard to Mallory, 31 October 1862, ORN Vol. 13 (1901), 814.

¹⁶⁵ National Archives, Record Group 109, War Department Collection of Confederate Records, Military Department. Letters – Beauregard Ch. 2 Vol. 35, 37. For a synopsis of the bureaucratic process Lee endured see Campbell 2000, 14-52.

¹⁶⁶ P. G. T. Beauregard to Inspector General Cooper, 13 October 1862, ORN Vol. 13 (1901), 812; Francis D. Lee to Brigadier-General Thomas Jordan, 8 November 1862, ORN Vol. 14 (1902), 670-1.

¹⁶⁷ Letter from F.D. Lee to Brigadier General Jordan dated 11 July 1863, Report of F.D. Lee to General Beauregard, National Archives, Record Group 109, Paper of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865. See Appendix B.

¹⁶⁸ ORA Vol. 28, pt. 2 (1890), 229. F. M. Jones built three un-named Hampton-class gunboats in Charleston. Two were abandoned before completion, one of which was likely used for Lee's ram. The third was used to test torpedoes. Other Porter gunboats were CSS *Palmetto State*, CSS *Chicora* (both stationed at Charleston), and CSS *Savannah*, built in Savannah, Georgia; all three were 150 feet (46 m) in length.

Marine Torpedo Ram now under construction here. I have to request that the Engines, &c, may be transferred to him with as little delay as practicable, and that all necessary orders may be given to secure prompt transportation.

Respectfully,
Your Obedt Servt
G. T. Beauregard
Genl Comdg¹⁶⁹

Although Captain Lee was assured by the Navy from the beginning of the project that two new engines would be supplied to the project, almost a month went by without their arrival. According to Lee, “Steps were immediately taken to carry the project into effect and the unfinished frame of a Gun boat commenced in Charleston was placed at my disposal. I was induced to believe that a boiler and two engines suited to the vessel would be furnished me, but receiving only one Engine of very little power and no boiler I was forced to seek in another direction for proper machinery.”¹⁷⁰

Unable to get new engines for the ram, Lee amended the vessel’s design to accept a single, used engine from the tug *Barton*.¹⁷¹ Lee was assured that the engine was but little worn. It was, however, later described by Beauregard as “second-hand and much worn.”¹⁷² Lee described changes that had to be made: “This was partly accomplished by the purchase of the steam tug ‘Barton’ of Savannah and the removal of the boiler and Engine of that vessel to the Torpedo Ram. The size and construction of this machinery made it necessary for me to modify my plans by raising the deck of the vessel two feet above the original plan and building a shield on deck.”¹⁷³

Construction began quickly, but almost as quickly came to a halt due to material and financial shortages that had been anticipated by Beauregard. Poor communication within the

¹⁶⁹ National Archives, Record Group 109, War Department Collection of Confederate Records, Department of SC and GA Letters Sent 1862, Chapter 2 Vol. 22.

¹⁷⁰ Report from F. D. Lee to General Beauregard, Letter dated 9 May 1863, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

¹⁷¹ F. D. Lee to Brigadier General Jordan, 15 December 1862, ORA Vol. 14 (1902), 719. The engine, boiler, shafting, and propeller were obtained from *Barton*, which was still in use as of 15 November 1862. By 6 January 1863, the machinery had arrived in Charleston, ORA Vol. 14 (1902), 694, 719, 1019.

¹⁷² Beauregard 1878, 150.

¹⁷³ Report from F. D. Lee to General Beauregard, Letter dated 9 May 1863, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

Confederate forces was a major contributor to the problem.¹⁷⁴ Chief of the Engineer Bureau, J. F. Gilmer, wrote on 13 January 1863 that he could not turn iron plating over to Lee because the young engineer “was requested to make some simple experiments to determine as to the effectiveness of a torpedo applied as proposed by him [extended on a spar]; whether the explosion could be relied upon etc. No report has been sent to the Bureau giving the results of such experimental tests. I am not prepared therefore to recommend as to the transfer of iron from the Naval Service for the use of a ‘Marine Torpedo Ram’ the machinery of which has not been tested so far as I am informed.”¹⁷⁵ Lee, in an act of desperation to complete his ram, sent an agent to collect pig and scrap iron from plantations or other sources.¹⁷⁶

Gilmer was apparently unaware of the proposal Lee made for building the ram, and subsequent verbal promises for material made months earlier at Richmond. Five months after that meeting, the project, which was to take “less than two months,” was still incomplete.¹⁷⁷ In the meantime, Lee redirected his efforts to delivery of the improved torpedo and spent the early months of 1863 “contemplating the utilization of torpedoes for a single swift blow against the enemy,” which resulted in a proposal for the use of modified open-hulled, manually powered cutters.¹⁷⁸

Spar Torpedo System

Previous attempts at offensive torpedo use were limited by the delivery system, that is, the way to transport the torpedo to the enemy ship while maintaining a safe distance for the attack vessel and

¹⁷⁴ P. G. T. Beauregard to J. K. Sass (Chairman of the State Gunboat Commission), 11 October 1862, requesting materials intended for a gunboat under construction be transferred for Lee’s torpedo ram as there existed a “difficulty, if not impossibility, of procuring the materials and machinery for its construction.” National Archives, Record Group 109, War Department Collection of Confederate Records, Letters Received Ch. 2 Vol. 22, 165; the letter is dated 13 October 1862 in a reprinted version, ORA Vol. 14 (1902), 636.

¹⁷⁵ Endorsement letter from Colonel and Chief Engineer J. F. Gilmer dated 13 January 1863, Record Group 109, Engineer Department Letters and Telegrams Ch. 3 Vol. 2, 211.

¹⁷⁶ F. D. Lee to Brigadier General Jordan, 22 November 1862, ORA Vol. 14 (1902), 686.

¹⁷⁷ P. G. T. Beauregard to J. K. Sass (Chairman of the State Gunboat Commission), 11 October 1862, requesting materials intended for a gunboat under construction be transferred for Lee’s torpedo ram as there existed a “difficulty, if not impossibility, of procuring the materials and machinery for its construction.” National Archives, Record Group 109, War Department Collection of Confederate Records, Letters Received Ch. 2 Vol. 22, 165; the letter is reprinted with a different date, 13 October 1862, in the ORA Vol. 14 (1902), 636.

¹⁷⁸ For a synopsis of the proposed use of rowed and small steam launches utilizing spar torpedoes in Charleston see Campbell 2000, 31-41; Perry 1965, 70-1.

crew. Various methods were proposed or used experimentally, including towed torpedoes and designs intended to attach a torpedo to an enemy hull. These methods proved unreliable. “The spar torpedo was based on the concept that water cannot be compressed; only displaced. The pressure exerted by the explosive charge was forced through the weakest surface.”¹⁷⁹ This was accomplished by placing the torpedo on the end of a wooden or iron shaft that was attached to the bow of the attacking vessel and submerging the shaft sufficiently to offer greater pressure from the water above it, forcing the explosion to act on the enemy hull instead of the surrounding water.

The origin of the spar-mounted torpedo has been difficult to trace and has been credited to several inventors. At least one claim has been made that the invention may have been that of E. C. Singer’s group during the Civil War, the group largely responsible for the creation of the submarine *H. L. Hunley*. Historian Mark Ragan has thoroughly documented the actions of the Singer group and traced that claim of originality. He concluded that the spar torpedo design used on *H. L. Hunley* in February 1864 was, in fact, adapted from Francis Lee’s 1862 conception, and likewise used a barbed torpedo, triggered by a lanyard.¹⁸⁰ It should be noted that a more recent publication has brought the method of detonation of the Hunley submarine into question and presents the possibility that the torpedo used a mechanical contact fuse, which was a modified version of the Singer Group’s design.¹⁸¹

Nevertheless, *Hunley*’s torpedo delivery method was altered from a towed torpedo to a spar mount design. Confederate Captain Hunter Davidson gave post-war credit to Lee for the origin of the invention, calling it the “Lee-Spar-Torpedo,”¹⁸² terminology that was echoed by General Beauregard in post-war years.¹⁸³ Several other Confederate sources, including Lieutenant William T. Glassell, the commander of *David*,¹⁸⁴ and James H. Tomb, the engineer of *David*’s original crew as well as for C.S. Navy vessels *Juno* and *Chicora*,¹⁸⁵ also credit Lee with the invention of the spar

¹⁷⁹ Carlin 2017, 130.

¹⁸⁰ Ragan 2015, 67, 83-5.

¹⁸¹ Brown and Neyland 2016, 179-80.

¹⁸² Davidson used a spar-torpedo in his attack on *Minnesota* on 9 April 1864 using the torpedo launch *Squib*. Davidson summarized his experience with (mostly electric) torpedoes during the ACW in an 1876 article for the Southern Historical Society Papers upon his return from work in Europe (Davidson 1876, 1-6).

¹⁸³ Beauregard 1878, 149, 150, 151, 154.

¹⁸⁴ Glassell 1877, 226.

¹⁸⁵ Tomb 1924, 98. Tomb declares “All tubes and copper torpedoes were made for the navy by Capt. F. D. Lee, C. S. A. and he was also the first to make use of the spar torpedo as used on *David*...”

torpedo.¹⁸⁶ Lee, seeking remuneration for his work on torpedo design and a repeating torpedo mechanism, wrote to the Confederate government, but in his letter, Lee did not claim the spar delivery system as original.¹⁸⁷

A counterclaim to the invention of the spar torpedo was made in November 1864 by John Mercer Brooke, Chief of the Confederate Navy's Bureau of Ordnance and Hydrography, who penned a letter to Secretary of the Navy Mallory about the possible origin of the device. Brooke stated that plans for delivering a torpedo by means of a spar attached to the bow of a vessel predated Francis Lee's claim to the originality of the idea, which Brooke cited as October 1862. In fact, Lee first proposed the idea to the government of South Carolina six months earlier.¹⁸⁸ Brooke acknowledged that "Capt. Lee made successful experiments with Torpedoes attached to spars [using rowed cutters], and it was I believe in consequence of the results of these experiments that the system was adapted in the Naval Service."¹⁸⁹ Brooke had misread Lee's claim for remuneration, for Lee desired acknowledgment for his improvement upon, but not the invention of, the torpedo's chemical percussion fuse (discussed below).¹⁹⁰

For the origin of the spar-mounted torpedo, one must look to an earlier time. Alex Roland contends that the origin of the spar torpedo rests with seventeenth-century inventor Cornelius Drebbel through the interpretation of his reference to a "battering ram" as a petard, a bell-shaped bomb typically associated with terrestrial bombardment of forts and castles to breach gates or walls. According to Roland, "Not only does this establish Drebbel as the originator of the spar torpedo, it also suggests the source of his ideas on underwater explosives—his second contribution in underwater warfare."¹⁹¹ Roland's interpretation is not commonly shared.

¹⁸⁶ Campbell 2005, 65; Perry 1965, 64.

¹⁸⁷ National Archives, Record Group 109, War Department Collection of Confederate Records, Dept. of Ordnance and Hydrography Letters Ch. 8 Vol. 292, 11-13, Letter from John Brooke to Sec. of the Navy Mallory.

¹⁸⁸ The proposal was presented to a commission from the State of South Carolina early in 1862, and was re-presented to Beauregard later in the year, and then to the Secretary of the Navy in October 1862.

¹⁸⁹ National Archives, Record Group 109, War Department Collection of Confederate Records, Dept. of Ordnance and Hydrography Letters Ch. 8 Vol. 292, 11-13, Letter from John Brooke to Sec. of the Navy Mallory.

¹⁹⁰ Brooke states that several plans for the use of spar torpedoes had been submitted to the Department by various people prior to Lee's, including one by John B. Read dated 24 September 1862, and cites a patent obtained by Mr. J. C. Patton in October 1862. Read's submission was nothing more than an idea scribbled on paper with no mention of a spar delivery system, and Mr. Patton's patent (14 October 1862) was for a submarine vessel (See Ragan 2002, 92).

¹⁹¹ Roland 1978, 23-4.

Several others credit the spar torpedo to Robert Fulton. Fulton supposedly recommended the use of a torpedo on a spar 96 feet-long, extending out from the bow and each quarter, of his harbor defense ship in 1810.¹⁹² However, no references to the use of a spar appear in Fulton's 1810 publication, *Torpedo War and Submarine Explosions*, and no such references have been located elsewhere. In that publication Fulton did suggest the use of a harpoon gun with a line attached to the torpedo as a delivery system.¹⁹³ An anonymous writer from 1815, "A Gentleman of the State of New-York," supplied an early, if not the earliest, written proposal for a spar torpedo.¹⁹⁴ Some have argued that this anonymous author was, in fact, Robert Fulton.¹⁹⁵

Regardless, it was during the ACW that spar torpedoes moved from the hypothetical to practical application. Historian Louis Schafer writes that General George A. Mercer suggested a spar torpedo in October 1862 for use on CSS *Atlanta*.¹⁹⁶ Possibly pre-dating Mercer's application is an anomalous and poorly dated submersible from Louisiana that *may* have utilized a spar torpedo prior to the fall of New Orleans in April 1862. An anonymous writer suggested the use of a spar applied to *Monitor* for the Union Navy in the pages of *Scientific American* in June 1862 that went unrealized.¹⁹⁷ All of these applications would pre-date Francis Lee's October 1863 proposal to the Confederate Congress for the use of spar-mounted explosives, but not his original proposal to a commission in South Carolina in the spring of 1862.¹⁹⁸

Whatever its origin, the spar-mounted torpedo saw the greatest use and development during the ACW, and that development was dependent upon technological advances in several iterations of the torpedo.¹⁹⁹ One historian writes, "There were, in fact, so many proposals for underwater warfare during the course of the conflict that their very number occasioned a warm debate over competing

¹⁹² For example, see Bradford 1882, 3; Schafer 1996, 63.

¹⁹³ Fulton 1810, original held at the National Archives, Record Group 45, Confederate Navy Subject Files, Mines and Torpedoes, entry 502, box 150; reprinted in Abbatt 1914.

¹⁹⁴ Appended to an 1815 copy of Machiavelli's *Art of War*, Machiavel 1815.

¹⁹⁵ Roland 1978, 120-1.

¹⁹⁶ Schafer 1996, 63.

¹⁹⁷ "Torpedoes to Destroy Vessels" *Scientific American* Vol. 6 No.23, 7 June 1862.

¹⁹⁸ The Louisiana Museum submersible is argued by some to have been designed for a spar-mounted torpedo. This hypothesis remains unproven. The craft is presumed to date to the first few months of the ACW, but believed to certainly date prior to the fall off New Orleans in April 1862. The Louisiana vessel, however, whose designer and builders remain unknown, cannot be dated with certainty (pers. comm., Richard Wills, also see Lambousy 2006, 8; Ragan 2002, 8-12; Wills 2000).

¹⁹⁹ Bradford 1882, 3.

claims to precedence.”²⁰⁰ Lee’s ram would eventually use a lengthy spar attached to the bow of the vessel with a torpedo bolted to its distal end. More importantly, Lee’s ram would employ a revolutionary fuse design that made the spar delivery system viable: the chemical contact fuse.

Lee’s Torpedo Fuse Design

For the creators of most early submersible and semi-submersible vessels, including most of those employed during the Civil War, the vessel itself was the prime area of interest and invention. Francis Lee approached things differently. For Lee, the torpedo, and delivery of the weapon were of greatest importance and he conceived the idea for the torpedo ram while “trying to figure out a way to take his torpedo to the enemy ship.”²⁰¹ This is reminiscent of the Revolutionary War-era American inventor David Bushnell and his attempts to create a torpedo boat.²⁰² Alex Roland concludes that “Bushnell did not start with the submarine. The underwater explosive was the foundation of all his work. He turned to the submarine only as a means of delivering the explosive to the vulnerable point. When forced to abandon the craft in 1777, he turned to towed and drifting mines to deliver the explosion.”²⁰³

The manner of ignition remained a problem for inventors. The concept of burning or igniting explosives in water had been addressed but lacked a controlled manner in which the explosive could be placed in contact with the enemy craft.²⁰⁴ Early concepts for torpedo fuses included mechanical triggers (springs and lanyards), horological (timed), and electrical. All proved unreliable. Mechanically triggered units, primarily the designs of Rains and a pair of Texan saboteurs, Dr. John Fretwell and Edgar Singer, suffered from the exposure of iron components to seawater, with metal springs quickly deteriorating.²⁰⁵ Lanyards required precise timing to be effective.

²⁰⁰ Roland 1978, 150.

²⁰¹ Perry 1965, 64.

²⁰² Bushnell was the creator of a late 18th-century submersible commonly known as “Turtle” that was unsuccessfully deployed in attempt to bore a hole into an enemy vessel and attach an explosive device. For a detailed analysis of Bushnell’s vessel and explosive see Ross 2000.

²⁰³ Roland 1978, 68.

²⁰⁴ For example, see Robert Boyle’s 17th-century works, *New Experiments Physico-Mechanicall, Touching the Spring of Air* (1660) and *Tracts* (1671).

²⁰⁵ For more on the Fretwell-Singer torpedoes see Ragan 2015, particularly pages 18, 128-9.

Electrically ignited torpedoes were popular at the time, having been developed by Werner von Siemens, a German inventor, and independently by American Samuel Colt, in the late 1840s.²⁰⁶ However, even by the ACW period, the materials for making conductive cable were not quite sufficient to be reliable.²⁰⁷ The best results seemed to lie with chemically detonated, contact-sensitive explosives, and those were solely the products of Francis Lee.²⁰⁸

Originally, Lee planned “to attach the shell to the enemy vessel by driving it by steam power through a hollow prow. By retiring, the lanyard was to be uncoiled and the friction tubes fired.”²⁰⁹ This method, however, was complicated and unreliable. Lee addressed the problems of fuse reliability by perfecting an acid-chemical, impact or percussion fuse. “I therefore prepared several shells to be fired by percussion using the Chlorate of Potash and sugar with sulphuric acid as the means of ignition and thereupon addressed the following communication to Dept Head Quarters.”²¹⁰ Prepared in early 1863 while Lee was awaiting material to finish the torpedo ram, the new fuse was perfectly suited to spar torpedo use as the design was impervious to rust, less prone to leakage, and it assured the explosive would ignite while in contact with the enemy vessel.²¹¹

²⁰⁶ Lundeberg 1974, iii, 12-3. For more on Colt’s role in the early development of electrical torpedoes see Roland 1978, 134-50.

²⁰⁷ Hunter Davidson argues that his system of electrical torpedoes was not the first, but was effective (Davidson 1876, 1- 6)

²⁰⁸ Perry 1965, 50. Gabriel Rains *may* have also produced a chemical (sulfuric acid) torpedo fuse prior to July 1862. Schiller (2011, 195) notes, “Rains, in a July 5, 1862, letter to his brother George Washington Rains mentions, in the context of the frame torpedo shell he was developing, that he was using his ‘sensitive priming tubes’ to detonate them. (Gabriel J. Rains Papers, July 5, 1863, South Carolina Historical Society).” Note the mismatched dates for the letter (1862 and 1863). In a separate reference, Schiller cites the letter’s date as 1862. Schiller (2011, 196 note 20) also notes, “Review of the Confederate Patent Office records in the Museum of the Confederacy reveals no application for a patent for the sensitive primer fuse. Hunter Davidson later wrote that Rains ‘was daft on sensitive fuses, and his experiments were generally disastrous.’ Francis Lee’s fuses differed greatly from the Tice Fuse used with field artillery, and is considered “one of the most dangerous fuzes of all time” (Bartleson 2012, 157-8, 177).

²⁰⁹ F. D. Lee’s letter to Dept. Head Quarters, 27 February 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²¹⁰ Lee’s letter to Department Head Quarters, 27 February 1863. Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²¹¹ Lee’s fuses, along with torpedoes utilizing other fuse designs, were employed throughout the south (Beauregard, 1988, 514; Perry 1965, 50–60). Heralded as the most reliable torpedoes, Lee’s versions were believed to have been the most utilized in Charleston (Tomb 1924, 98). However, it is feasible, perhaps even more likely, that more torpedoes designed by Gabriel Rains were deployed in Charleston as the Brigadier General had established a torpedo production facility in Charleston employing an estimated 35 to 40 men under the direction of Captain M. M. Gray, as well as having production facilities in Mobile, Richmond, Savannah, and Wilmington. Rains served in Charleston from August 1863 to mid-February 1864, and Captain Gray stayed on in Charleston to oversee production of torpedoes (Schiller 2011, 5-6.). One torpedo captured in 1863 is described in “The New Torpedo in

Lee was not, however, the first to develop an acid-chemical fuse.²¹² Mortiz Hermann von Jacobi, a German chemist working mainly in Russia, developed a similar fuse that was used extensively in the Crimean War. Lee likely knew of the von Jacobi fuse.²¹³ Lee's version, like von Jacobi's, was contact sensitive, requiring a mere seven pounds (3 kg) of pressure to crush the outer shell and break the internal glass vial that allowed the acid to ignite the powder. The method proved most reliable.

Testing Spar Torpedoes in Charleston

Wanting to field test his spar torpedoes, Lee wrote to Brigadier General Thomas Jordan in late February 1863 stating, "I have nearly completed all the necessary arrangements for making the experiment and only need a hulk to operate upon. Should this hypothesis be established by actual experiment then torpedoes to be fired by percussion borne at the extremities of spars and suspended below small boats, may be used under cover of night against iron clads and other vessels."²¹⁴

By early March, Lee was provided with an abandoned gunboat hull and conducted his test using what he described as "a light built canoe about twenty feet [6 m] long with a spar suspended six feet [2 m] from her keel and projecting beyond her bow twenty feet on which I placed the torpedo with a Charge of nearly thirty pounds [14 kg] of powder."²¹⁵ Future *David* crew members, Lieutenant Glassell and James Tomb, each experimented with Lee's rowed torpedo boat plan in

Charleston Harbor" *Scientific American* Vol. 9 No. 11, 12 September 1863, 164 and "Examination of Torpedo Sent from the Navy Department" *Scientific American* Vol. 9 No.15, 10 October 1863, 229.

²¹² There was an earlier reference to a chemical fuse "By a Gentleman of the State of New York" that relied on the attachment of a torpedo to an enemy hull and allowance of some roughly predictable amount of time (8-12 hours) before the chemicals could ignite. However, this version never came to fruition (Appended to an 1815 copy of Machiavelli's *Art of War*, Machiavel 1815).

²¹³ John S. Barnes offered a cutaway sketch and description of a contact fuse, attributed to von Jacobi in his 1869 publication (Barnes 1869, pl. V). The same image was republished by Schiller in 2011, but attributed to Francis Lee (Schiller 2011, 188. Also see Lundeberg 1974, 5, 19).

²¹⁴ Letter to Brigadier General Jordan, 27 May 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

²¹⁵ Letter to Brigadier General Jordan, 27 May 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

preparation for an actual sortie. The pair used rowed cutters from the ironclad gunboat CSS *Chicora* to execute an unsuccessful attack on the Union vessel USS *Powhatan* on 18 March 1863.²¹⁶ Glassell reports, “I think the enemy must have received some hint from spies, creating a suspicion of torpedoes, before I made this attempt. I got back to Charleston after daylight the next morning, with only the loss of one torpedo, and convinced that steam was the only reliable motive power.”²¹⁷

James Tomb summarized these failed events in his memoirs, and like Glassell, felt the failure was due to limitations of the rowed cutters: incapable of speeds equal to, or greater than, the monitors:

Lieutenant William T. Glassell, C. S. N., and I had been experimenting for some time with the first and second cutters of the *Chicora*, with a spar torpedo attached to the bow of the cutter, in an effort to reach and blow up one of the monitors off Morris Island, but it was always a failure, as we would pass out by Sumter in good shape on the last of the ebb-tide, and that was about all we did, as neither Glassell nor I ever got near the monitors. The nearer we got to them, the less headway our boat made, and when striking the first of the flood [tide], it was a tie, and then we lost out. As we both had the same trouble we reported to Flag Officer Tucker that we could do nothing unless we had other means of propelling the boats.²¹⁸

New Ironsides

By early 1863, the first Union ironclad, the armored frigate *New Ironsides*, arrived in Charleston Harbor. Rumors immediately began to circulate of an impending siege. *New Ironsides* (Figure 14) was the Union’s most formidable naval vessel for use against merchant blockade runners, heavily armed forts, and possibly the greatest threat to the city of Charleston. As Major John G. Barnwell, Confederate Assistant Chief of Ordnance acknowledged, “This ship was in every way the most powerful vessel ever floated up to that date – iron-plated from the top of her bulwarks to four or

²¹⁶ Campbell 2005, 66-7; Glassell 1877, 226-8.

²¹⁷ Glassell, 1877, 228.

²¹⁸ Campbell 2005, 66.

five feet below her water-line, and forward and aft her ports, and her guns were eleven-inchers, and capable of delivering the heaviest broadside ever poured from a ship's deck."²¹⁹

New Ironsides was menacing. The entire upper hull was covered in 4 inches (0.10 m) of iron plate. At 250 ft (76 m) in length, 57 ft (17 m) in breadth, and with a deep draft of 15 ft (4.5 m), the ship displaced over 4000 tons of water.²²⁰ It was powered by two horizontal, 700-hp engines with 50 in (1.27 m) cylinders each with a 30 in (0.76 m) stroke. The ship's armament consisted of two 200 pounder (91 kg) Parrot rifles and fourteen 11 in (0.28 m) Dahlgren smoothbores. These latter guns had a range of over a mile (1.6 km). Although a threat to Charleston, the vessel's guns remained silent as long as support from the other long-awaited ironclads was missing.

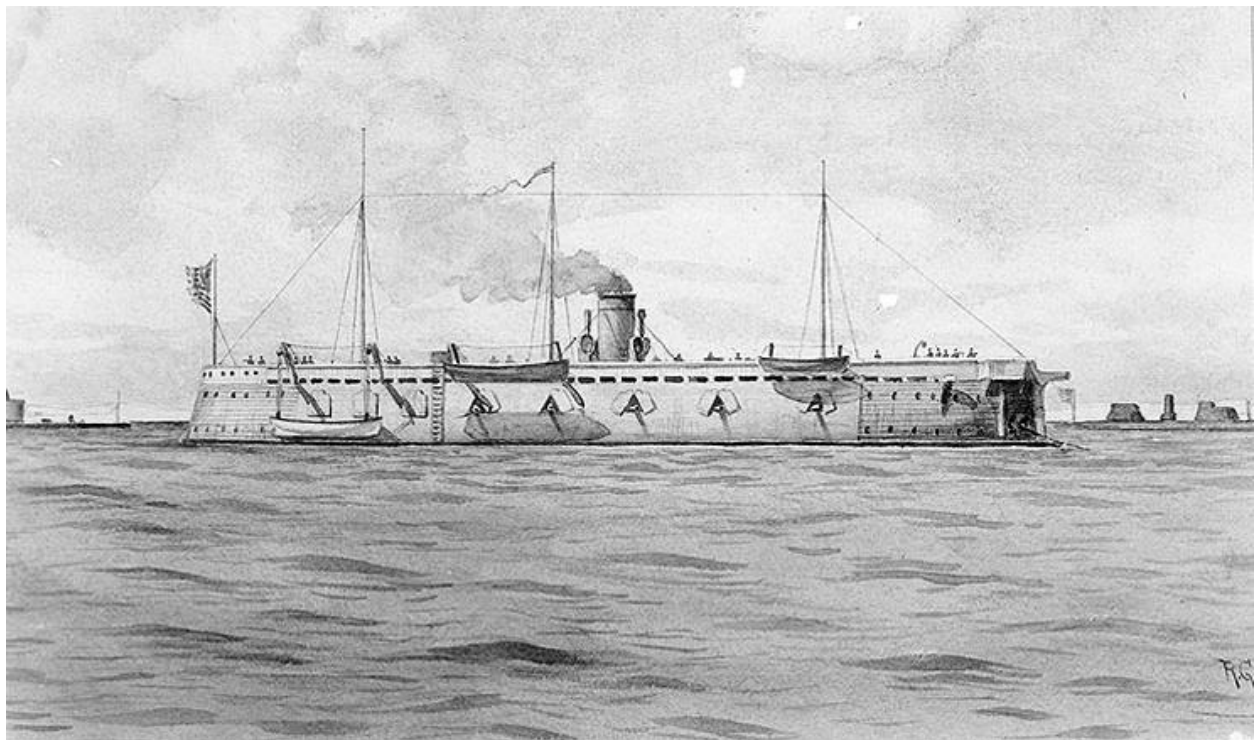


Figure 14. USS *New Ironsides* off the coast of Charleston, April 1863. Naval History and Heritage Command, Washington, D. C., Photo # NH 60273.

²¹⁹ Barnwell, 1872, 536.

²²⁰ Merrick 1867, 76-8. Merrick and Sons were the builders of the vessel.

First Siege Attempt of Charleston, 1863

In early April, seven more Union ironclads, monitors of the Passaic-class, finally arrived off Charleston Harbor.²²¹ The double-turreted *Keokuk* joined days later. *Keokuk* was one of the first all-iron hulls and Rear Admiral DuPont had high hopes for the vessel, “I am very anxiously looking for the *Keokuk*. Her less draft than the others [ironclads] is very important.”²²² *Keokuk*, an experimental design that was untested in battle, was immediately committed to the attack, a decision that speaks to the faith that the Union also placed in experimental designs.

Beauregard suspected the naval buildup was a precursor to an attempt to take Charleston by sea.²²³ He was correct. The construction of Lee’s ironclad torpedo ram, however, remained stalled due to lack of iron resources and machinery.²²⁴ By 6 April, Beauregard received intelligence that suggested an imminent naval attack and Lee was consequently instructed to be ready “to insure the complete destruction of the [still unfinished] torpedo ram under your charge at a moment’s warning” to prevent the torpedo boat from falling into enemy hands.²²⁵ The following day seven Union monitors, *Keokuk*, and *New Ironsides* sailed as far into the harbor as they dared, attempting to avoid torpedoes placed across the channels, and battled with onshore batteries (Figure 15).²²⁶

USS *Weehawken*, which had been chosen to lead the Union fleet, was equipped with a torpedo catcher or “devil” (Figure 16), designed by John Ericsson, for removing hidden torpedoes safely from the path of the vessels. In the words of seaman Franklin Matthews, “This torpedo catcher was an awkward thing. When the ship rose, it fell; when the ship sank, it rose. The men on board the *Weehawken* were more afraid of it than they were of an enemy’s ship.”²²⁷ Despite the

²²¹ Telegram from Alfred Rhett to General Beauregard, 5 April 1863, ORN Vol. 13 (1901), 823.

²²² Private letter from DuPont to Assistant Secretary Fox, 19 March 1863, ORN Vol. 13 (1901), 766.

²²³ P. G. T. Beauregard to General S. Cooper and Beauregard to South Carolina Governor, M. L. Bonham, 3 February 1863, ORA Vol. 14 (1902), 760.

²²⁴ P. G. T. Beauregard reported a delay due to “want of materials” in early February 1863 ORN Vol. 13 (1901), 819. Francis Lee to Brigadier General Thomas Jordan, 25 March 1863, ORA Vol. 14 (1902), 843-4. Lee’s Torpedo Ram is covered in greater detail in Campbell 2000, 14-30; Perry 1965, 63-80, and Schafer 1996, 82-92.

²²⁵ Beauregard to F. D. Lee, 6 April 1863, ORN Vol. 13 (1901), 824.

²²⁶ Seven single-turreted monitors (*Weehawken*, *Catskill*, *Montauk*, *Nantucket*, *Passaic*, *Nahant*, and *Patapsco*), the double-turreted monitor *Keokuk*, and the ironclad frigate *New Ironsides*. According to Susan Middleton, the monitors were escorted by 35 transports, Leland 1963c, Letter from Susan Middleton to Harriott Middleton, 7 July 1863, 159.

²²⁷ Matthews 1915, 126.

precautionary device, *Weehawken* was still damaged by a torpedo explosion. However, the monitor suffered much greater abuse from 53 shells delivered from shore.²²⁸

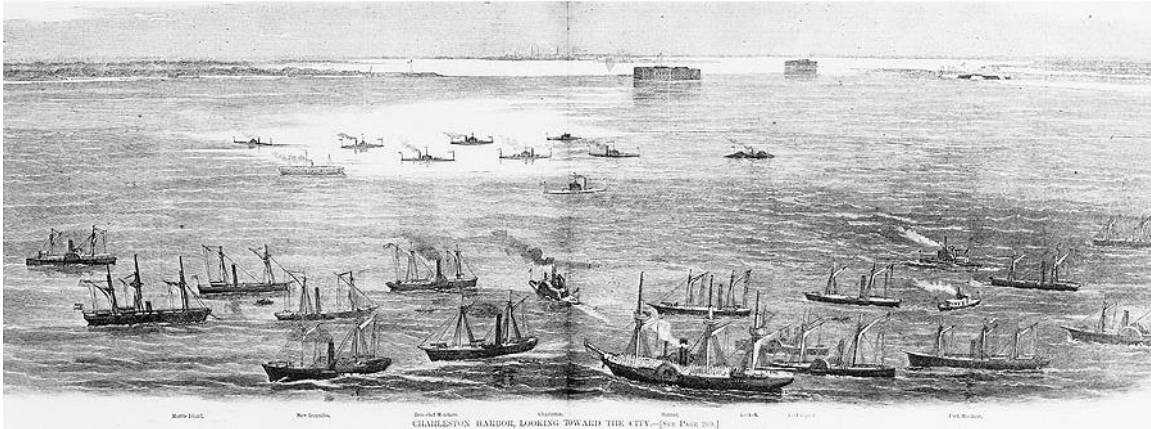


Figure 15. Union ships ready for attack of Charleston Harbor, 7 April 1863. Naval History and Heritage Command, Washington, D. C., Photo # NH 59298.

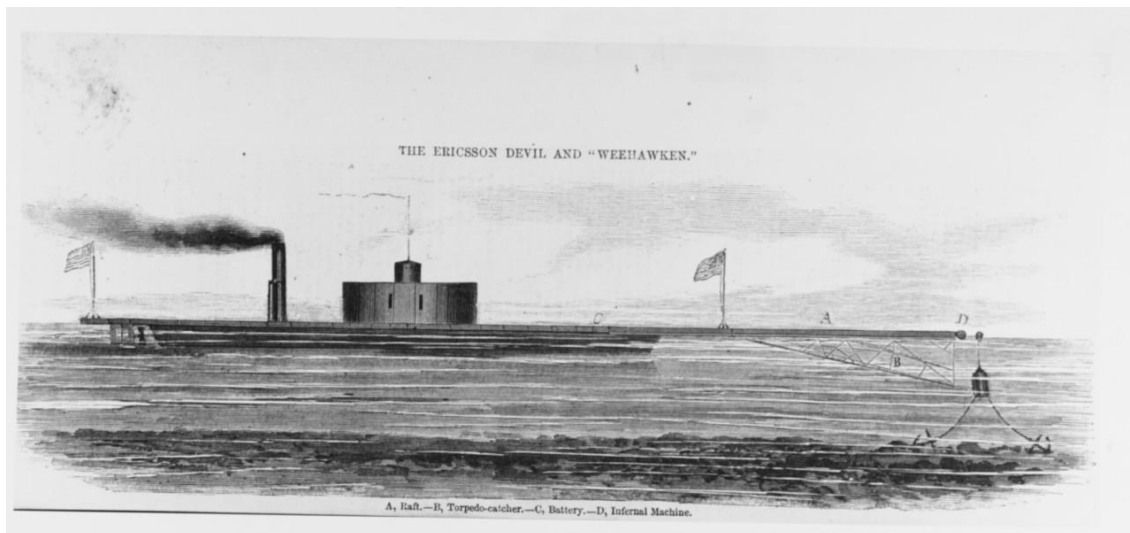


Figure 16. USS *Weehawken* and the torpedo devil of John Ericsson. Reprinted with permission of the Naval History and Heritage Command (NH 59387).

²²⁸ Confederates kept detailed records of the number, type, and position of guns, along with the types of projectiles hurled at the ironclads. See the ORN Vol. 14 (1902), 240-80 for 17 reports of the attempted siege. Mention of the torpedo failure is found on page 257.

Keokuk, which DuPont had so anxiously awaited, was battered by shell and by torpedo to the point that she sank the following morning and was lost.²²⁹ *Passaic* had to be towed to Port Royal for repairs, and several other monitors suffered a great deal of damage. The effort demonstrated that the monitors, and *Keokuk*, were not suited to engage the large, well-placed shore guns of Charleston.

New Ironsides' deep draft proved to be a distinct disadvantage to the Federals. Not only could the big ship not properly approach the heavily fortified defenses, but in what must have seemed a stroke of good fortune for the Confederates, *New Ironsides* dropped anchor during the battle directly above a large, statically-placed, electrically-triggered torpedo (Figure 17).²³⁰ Even more fortunately for the crew of *New Ironsides*, however, the torpedo failed to ignite. As the large ironclad sat above the explosive, shore crews made multiple attempts to trigger the explosive to no avail. Captain Langdon Cheves who was in charge of the torpedo reported, "I could not have placed the Ironsides more directly over it if I had been allowed to, but the confounded thing, as is usual, would not go off."²³¹ Cheves's statement and the anecdote in general, underscores the unreliability of the early torpedoes. Like almost all the other Union vessels involved in the battle, the ironclad frigate was damaged in the fight, but not mortally, and narrowly escaped a near disastrous fate. This would not be *New Ironsides*' last near-disaster involving Confederate torpedoes.

²²⁹ *Keokuk* was heavy damaged and sank the following morning. Her guns were secretly salvaged by Confederates. Newspaper clipping from the *Baltimore American*, 15 April 1863, ORN Vol. 14 (1902), 57; various reports ORN (1902), 36-59.

²³⁰ Letter from F. H. Harleston to Lieutenant Thurston dated 23 April 1863 reported 3000 pounds (1360 kg) of powder, ORN Vol. 14 (1902), 111. Alternatively, Matthews (1915, 128-9) and Scharf (1887, 758) reported the torpedo contained 2000 lbs (900 kg) of powder, while Sleeman (1880, 190) believed the amount to be 5000 lbs (2270 kg). The reported time that *New Ironsides* remained above the torpedo also varies greatly, from ten minutes to two hours.

²³¹ Letter from F. H. Harleston to Lieutenant Thurston dated 23 April 1863 found onboard CSS *Atlanta* ORN Vol. 14 (1902), 111. According to J. Thomas Scharf, Cheves "was suspected of treachery, until it was ascertained that one of the wires had been cut by an ordnance wagon passing over it (Scharf 1887, 758. Also see Leland 1963b), 96).

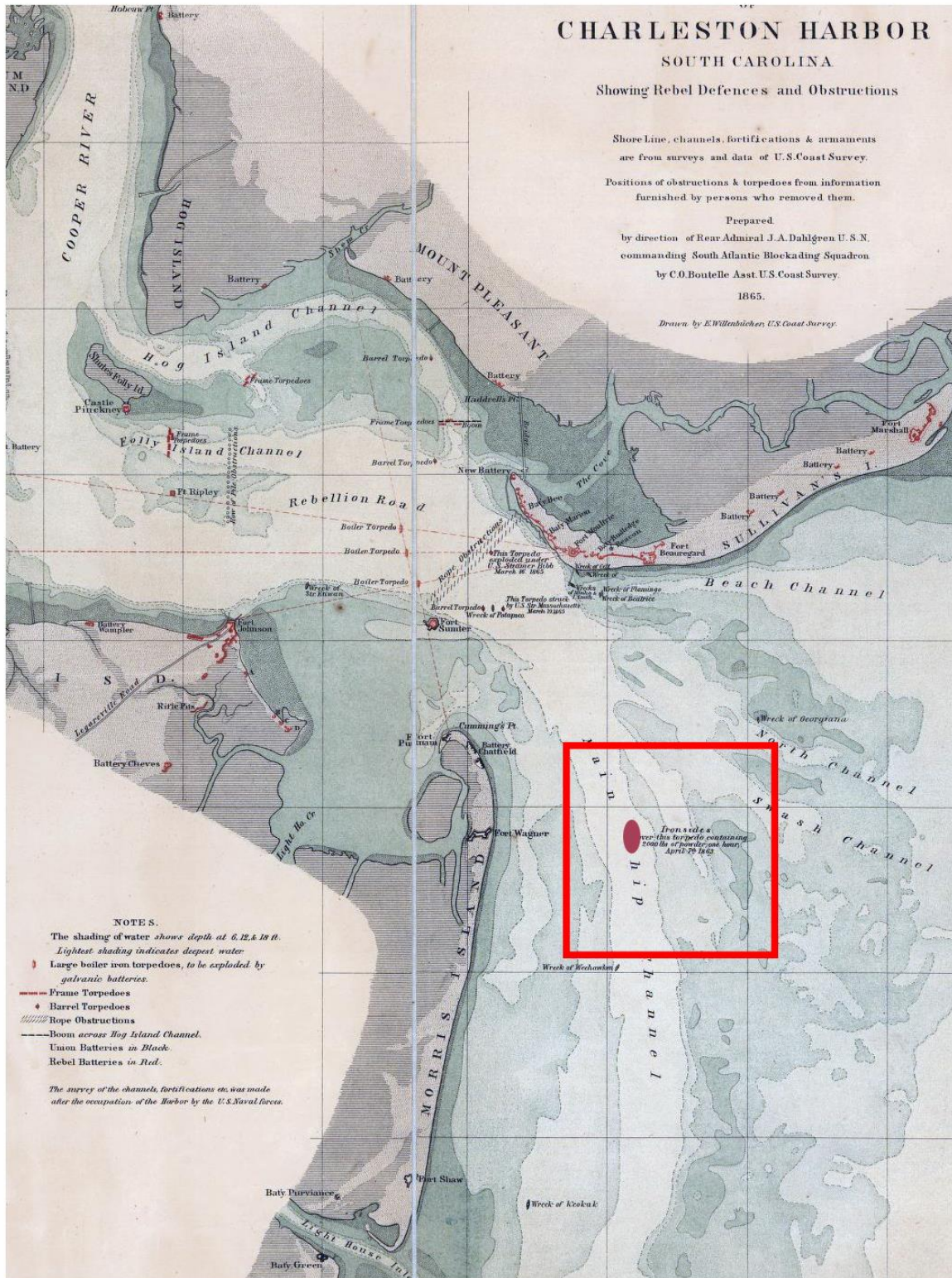


Figure 17. Location of large torpedo and *New Ironsides*, 8 April 1863. Reprinted with permission of the Library of Congress (GM71004125).

The long-expected (first) naval siege was rebuffed. Not only had the monitors failed to get past the heavy guns of the forts but they inflicted negligible damage upon the shore batteries. The attack lasted less than one day and was a marked disappointment for the Union Navy and Rear Admiral DuPont, who reported, “I attempted to take the bull by the horns, but he was too much for us. These monitors are miserable failures where forts are concerned; the longest [salvo] was one hour and the others forty-five minutes under fire, and five of the eight were wholly or partially disabled.”²³²

Historian Louis Schafer contends that fear of statically-placed torpedoes plagued Union vessels desiring to enter the inner bar of the harbor in April 1863, and for the duration of the conflict, keeping them at a relatively harmless distance from fortifications. In fact this claim was made from the first appearance of torpedo use in Charleston.²³³ Union Chief Engineer C. C. Fulton reported similarly in the *Baltimore American* on 8 April 1863 one day after DuPont’s failed attempt to take the city:

Here [Charleston], however, the ghosts of rebel torpedoes have for two months past paralyzed the efficiency of the fleet authorities and the sight of large beer barrels floating in the harbor of Charleston added terror to the overwhelming fear. The Government furnished them with India-rubber rafts, cork jackets, and everything else that could be contrived to ease their minds, but the torpedo phantom has proved too powerful to be overcome, and to-morrow the whole fleet will retire to summer quarters in Port Royal Harbor.²³⁴

Steam Launches

After their 18 March fouled torpedo attack on USS *Powhatan*, Glassell and Tomb each realized the need for steam-propelled vessels to carry spar torpedoes. Thus, Lee, still trying to make a name for himself as an engineer, proposed the use of steam launches (Figure 18) bearing spar-mounted

²³² Letter from Rear Admiral DuPont to Major-General Hunter, 8 April 1863, ORN Vol. 14 (1902), 30-1.

²³³ Schafer 1996, 73.

²³⁴ Newspaper report from the *Baltimore American*, 15 April 1863, ORN Vol. 14 (1902), 58.

torpedoes for an attack on the blockading vessels, and specifically to make a second attempt on *New Ironsides*.²³⁵ As steam launches were readily available, and the required modifications were relatively simple, the plan did not take long to put into action.

Fifteen steam launches were assembled in the early morning hours of 12 April 1863 around the Confederate steamer *Stono*, the former Union boat *Isaac Smith* captured in January 1863. Before setting out for attack, the crews, however, were informed that the Union fleet had abandoned their position close to the harbor. This was a result of accurate intelligence on the part of the Union Navy.²³⁶ The mission was cancelled, much to the relief of Lieutenant William H. Parker, an executive officer of CSS *Palmetto State*, who had been placed in charge of the sortie. When asked by Flag-Officer John Tucker about his obvious relief, Parker took the Commodore to the side of *Stono*, pointed to the fifteen skiffs and canoes, “half full of water, and with inexperienced crews,” bearing sensitive torpedoes extended on spars and responded, “Why the *Stono* was not blown up, or why they did not blow each other up, is more than I can account for.”²³⁷ The unit strived to maintain their operational status throughout the summer until another sortie could be planned, but one-by-one the men were transferred to their former duties.²³⁸ As a consequence, the steam launches saw only patrol duty for the remainder of the summer, with no recorded attempts at using a spar-mounted torpedo in an attack. Meanwhile, similar steam launch torpedo boat designs would be implemented, with varying success, in waterways of the Confederacy, including those of the James River and Wilmington.

Francis Lee and General Beauregard still regarded torpedo boats mounting spar torpedoes as a panacea to the Union ironclads, much as Beauregard’s superiors still saw ironclads as the solution to breaking the Union blockade.²³⁹ James Tomb recalled that in addition to himself, Beauregard, Tucker, Lee, and Glassell were also of the opinion that a fleet of small torpedo boats would have been most decisive in the defense of Charleston.²⁴⁰

²³⁵ Recall the first attempt, on 7 April, failed due to a short in the wire of an electrically ignited torpedo.

²³⁶ Parker 1883, 312-5; Perry 1965, 74.

²³⁷ Parker 1883, 314.

²³⁸ Campbell 2000, 41.

²³⁹ Beauregard 1878, 154; Beauregard to S. Cooper, 2 April 1863, ORA Vol. 14 (1902), 906-7.

²⁴⁰ Tomb 1924, 98.



Figure 18. An early unidentified torpedo-bearing steam launch. Reprinted with permission of the Naval History and Heritage Command (NH 82827).

Frustrated with the failures of the March and April attempts to break the blockade with small torpedo boats, and with the delay in getting the necessary iron to finish the torpedo ram, Lee proposed to Beauregard that similar vessels could, and should, be constructed abroad, where materials and labor were more readily available,²⁴¹ and that officers going overseas could carry plans and execute their construction.²⁴²

Lee met with Secretary of War James Seddon in Richmond about his designs and production of them. Seddon approved of the designs and proposed, with pending approval of Secretary of the

²⁴¹ F. D. Lee to P. G. T. Beauregard, 25 March 1863, ORA Vol. 14 (1902), 843, 898, 900, 917-8.

²⁴² As per a letter from F. D. Lee to Colonel Gilmer, 21 May 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865. Lee goes on to note that Mallory "never favored me with a reply" and that his submitted drawings were not returned.

Navy Mallory and Chief Engineer Gilmer, to detach Lee to supervise the work abroad, but his leave was ultimately denied; the work was thought best for the navy. Lee was “deeply mortified”²⁴³ and resolved to immediately return to Charleston where he subsequently approached some of the most influential, even among the military, merchants of Charleston for financial support for his proposed work abroad.²⁴⁴ Employees from John Fraser and Company were aware of Lee’s torpedo ram and the proposal to construct similar vessels abroad. They replied to the engineer offering to finance the project, with Lee supervising.²⁴⁵ The following exchange of correspondence took place in early June 1863:

CHARLESTON, June 6, 1863.

Capt. FRANCIS D. LEE,
Confederate States Engineer

CAPTAIN: The undersigned, in connection with other merchants in this city, propose the construction of a marine torpedo steamer abroad, and desire your services for carrying the work into effect. Arrangements have been made for placing the necessary funds at your disposal in Europe.

Very respectfully, yours,

JNO. FRASER & CO.

CHARLESTON, June 8, 1863.

Brig. Gen., THOMAS JORDAN, *Chief of Staff*:

GENERAL: Would the commanding general be pleased to approve of my detachment for the purpose above named? As time is a matter of vital importance, I would respectfully suggest that all my arrangements should be made to enable me to leave during the present dark nights; otherwise I shall be necessarily detained one month.

I have the honor to be, general, very respectfully, your obedient servant,

FRANCIS D. LEE,
Captain, Engineers.

²⁴³ Letter from F. D. Lee to Colonel Gilmer, 21 May 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²⁴⁴ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²⁴⁵ In some records, alternate spellings *Frazier* or *Frazer* are used.

N. B.- In the above communication I have omitted to state that the only work directly under my charge at present is the torpedo ram. I have made all necessary arrangements for the completion of this vessel, and would in the event of my going abroad respectfully request that it be placed under the charge of Mr. C. A. Chisolm, who is not only thoroughly informed as to my plans, but is by education and employment admirably adapted to the position

HDQRS. DEFT. SOUTH CAROLINA, GEORGIA, AND FLORIDA,

Charleston, June 13, 1863.

Respectfully referred to Col. J. F. Gilmer, requesting that he should have Capt. F. D. Lee detached for the purpose of having the marine torpedo ram of Messrs. Fraser & Co. constructed in Europe, as desired by these gentlemen; meanwhile Major Echols, with the assistance of Mr. Chisolm, will attend to the completion of the State marine torpedo ram now under the charge of Captain Lee.

G. T. BEAUREGARD,
General, Commanding.

ENGINEER BUREAU, June 19, 1863.

Respectfully returned to Capt. F. D. Lee, favorable action having been taken upon his application.

ALFRED L. RIVES,
*Lieutenant-Colonel and Assistant Chief Engineer.*²⁴⁶

Lee's torpedo ram was now a product of compromised design and limited resources. In late June, Lee received word that additional funds would not be supplied by the Engineer Bureau and that all work on the ram would cease pending an in-person detailed report of progress.²⁴⁷ Plans for Lee to work abroad nevertheless moved forward and 200 bales of cotton were secured and shipped to Europe to fund the venture. By 11 July, however, sensing another impending attack on Charleston, funds earmarked for Lee's European project were "diverted to accomplish under my

²⁴⁶ Exchanges between John Fraser and Co. and Francis Lee, 6 June 1863, ORA Vol. 14 (1902), 965-6.

²⁴⁷ Letter to F. D. Lee, 24 June 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

[Lee's] direction the immediate completion of the torpedo boat."²⁴⁸ Lee forfeited his leave of absence and returned to his duty in defense of Charleston and to the completion of the torpedo ram, which Beauregard desperately wanted done.²⁴⁹

Second Siege Attempt of Charleston

DuPont's failure with the April siege resulted in a change of command for the South Atlantic Squadron. His successor, Rear Admiral John A. Dahlgren, took the post in early July and another attempt to take Charleston was contrived. On 10 July, the monitors and *New Ironsides* returned to the entrance of the harbor and began a 53-days-long (19 July – 7 September) combined effort with the Union Army, to take the city. Again, the monitors failed to defeat the forts surrounding Charleston Harbor. As noted by a Confederate signaler observing from the harbor, "Their [Union officers] opinion of the Monitors has fallen very much & they regard the Ironsides as worth the whole of them. She is certainly by far the most annoying to our batteries."²⁵⁰

It was during this siege that the "Swamp Angel," a 200-pounder (90 kg) Parrott rifle (Figure 19), was briefly used against the city before its muzzle exploded, again demonstrating willingness of both sides to field test experimental weaponry in battle. It was also at this time that Lee's ram was purchased by Captain James Carlin, inspected, tested, and deemed ready for service, albeit still without iron plating. Without pomp or circumstance, *Torch* (Figure 20) was quietly launched on 11

²⁴⁸ Letter from F. D. Lee to Brigadier General Jordan, 11 July 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

²⁴⁹ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

²⁵⁰ Letter from Augustine T. Smythe, signaler assigned to CSS *Palmetto State*, to his sister, Jane Adger 8 August 1863 (Emerson and Stokes 2017, 50).

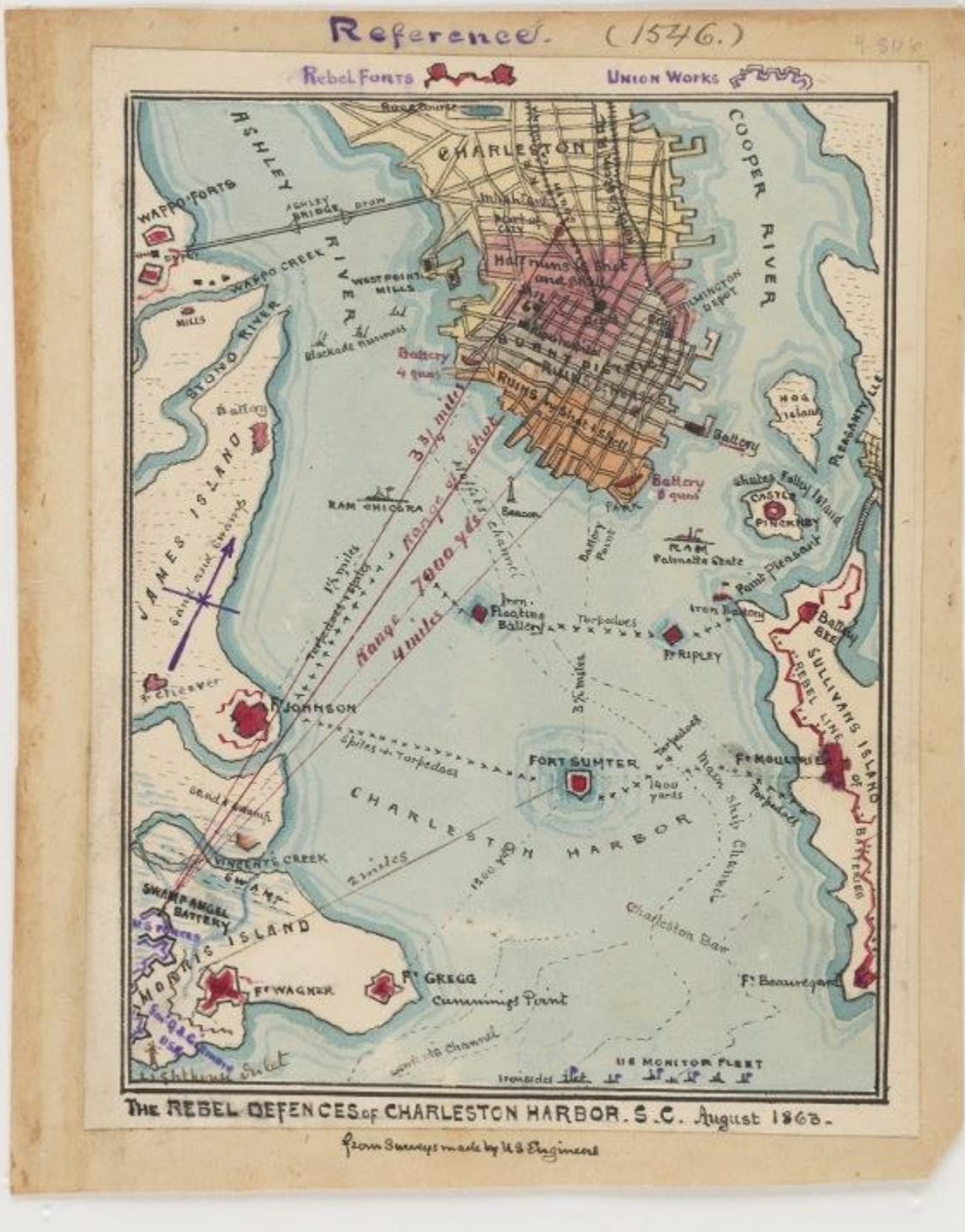


Figure 19. Charleston Harbor with location of the “Swamp Angel”, Rebel forts, and Union garrisons. *Robert Knox Sneden Diary, 1861-1865* Vol. 4, p. 237. Reprinted with permission of the Virginia Museum of History & Culture, Richmond, Virginia.

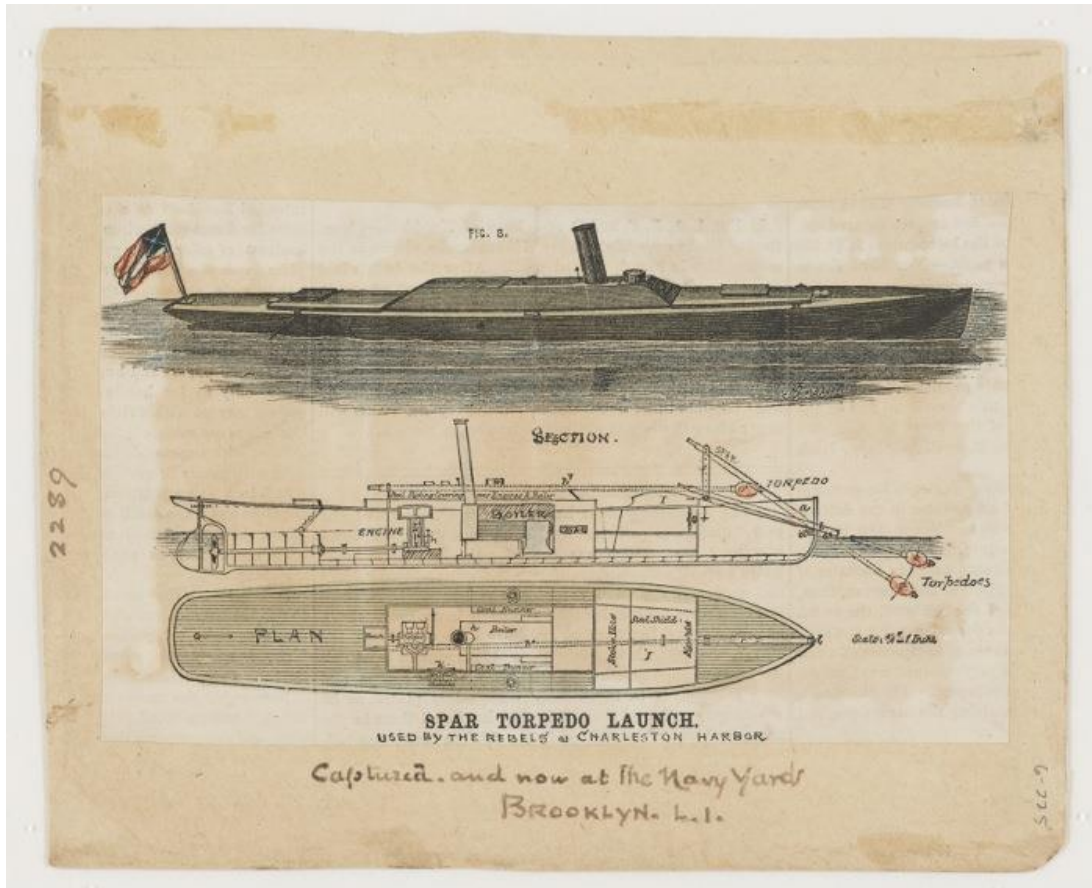


Figure 20. Sketch of *Torch* by Robert Knox Sneden (lower vessel).²⁵¹ *Robert Knox Sneden Diary, 1861-1865* Vol. 6, p. 225. Reprinted with permission of the Virginia Museum of History & Culture, Richmond, Virginia.

July 1863, to be used, temporarily, as a transport.²⁵² Clearly, the vessel had suffered from forced compromise, but was commissioned in desperation.²⁵³ Lee's original design called for a cigar-shaped

²⁵¹ Although two distinct vessels are depicted, the lower vessel is believed to be Francis Lee's *Torch*.

²⁵² Francis Lee to Brigadier General Jordan, 11 Jul, 1863, ORA Vol. 28 pt. 2 (1890), 191.

²⁵³ Image from the Diary of Robert Knox Sneden, Vol. 6, 225, call number Mss5:1 Sn237:1, Virginia Historical Society. Available online at <http://www.vahistorical.org/collections-and-resources/how-we-can-help-your-research/researcher-resources/finding-aids/snedden-0-4>

The image shows what appears to be *Torch* (with a single engine). There are three views shown and it should be noted that the upper view does not match the lower two views. The upper-most sketch has been noted to be remarkably similar to the Norwegian warship HNoMS *Rap*, an early (1873) torpedo boat that utilized self-propelled torpedoes. The lower two sketches show what I believe to be a version of Lee's repeating torpedo apparatus. Sneden, the artist notes on the sketch that the vessel was taken as a prize of war to the Brooklyn Navy Yard, yet no other references to this event are known.

vessel, with twin engines. This iteration was far from that design. R. Thomas Campbell asserts, “Lee must have felt a bittersweet sense of pride as he watched her glide gracefully down the ways.”²⁵⁴ By the first of August, torpedo spars were being added to *Torch* along with a cutwater as it was prepared for battle.

Lee remained dedicated to his vessel and its potential. However, Beauregard, understanding *New Ironsides* to be the Union Navy’s greatest threat, wanted to stack the odds of success in his favor, suggested adding a spar torpedo system to the blockade runner *Juno* for attacking the Union fleet.²⁵⁵ Shortly after the launch of *Torch*, the General wrote to Flag-officer John Tucker:

CAPTAIN: I believe it my duty to acquaint you with the fact that I consider it of the utmost importance to the defense of the works at the entrance of the harbor that some effort should be made to sink either the Ironsides or one of the monitors now attacking the works on Morris Island, not only because of the diminution thus effected in the enemy’s means of offense, but because of the great moral effect that would inevitably result from such an occurrence. The stake is manifestly a great one, worthy of no small risk. For its accomplishment, one vessel, such as the Juno, provided with the spar torpedo, with 2 or 3 officers and a few men, it is believed would be as effective at night for the end in view as a flotilla of vessels, so arranged, of the same class.

If, however, the results of your experiments are sufficiently adverse to the prospect of success with the contrivance, I must beg to be advised of the fact, to the end that I may not permit the expectation of assistance to enter further into my plans of defense; but if, on the other hand, the experiments remain satisfactory, permit me to say the time is rapidly passing away when that assistance can be of any avail or value.

One monitor destroyed now will have greater moral and material effect, I believe, than two sunk at a later stage in our defense.

Respectfully, your obedient servant,
G. T. BEAUREGARD,
General, Commanding.²⁵⁶

²⁵⁴ Campbell 2000, 43.

²⁵⁵ *Juno* was side-wheel steamer, privately owned and built in Glasgow, Scotland. The side-wheel steamer was purchased as a blockade runner and arrived in Charleston from Nassau in July 1863. In December, the Confederacy purchased the vessel for £21,000 to be used as a gunboat, but with little success. In early spring of 1864, the vessel returned to blockade running and was lost at sea on 10 March 1864.

²⁵⁶ Letter from Beauregard to Tucker, 18 July 1863, ORA Vol 28, pt. 2 (1889), 208-9.

As the blockade tightened, the Confederate government needed at least some control over blockade running to assure necessary materiel was brought from abroad, the problems associated with a government-controlled program were too great to overcome.²⁵⁷ Besides being an ideological problem for the seceding Southern States (which wanted less federal government), government-controlled blockade running would have presented even larger logistical problems for Secretary of War James Seddon and Secretary of the Navy S. R. Mallory.²⁵⁸ Hence, blockade runners remained, until mid-1864, in the profit-driven private sector, with little concern for military needs of weapons and supplies.²⁵⁹

In Charleston, these private ventures were largely organized by John Fraser and Company, a branch of Tremholm, Fraser, and Company of Liverpool. Breaking the blockade of Charleston Harbor was thus a mission for the Confederate Navy and Southern merchants. Charleston-based merchants felt strongly about Beauregard's desire to dispose of *New Ironsides* or at least one Union ironclad. On 13 August 1863, two months after proposing to fund the building of Lee's torpedo rams abroad, Theodore Wagner, president of John Fraser and Company, offered a reward of \$50,000 for the destruction of any monitor and \$100,000 for the sinking of either *New Ironsides* or the steam frigate *Wabash*.²⁶⁰ These substantial cash prizes proved to be powerful incentives for naval innovations and naval enterprises by local rebels, and served as an indicator of the level of financial stress the blockade had placed on the merchants of Charleston.

One week after the announcement of the reward (20 August 1863), Lee's *Torch*, working "independent of the Navy," and under the voluntary command of a new owner, an English merchant turned Confederate Captain named James Carlin, along with a crew of volunteers from various vessels, made a third attempt to dispose of *New Ironsides*.²⁶¹ Like the previous attempts, this one was also a failure. Carlin wrote of the event:

²⁵⁷ Surdam 2001, 95-6.

²⁵⁸ Symonds 2009, 49.

²⁵⁹ Symonds 2009, 54. In mid-1864, George Trenholm, one of the partners of Fraser, Trenholm, and Company of Liverpool, the parent company of John Fraser and Company of Charleston, took over as Secretary of the Confederate Treasury and assured more military materiel was a primary goal for importation from abroad. Fraser, Trenholm, and Company had been pioneers in the blockade running trade (Skelton 1974, 25).

²⁶⁰ Theodore Wagner to P. G. T. Beauregard, 13 August 1863, ORA Vol. 28, pt. 2 (1890), 280.

²⁶¹ Carlin purchased *Torch* sometime shortly before 11 July 1863. Letter from F. D. Lee to Brigadier General Jordan, 11 July 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

When I came within quarter of a mile of the Ironsides I lowered the torpedoes and proceeded directly for the ship, feeling at the same time fully confident of striking her in the right place. At this time she was lying across the channel and heading for Morris Island. I steered up, keeping the object on our port bow, and, when within 40 yards from the ship, I stopped the engine and ordered the helm put hard a starboard. *I attribute my failure to the want of proper execution of this order* [emphasis added]. I noticed the slow obedience of the ship to her helm, and again gave the order, repeating it three times. It was a moment of great anxiety and expectation, and not doubting but I would strike her, I was obliged to attend to the proper command of the officers and men, and restrain any undue excitement. In this I was ably assisted by the cool, courageous bearing of Lieutenant Fickling, who commanded the force stationed for defense. I discovered, as we ranged up alongside, that, in consequence of the Ironsides being in the act of swinging to the ebb, we must miss with our torpedoes, but feared that her chain cable would either ignite them or detain us alongside.²⁶²

Lee added that due to “an error of the part of the steersman the Ram struck the ‘Ironsides’ quarter so that the torpedo did not come in contact.”²⁶³ Another version of the story comes from Charleston socialite Susan Middleton, who relayed that the failure was due to a strengthening tide, suggesting an alternate story for public consumption:

Last week Carlin actually reached the “Ironsides” one night, but the tide was so strong that he ran into her side-ways, instead of striking the torpedo on his bow. The guard called out at once, when he had the presence of mind enough to answer, “Yankee—despatch-boat,” [sic] making the best of his way off, as he apologized for his “awkwardness.” They took him for a blockade-runner, beat to quarters, and gave him a broadside—but all the shot went over, and he got safely back to town.²⁶⁴

This action is the one most associated with *Torch* and that gets almost exclusive attention in naval histories. But this was not the first time Carlin had attempted to use *Torch*. Carlin had taken the

²⁶² Report of Captain James Carlin, 22 August 1863, ORA Vol. 28 pt. 1 (1890), 680-2; ORN Vol. 14 (1902), 498-500.

²⁶³ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²⁶⁴ Leland 1963c, Letter from Susan Middleton to Harriott Middleton, 28/29 August 1863, 168.

vessel out the previous night. On 21 August, Susan Middleton wrote “Capt. Carlin, too, is on the list—and went down two nights ago with our home-built torpedo-boat. He got as far as Sumter, but could go no further, the sea was so heavy.”²⁶⁵ Evidence of this sortie is vaguely buttressed in Carlin’s report on 22 August, “General, in consequence of the tests to which I have put the ship in the two late adventures, I feel it my duty most unhesitatingly to express my condemnation of the vessel and engine for the purpose it was intended, and as soon as she can be docked and the leak stopped, would advise making a transport of her.”²⁶⁶ Lee also confirmed that the *Ram* had been taken out “too” times, “Captn Carlin fearing however that too much time would be lost if we attempted to plate her determined to use the vessel without any defensive armor and after rapidly preparing her for service made too [sic] attempts against the Enemy. The first enterprise failed in consequence of the night being pitchy darkness accompanied with a storm.”²⁶⁷

Nothing was accomplished on either of the two sorties. *Torch* lacked iron plating, leaked terribly, and performed poorly. There was no plating to provide physical protection or psychological security for the crew and the “much worn” engine failed to deliver enough power to overcome the harbor tides.²⁶⁸ The ram was not used again offensively for the duration of the war.²⁶⁹

The failure of *Torch* must have been a blow to both Lee and Beauregard, as the General had referred to the torpedo ram as “the greatest invention of the day”²⁷⁰ and “far superior to any gunboat for attacking ironclads.”²⁷¹ Historian Raimondo Luraghi concludes, “The *Torch* turned out to be useless. It had been a bad decision to send her into action hastily and with an untrustworthy crew. The idea itself [that of a spar-torpedo boat], however, was excellent. The proof was the panic

²⁶⁵ Leland 1963c, 168. Francis Lee noted a storm and “pitchy darkness” as causes of abandonment of the sortie (Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865).

²⁶⁶ James Carlin to P. G. T. Beauregard, 22 August 1863, ORN Vol. 14 (1902), 498. Francis Lee and the first officer of *Torch*, W. P. Poulnot, each offered slightly more detail of the otherwise undocumented mission (Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865; Leland 1963c, 168).

²⁶⁷ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²⁶⁸ Various reports of the incident appear in the ORN Vol. 14 (1902) 497-500; Schafer 1996, 92; Smythe 1907 (55).

²⁶⁹ A work invoice from September 1863 suggests *Torch* may have not been fully retired (The invoice is from Eason Bros. Shipbuilding and is held at the National Archives, Record Group 45, War Department Collection of Confederate Records, Vessel Files, M1091, roll 10).

²⁷⁰ P. G. T. Beauregard to Messrs Orr and Barnwell (Senators), 12 April 1863, ORA Vol. 14 (1902), 898.

²⁷¹ P. G. T. Beauregard to Messrs Orr and Barnwell (Senators), 16 April. 1863, ORA Vol. 14 (1902), 900.

that her ghostlike appearance aroused and continued to create aboard the great enemy ironclad.”²⁷² Yet Lee had to admit, “Although no one was injured in either of these enterprises it became apparent that the Ram (modified as it was from my design by circumstance over which I had no control and which have been previously stated) was not the vessel for the purpose intended.”²⁷³

Despite Beauregard’s best efforts, the Union Army and Navy maintained a constant bombardment of the city of Charleston and its fortifications, and on 6 September managed to overwhelm the Confederate garrison of Fort Wagner on Morris Island (Figure 21). The capture of the fort marked a great success for Union forces, as it was located at a strategic position at the mouth of Charleston Harbor. Still, the Union Navy was unable to make their way past the inner forts and into the city, leaving Charleston and the other fortified bastions in the hands of the Rebels.

Back to the Blockade

Each attempt to capture the city failed and the Union Navy consequently reverted to blockading the harbor and protecting the blockading vessels. In an excellent evaluation of the history of blockade strategies, including those of the six Union squadrons of the American Civil War, Robert E. Johnston explains the differences in strategies used by Rear Admiral DuPont in his time with the South Atlantic Blockading Squadron, and those of Rear Admiral Dahlgren.²⁷⁴ DuPont was lax in enforcement of the blockade and commanded remotely from Port Royal, never actually seeing the situation in Charleston Harbor.²⁷⁵ Dahlgren, on the other hand, effected strategic changes that increased the efficiency of the Southern Atlantic Blockading Squadron, particularly in Charleston Harbor, from where he situated himself for daily command.²⁷⁶ Consequently, under Dahlgren, the blockade became increasingly more stringent in the latter part of 1863 and breaking the blockade became paramount for the Rebels. The Southern economy could not survive without increased access to European markets for goods, and Confederate forces desperately needed supplies.

²⁷² Luraghi 1996, 260.

²⁷³ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

²⁷⁴ Johnston 1972.

²⁷⁵ Johnston 1972, 51.

²⁷⁶ Johnston 1972, 52.

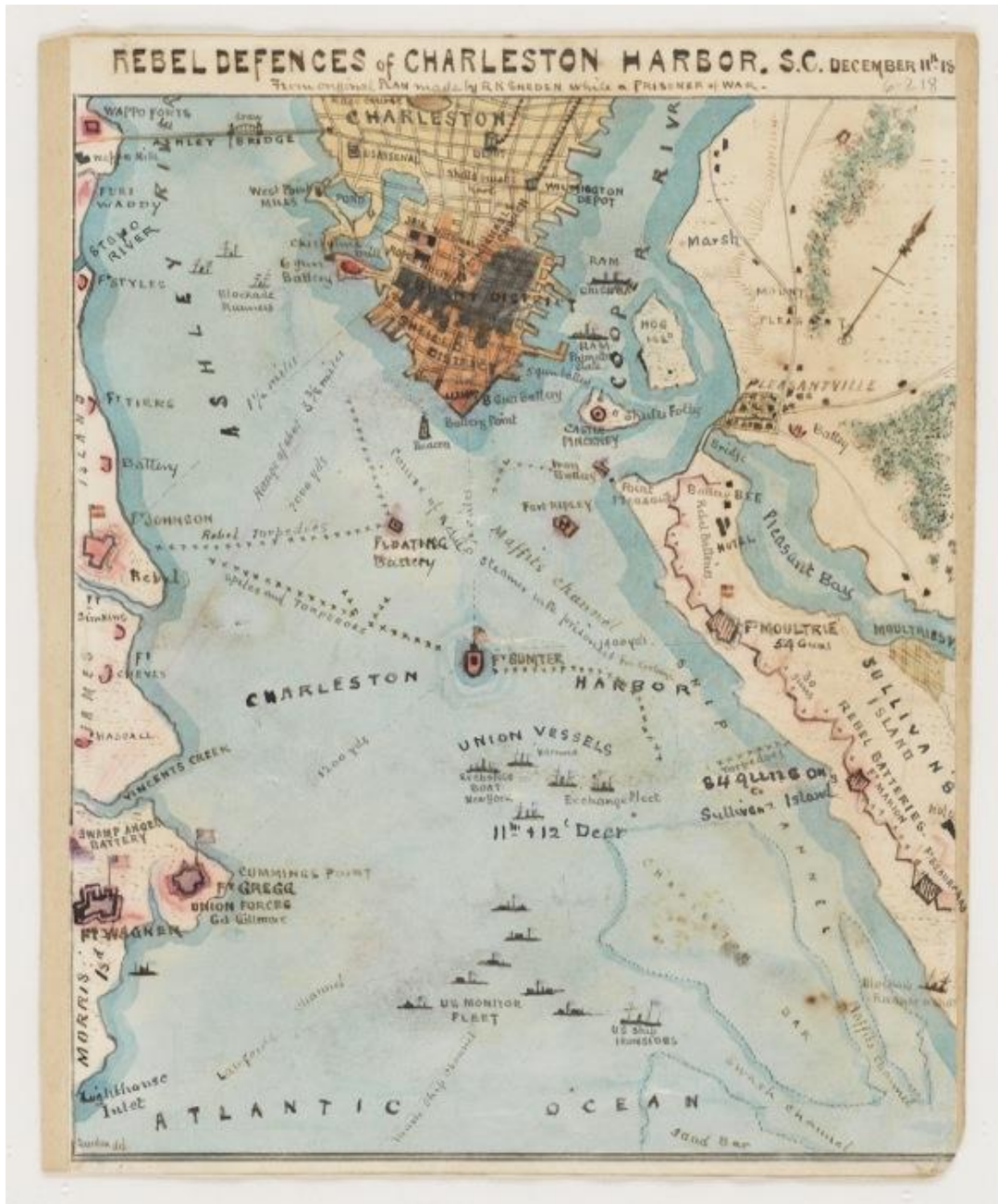


Figure 21. Charleston Harbor after the fall of Fort Wagner (bottom left). *Robert Knox Sneden Diary, 1861-1865* Vol. 6, p. 218. Reprinted with permission of the Virginia Museum of History & Culture, Richmond, Virginia.

The tack in strategy, back to blockading, was in part due to the inefficiency of Union monitors against the well-situated and well-armed fortifications of Charleston, in part due to the level of disrepair of the blockading vessels, and in part due to the lingering threat of submarine explosives. Additional torpedoes were continuously laid in the harbor at this time. James Tomb noted; “Capt. M. M. Gray informed me there were more than three hundred torpedoes in the harbor, and as [he] had charge of that duty, was satisfied no ship could pass the obstruction.”²⁷⁷ After the eventual evacuation of Charleston, *The New South* echoed Gray’s claim, “A careful survey of the defences [sic] of Charleston shows the exact number of guns, of all calibres [sic], bearing upon the harbor, from Sumter, Sullivan’s Island, James Island, Castle Pinckney, and the various city batteries, to be one hundred and thirty–six. Besides these there was a double line of obstructions, with torpedoes and torpedo boats innumerable. Altogether, Charleston was, in some respects, the strongest fortified city on the continent.”²⁷⁸

From the Union side, the threat posed by torpedoes was acknowledged by the fleet’s ironclad inspector Chief Engineer Alban Crocker Stimers. After news of one of many Union monitor mechanical failures, Stimers lamented that even if the long overdue newest class of monitors was ready for delivery, the Southern ports were so filled with torpedoes and obstructions that the effectiveness of the monitors in cutting the war short would be lost, if not the vessels themselves. He wrote, “we may yet be thankful that we did not impair the efficiency of these new and powerful vessels by attempting to enter the Southern ports.”²⁷⁹ This view was reiterated in a Northern newspaper in early 1864, “Those [obstructions and torpedoes] in the harbor of Charleston have proved utterly impassable.”²⁸⁰ Yet, statically-placed torpedoes achieved little success sinking enemy vessels in the first half of the war, particularly in Charleston. The torpedoes peppering the harbor, however, did an outstanding job of keeping the blockading vessels at bay through psychological warfare.²⁸¹ Writing for the *London Review*, one journalist acknowledges, “Few things in

²⁷⁷ Tomb 1924, 98.

²⁷⁸ *The New South* (Port Royal, South Carolina) 6 May 1865.

²⁷⁹ Roberts 2002, 157.

²⁸⁰ “Rebels Preparing for Extensive Naval Movements-Thirty Iron Clads Now Ready- Location and Character of the Rebel Fleet- Twenty European Iron-Clads- Possibility of an Attack on Washington” *New York World* (New York) 21 April 1864.

²⁸¹ Greater success from statically positioned torpedoes came later, particularly in the latter part of 1864 and early 1865. For an incomplete, chronological list of 40 vessels destroyed or damaged by torpedoes prior to July 1864, see

the present American conflict have been so much spoken of and have produced such small results as the much dreaded ‘torpedoes’.”²⁸² In Barnes’s 1869 publication, he wrote, “Refugees, deserters, and spies, all united in bearing testimony to the confidence of the rebels in their ability to destroy our ironclad fleet by torpedoes alone, if it should venture within their lines of defence.”²⁸³

Still there was a need for an active offensive measure, one that could break the blockade or damage the mighty *New Ironsides*. A well-informed Charleston civilian stated, “I hear Beauregard says that if he can only get rid of the ‘Ironsides’ he thinks he can manage the monitors.”²⁸⁴ In Beauregard’s words, “I may note that this ironclad steamer threw a great deal more metal, at each broadside, than all the monitors together of the fleet; her fire was delivered with more rapidity and accuracy, and she was the most effective vessel employed in the reduction of Battery Wagner.”²⁸⁵ This statement was made in frustration in late August 1863, after three attempts had been made to rid Charleston Harbor of the foreboding iron monster. A century later, historian Milton Perry echoed Beauregard’s frustration, “The great armored ship *New Ironsides* had become the symbol of Union naval might in the eyes of the Confederates at Charleston, and plans for destroying her were many.”²⁸⁶

Torpedo boats seemed the only way to slay the beast. However, torpedo boat usage up to this point had been a bitter disappointment. Rowed torpedo boats proved underpowered, and their crews frightened by their own mortality. Steam launches could be used successfully, as seen in future exploits of similar Confederate and Union vessels, but they were denied the chance for combat testing. Lee’s ram also had been a disappointment, particularly for Lee. Southerners continued to try

Scharf 1887, 768. In the most detailed listing found, Schiller (2011, Appendix 1, 139-67) describes 43 vessels lost or damaged by torpedoes, five of which are unconfirmed by the author and 13 of which occurred between 1861 and 1863. Schiller’s total matches historian Milton Perry (1965, Appendix, 199-201). Also see Bell (2003, 471 and Roland 1978, 162), who also lists 43 Union vessels lost or damaged to torpedoes. Gabriel Rains (1877, 256) claims 58 vessels sunk or damaged by torpedo. In a note at the end of an article by Dabney Herndon Maury, he noted that Rains offered an incorrect number of torpedo sinkings in Mobile (three) that should be corrected to 12, raising the total to 67. In a later article, Maury (1894, 78) offers a similarly high number stating, “official reports show that sixty-eight Federal vessels were destroyed by torpedoes during the War Between the States.” However, neither Rains nor Maury list the vessels by name.

²⁸² “Submarine Warfare” *London Review* (London) 12 December 1863.

²⁸³ Barnes 1869, 86. At war’s end, the US fleet had grown to more than 650 vessels (see footnote 114-not including those lost to disrepair, etc. through the course of the war) plus at least 68 vessels lost to torpedoes (footnote 282) for an estimated total of 718 vessels. If 68 vessels were lost to torpedoes, that would equate to more than 9% loss, a figure that seems more substantial than is commonly accepted.

²⁸⁴ Harriet Middleton to Susan Middleton, 21 August 1863, Leland 1963c, 168.

²⁸⁵ Beauregard 1878, 151.

²⁸⁶ Perry 1965, 77.

to find an inexpensive and effective counter-measure to battle *New Ironsides* and the fleet of monitors. It was at this point that a newer, simpler, less expensive torpedo boat was brought to the attention of Lee and Beauregard: *David*.

CHAPTER VI
THE CONCEPTION OF *DAVID*

Three aspects of *David's* creation have been addressed by previous researchers whose information and conclusions diverge significantly from the content of the Ebaugh letters. These aspects were the conception, financing of construction, and applying the “David” moniker. Almost all prior attempts to address these issues have neglected to acknowledge the data supplied in the Ebaugh letters. The exception is an article by Herbert Ravenel Sass (1954), who argued the Ebaugh letters were inaccurate, yet Sass had a vested interest in maintaining the legend of family member Dr. Julien Ravenel’s involvement in the conception and creation of the vessel.

David's Conception

It has been said that victory finds a hundred fathers, but defeat is an orphan.²⁸⁷ In that sense, *David* must be considered a victory, for the vessel had many recorded fathers. For example, one historian wrote, “The ‘torpedo steamer’ to which [Francis D.] Lee was referring was the brainchild of Ross Winan[s] of Baltimore, Maryland, who was an advocate of the Southern cause.”²⁸⁸ No evidence has been found to associate Winans with *David* in any way. Not surprisingly, Lee himself was also credited with the creation of *David* by at least one modern historian.²⁸⁹

A more mysterious claim was made in 1941 by Jacob S. Raisin , who wrote in the pages of *American Jewish Archives Journal* that David Lopez Jr., a figure never previously mentioned in discussions of *David*, “is credited with the invention of the forerunner of the modern torpedo boat, the ‘Little David’ which attacked the United States ironsides [sic] during the Civil War.”²⁹⁰ Yet, in a brief biography of Lopez, Barry Stiefel points out that a connection between Lopez and *David* is at best tenuous, as Lopez was employed elsewhere in South Carolina too late into 1863 to have been involved with the design or even the construction of the boat almost two hundred miles (320 km) away in Charleston. Stiefel also asserts that although “numerous” historians have cited Raisin’s

²⁸⁷ Gibson 2001, 521.

²⁸⁸ Schafer 1996, 94-5.

²⁸⁹ Roland 1978, 162.

²⁹⁰ Raisin 1941, 116.

claims (Stiefel lists five, some of whom even suggested the torpedo boat was named for David Lopez), the claim lacks any primary documentation.²⁹¹ More recently, evidence has come to light that suggests Lopez never relocated to Charleston, but remained in the upstate region, making it highly improbable that he was involved with *David* in any capacity.²⁹²

A more commonly recorded anecdote relates that *David* was conceived when Captain Theodore Stoney watched from shore as the Charleston batteries were being assaulted by *New Ironsides* in the summer of 1863.²⁹³ Stoney was reportedly so shocked at the speed and efficiency of fire from *New Ironsides* that he was inspired to plan the construction of *David*. Various versions of this story credit Stoney, Dr. Julien Ravenel, or both with the conception and design of the vessel; some even give credit for the actual construction of the craft to the duo. The correspondence of the Middleton cousins indicates that this attribution was promoted as early as 1864:

What is the true story of the Little Davids. Who invented them. Cousin Lizzie gave us a romantic account of Dr. Ravenel thinking of a barrel, and immediately inventing a torpedo boat- he then unfolded his plans to Beauregard who expressed himself highly delighted ending with 'Go ahead- I give you carte blanche as to expense.' Speaking of it to some gentlemen as Dr. Ravenel's boat, he laughed and said 'Not Dr. Ravenel's.' He then said that Mr. Stoney and two others had designed and I think had begun the boat and only applied to Dr. Ravenel for some scientific facts- as the exact resistance of water to a given surface, etc. They applied for a steam engine for heating shot belonging to Fort Sumter.²⁹⁴

Several late-nineteenth-century histories of *David* credit Ravenel and Stoney with jointly conceiving and building the boat.²⁹⁵ Over time, details from these histories have been transformed. As one modern historian writes, "After observing the devastating fire from *New Ironsides*, Stoney sought out his longtime friend and business partner, Dr. St. Julien Ravenel, who was serving at the

²⁹¹ Stiefel 2012, 79-80 notes 86-9.

²⁹² In a Personal Communication (4 September 2014), College of Charleston instructor Dr. Barry Stiefel, updated information published in his 2012 article.

²⁹³ For example, see Ragan 2002, 53-5. *New Ironsides* was used in two major attacks in 1863. The first on 8 April and the second started on 19 July and lasted until 7 September. *David* was nearing completion by 19 July, so if Stoney suggested building a vessel, it would have been upon witnessing the failed 8 April attack on Fort Wagner.

²⁹⁴ Leland 1964, Harriott Middleton to Susan Middleton 10 March 1864, 42-3.

²⁹⁵ Beauregard 1878, 151; Johnson 1890, appendix clxiv; Lachlison 1908; Tomb 1914, 168.

military hospital in Columbia, South Carolina. Ravenel and Stoney jointly managed the Southern Torpedo Company of Charleston which manufactured explosive devices including some of Captain Lee's torpedoes."²⁹⁶ Several discrepancies should be acknowledged. First, Ravenel was not on the board of the Southern Torpedo Company (STC), nor has any evidence been found to associate him with the company.²⁹⁷ The implication of the statement, "Ravenel and Stoney jointly managed the Southern Torpedo Company of Charleston," without a time qualifier implies that the STC was responsible for the creation of *David*. Yet, the formation of the STC was not proposed until 1 October 1863, and it was not actually founded until November of that year, well after *David's* construction and assignment to the Confederate Navy. It should also be noted that neither of these men were known to have any expertise or experience in ship design or shipbuilding.

In Susan Middleton's response to her cousin Harriot's question, she offers a slightly different version of the Ravenel/Stoney-origin story:

As to the 'true story about the little David'- both Hal [Ravenel's wife] and Dr. Ravenel told me all about it at the time of the attempt against the 'Ironsides'- as well as I remember, it was Theodore Stoney, Dr. Ravenel, and some others, about a year ago, happened one evening to be talking of torpedoes. Dr. R said it had often occurred to him that a boat built on the pattern of Winans Steamer in Baltimore would be peculiarly well-adapted for the purpose of attacking the fleet with torpedoes, and went on to mention all the advantages such a boat would unite. He was thinking it over after he went to bed, and recalling the descriptions of the Winans boat which he had read, I believe, in the 'Scientific American.' The next day Mr. Stoney called, and told him he too had been thinking over what had been said, and wished Dr. Ravenel would undertake to build such a boat as he had described. Dr. R said 'certainly, if you will undertake to get me a month's furlough from the hospital in Columbia.' Soon after he left town, he heard from Mr. Stoney that the furlough was secured, and during the month of May he was at Stoney [sic] Landing, his plantation on Cooper River, where he superintended the building of the 'Little David.' I think, by his own negro carpenters. He was recalled here, however, before it was quite finished, and turned it over to Mr. Stoney, who promised to procure the engine and have all completed. Hal said they had heard nothing of it for months and had nearly forgotten its existence, when Alfred Ravenel in a letter mentioned that the Segar-boat was ready for service and would go out the first favourable night to attack

²⁹⁶ Ragan 2002, 55. A similar version of this anecdote appears in Perry 1965, 81: "The Southern Torpedo Company, a group of Charlestonians headed by Theodore Stoney and Dr. St. Julien Ravenel, had built, with the assistance of Captain Lee, a small propeller ironclad specifically designed to deliver the spar torpedo against Federal warships."

²⁹⁷ The formation and operations of the Southern Torpedo Company is discussed in more detail in Chapter VIII.

the fleet- a few days afterwards came the news of poor Glassell's attempt. I did not know that Gen. Beauregard had had ought to do in the matter, and it is certain that people constantly call it 'Ravenel's boat.' Hal's great fear was that her husband would go out in it, which he told me he was anxious to do. He said, too, that if they had followed his directions the attempt, he believed, would have been perfectly successful- he had urged them to depress the torpedo, so as to have as great a weight of water as possible above it, and also to pin down every piece of old iron used as ballast, that it might not be displaced when the shock of the explosion came- it was neglecting this, you remember, which made the boat become unmanageable- a piece of iron which was loose having got into the machinery.²⁹⁸

The information of the Middleton letters, which appear to be accurate in many details, suggests the original conception of a torpedo vessel was the product of Ravenel and Stoney. That credit is questionable, however, as James Tomb implied *David* was already under construction on 18 March 1863, well before the first Union Navy attempt to take Charleston on 18 April during which Ravenel and Stoney were rumored to have proposed the idea while witnessing the might of *New Ironsides*.²⁹⁹ The precise date at which *David* was conceived remains unknown, but it most likely occurred in early 1863, around the time of the arrival of *New Ironsides* to Charleston, or shortly after. Likewise, the precise date when construction began is also unknown.

The crediting of Ravenel and Stoney with creation of *David* likely originated with Francis Lee. He knew of the vessel at least by late July (likely earlier), seemingly months after the vessel was assembled, and wrote in a report dated 1 October 1863, "Surgeon St Julien Ravenel undertook its construction and was detached for that purpose. Before its completion however Dr. Ravenel was compelled by his more legitimate duties [as surgeon] to transfer the prosecution of the work to Capt'n Theodore Stoney under whose energetic direction the boat was finished."³⁰⁰ Hitherto no evidence has been found to associate Stoney with the vessel before it was turned over to the the navy in September 1863. As we shall see, Lee's statement regarding *David's* construction may be based on assumption rather than direct knowledge of its parentage.

²⁹⁸ Leland 1964, Susan Middleton to Harriott Middleton 19 March 1864, 42-3.

²⁹⁹ James Tomb suggests the vessel was under construction by 18 March 1863 (Tomb 1914, 168).

³⁰⁰ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

Historical accounts have credited Ravenel and Stoney with the conception, design and construction of the vessel. David Ebaugh offers an alternative account, which in light of his undeniable involvement in *David's* production has considerable merit:

Dr. Ravenel told me that a Torpedo [Lee's design] had been made, that if a boat could be built to carry it and explode it under the Iron Sides [sic] we could clear Charleston harbor of Blockcadors [sic]. He asked me if a boat could be built with a long pole in front to carry the Torpedo on and suggested to build a boat to be driven by man power. I told him it would be too slow and that two [sic] many men would be required and the danger to [sic] great. I suggested to build a Segar [sic] shaped boat and put in it a steam Engine to drive it.³⁰¹

A few paragraphs later, in the same communication, Ebaugh openly and clearly states, "I told Dr. R that I would build a boat on my own plans that I thought would accomplish the Object."³⁰²

Further circumstantial support of Ebaugh's claims may come from his confession to Dr. Henry Marcy, his arresting Union officer in March 1865. Marcy was leading the 35th United States Colored Troops during Brigadier General Potter's march through the Charleston area after the Confederates had evacuated the city. An entry in Marcy's hand-written journal, dated 3 March, is of interest, "Found Mr. E. at home, and after a little delay returned with him and his papers."³⁰³ The following day Marcy offered a short description of the materials confiscated from Ebaugh, "Spent the morning in looking over Eboughs [sic] papers he has been sent home, on a sort of parole- Found much of interest. All his papers relating to the blockade runner which he built here now in Charleston and the torpedo boats &c. Correspondence with many eminent men."³⁰⁴

Ebaugh retained the incriminating evidence of his involvement with *David* and a large blockade runner at his home. These documents have not come to light, so all that can be said with certainty about the contents is that there were apparently documents to incriminate not only

³⁰¹ Ebaugh 1953, 33.

³⁰² Ebaugh 1953, 33.

³⁰³ Entries of 3 and 4 March 1865, Marcy 1865.

³⁰⁴ Entries of 3 and 4 March 1865, Marcy 1865.

Ebaugh, but several un-named prominent men of Charleston. Collectively these anecdotes and documents suggest Ebaugh did not solely conceive *David*, yet he is unequivocal in stating that the design and construction of the vessel were his own accomplishments: “I furnished the plans of the boat, built it, and spent my own money.”³⁰⁵ It is clear that even while *David* was plying the waters around Charleston, questions lingered about the boat’s origins.³⁰⁶

Financing the Construction of *David*

Several conflicting stories about financing for the vessel appear in various sources, none of which are definitive about the sources of money for its construction. It seems likely that the confiscated Ebaugh papers that named prominent gentlemen of Charleston addressed this subject.

In Herbert Sass’s 1943 short and dramatized version of the *David* story, he writes, “[Captain Stoney] undertook to pay the cost of any new weapon that Ravenel might design and build to eliminate the *New Ironsides*.”³⁰⁷ Sass claims that Ravenel paid Ebaugh \$29,000 for his work on the boat, a seemingly excessive amount for a “head mechanic” as Sass refers to Ebaugh.³⁰⁸

Unfortunately, attempts to trace the source of Sass’s information have proven fruitless, but using some comparative material from the time of the vessel’s construction may be insightful. Francis Lee estimated total costs to replicate *David* would be less than \$20,000.³⁰⁹ Lee was no doubt including all the costs, labor and timber, as well as costs of the machinery. This figure can be compared to financing figures supplied by Ebaugh, who wrote that at least five prominent men offered to contribute \$1000 each for the construction of the vessel, money that may or may not have actually

³⁰⁵ Ebaugh 1953, 36.

³⁰⁶ Although the Middleton letters are contemporary with *David*, they should be considered as third-party hearsay sources for this discussion. Sass (1943) gave weight to the Middleton’s origin story.

³⁰⁷ Sass 1943, 621.

³⁰⁸ Sass 1943, 621-2. The source of Sass’s payment figure has not been located. Similarly, Schafer (1996, 95) wrote, “Winans had secured a handful of wealthy investors residing in the Charleston area, including Theodore Stoney (who had contributed \$25,000) and Theodore Wagner.” As already noted, Ross Winans was in no way involved in the creation of *David*. Augustine Thomas Smythe wrote, “Mr. Theodore Stoney, of Charleston, having conferred with Dr. Ravenel and Capt. Lee as to the practicality of the boat, gave his check for \$20,000 and within a few days, she was under process of construction at Stoney [sic] Landing, on the Cooper River” (Smythe 1907, 56).

³⁰⁹ Letter from F. D. Lee to A. N. T. Beauregard, 1 October 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

been collected:³¹⁰ “I furnished the plans of the boat, built it, and spent my own money to the amount of \$1500.00 not counting the lumber or my own time. Mr. Theodore Stoney I think payed some bills in Charleston. When the Confederate Navy took Charge of the boat they asked me how much the boat cost me. I told them I had spent \$1500-- they gave me the amount back.”³¹¹

Stoney was likely the liaison between Ebaugh and the military as he was certainly involved from the military side early on, at least by 18 September 1863, when he was assigned to the crew under the command of William Glassell. The uncertainty that Ebaugh expresses about Stoney’s contribution to paying bills likely refers to a time after the vessel had been turned over to the Confederate Navy, and suggesting that Stoney had limited involvement with *David* up to the point of launching.

Ebaugh obtained a used engine from the North-Eastern Railroad shop; he may have even sold the engine to the shop when it was new. The used boiler was taken from Fort Sumter, suggesting a military contribution that minimized the costs of these items.³¹² The lumber certainly came from Ebaugh’s property, as he suggested in his letters. He was already engaged in lumber sales, both privately and to Confederate military forces. Ebaugh did not include fees for his labor. Additional labor may have been provided by Stony plantation slaves, as has been suggested by the Middleton correspondence and some historians.³¹³ The use of the unpaid slave labor to construct *David* remains speculative, however, as receipts issued to the Engineer Department show Ebaugh paid to hire slaves for work at the nitre sheds, thus demonstrating the need for additional labor at the plantation (Figure 22). Labor assistance was, at least in part, provided by the military as demonstrated by the employment of Ebaugh’s closet neighbor, A. David Hare, an army volunteer in the same volunteer group in which Ebaugh served, from January 1862 until his enlistment in 1864:

³¹⁰ Ebaugh 1953, 33.

³¹¹ Ebaugh 1953, 36.

³¹² Ebaugh 1953, 33.

³¹³ For example, see Ragan 2002, 56; Schafer 1996, 95.

January 29th [186]4

Col. D. B. Harris

Chief Engineer Department

Col.

I have the honor to apply for the extension of the detail of Pvt. A. D. Hare. Hare Co. A 3rd S.C. S[tate]. T[roops]. Till 31st March 1864. He is engaged at Mr. D.C. Ebaugh's Saw Mill for this Dept.

Very respectfully Yr Obt Svt

W. H. Echols

Major Chf E of S.C.³¹⁴

Sheet 350

We, the subscribers, hereby acknowledge to have received of *Frank J. Holmes Sup^t Dist*, the sums set opposite our names, respectively, being full for the services of our Slaves at *Copper River Nitre Works* during the month of *May* 1864, having signed duplicate receipts.

FROM WHOM HIRED	NAME	OCCUPATION	TIME EMPLOYED	RATE OF PAY		AMOUNT FOR EACH SLAVE	DEDUCTIONS			NET AMOUNT FOR EACH SLAVE	AMOUNT RECEIVED	SIGNATURES	WITNESSES NAME
				Per month	Per day		On what account	Deduct	Credit				
1	<i>J. C. Ebaugh</i>	<i>Alfred Carpenter</i>	<i>day</i>	<i>3</i>	<i>40c</i>	<i>12 00</i>				<i>12 00</i>			
2	"	<i>George</i>	"	<i>3</i>		<i>12 00</i>				<i>12 00</i>	<i>24 00</i>	<i>D. C. Ebaugh</i>	
				<i>6</i>		<i>24 00</i>				<i>24 00</i>	<i>24 00</i>		
3	"	<i>Essex</i>	<i>Laborer</i>	<i>1 month</i>		<i>40 00</i>				<i>40 00</i>			
4	"	<i>Sam</i>	"	"		<i>40 00</i>				<i>40 00</i>			
5	"	<i>Israel</i>	"	"		<i>40 00</i>				<i>40 00</i>			
6	"	<i>Samuel</i>	"	"		<i>40 00</i>				<i>40 00</i>	<i>160 00</i>	<i>D. C. Ebaugh</i>	
						<i>160 00</i>				<i>160 00</i>			
<p><i>Summary</i></p> <p><i>Alfred</i> <i>24 00</i></p> <p><i>George</i> <i>24 00</i></p> <p><i>Essex</i> <i>40 00</i></p> <p><i>Sam</i> <i>40 00</i></p> <p><i>Israel</i> <i>40 00</i></p> <p><i>Samuel</i> <i>40 00</i></p> <p><i>Total</i> <i>184 00</i></p>						<p><i>N.B. The Carpenter & Laborer on this Roll were paid by their owners.</i></p> <p><i>Frank J. Holmes</i> <i>Sup^t Dist</i></p>							

Figure 22. One example of an invoice showing the use of paid slave labor at the Copper River Nitre Works. National Archives, RG 109, "Citizens Files" M346.

³¹⁴ National Archives, Record Group 109, Confederate Engineer Department Letters and Telegrams Sent, Chapter 3, Vol. 19, 265.

According to 1860 census records, Hare was a miller by trade, and given his residential proximity and shared trade skills, he likely worked with Ebaugh at his sawmill as a private citizen before joining Ebaugh as a military volunteer prior to their formal enlistments with the Confederate Army in early 1864.³¹⁵

Costs for all major components of *David* were minimal as the vessel was of a simple design. The engine was procured used and possibly for free. The boiler was obtained with military help, at little or no costs. Lumber was supplied by Ebaugh, and labor may have also been supplied without charge. The only other major components needed were a propeller, shaft, fasteners, and plumbing. What then, would the costs of constructing the boat amount to? Would \$1500 be enough or would it take upwards of \$6500, as suggested by at least five persons offering \$1000 each, plus Ebaugh's \$1500?

For comparison, cost for producing the iron-hulled, privately built submarine *H. L. Hunley* has been estimated at \$15,000.³¹⁶ The unique design and all-metal construction of *H. L. Hunley* were undoubtedly substantially more expensive than the cost of the wooden-hulled *David*, as little of the semi-submersible required fabrication by outside specialists or complex casting or machinery, with exception of the screw, drive shaft, and the spar mount hardware. Also recall that Lee had suggested the boat could be replicated by the navy for less than \$20,000, presumably without slave labor or furnished lumber. In this context, it seems that \$6500 would have been more than enough money to construct *David*, and the \$1500 dollars Ebaugh actually spent may have been the only cash applied for building the vessel.

³¹⁵ 1860 Census Report shows A. Davis Hare to be Ebaugh's closest neighbor and his occupation as miller. National Archives, Record Group 29, US Federal Census, 1860 Population, M653, Roll 1215. Given the proximity of the two men and the trade they shared, it is likely that Hare was employed by Ebaugh prior to his enlistment into Company A of the 3rd South Carolina State Troops in early 1864 (National Archives, Record Group 109, War Department Collection of Confederate Records, Engineer Department Letter and Telegrams Sent Ch. 3 Vol. 19, 254). Private A. D. Hare of Company A, 3rd South Carolina. S.T. was detailed to D. C. Ebaugh's saw mill on 29 January 1864 (National Archives, War Department Collection of Confederate Records, Record Group 109, Engineer Department Ch. 3 Vol. 19, 37), and again on 20 October 1864 (National Archives, Record Group 109, War Department Collection of Confederate Records, Confederate Engineer Department Letters and Telegrams Sent, Ch. 3 Vol. 19, 254) presumably during the construction of later vessels built at Stoney Plantation. Other details may have been assigned to Hare, but portions of the relevant volume are illegible.

³¹⁶ Duncan 1965, 63-4; Ragan 2002, 111.

Naming the Vessel: The “David” Moniker

David was the only boat of the type to have a Confederate-conferred moniker.³¹⁷ Its earliest documented use comes in an order from Confederate Flag-Officer John Tucker issued in September 1863, two weeks before the attack on *New Ironsides*, assigning Glassell command of the vessel.³¹⁸ After the attack on *New Ironsides*, “David” became a moniker applied to many ACW torpedo boats.

Past chroniclers have credited naming of *David* to Dr. Ravenel, or rather to a suggestion from Ravenel’s wife, as an analogy to the biblical story of David slaying the mighty Goliath.³¹⁹ Alternatively, Engineer Tomb credited Captain Stoney with naming the vessel, but with the same scriptural connotation.³²⁰ The idea of the name referencing the biblical David parable can also be found in various federal sources, including military correspondences during the war.³²¹ The earliest dated usage of the biblical reference comes from Union Rear Admiral John Dahlgren in a report to Gideon Welles just days after the attack on *New Ironsides*, “These papers (four in number) I transmit herewith, from which it seems the vessel was called the David: probably to point to the presumed success against the Ironsides, which was to enact the Goliath.”³²²

The scriptural allusion is also implied in the contemporaneous use of “Little David” that has stuck with the tale of the vessel through the years, although the original source cannot be traced with certainty. One historian erroneously proclaims the sobriquet to be a modern invention, stating, “She was known as the *David* and only in recent years has she been spoken of as the ‘Little David’.”³²³

³¹⁷ Ragan (2002, 150) notes, “The Federals referred to this style of torpedo boat as a ‘David,’ and although several were built, none were christened with formal names.” Two other David-class vessels were named (*Midge* and *Knat*, discussed in Chapter VIII), but all evidence suggests these names were applied by Union officers after their removal from Charleston.

³¹⁸ Flag-Officer Tucker to Lieutenant Glassell, 22 September 1863, *Report of the Secretary of the Navy 1863*, 1863, 280.

³¹⁹ For example, see Campbell 2000, 58; Schafer 1996, 97.

³²⁰ Tomb 1914, 168.

³²¹ Beauregard 1878, 151; Bradford 1882, 10; ONR Vol. 15 1902, 10. The biblical reference may actually have roots extending back to an earlier, completely different vessel. A proposed submersible vessel, detailed in a German publication from 1861, was described as follows: “At this moment the marine giant, seeing itself helpless and abandoned without assistance, will surrender to the pitiful submarine with its double mode of propulsion, and then will say that the Goliath has been vanquished by David.” (Sweeney 1970, 75).

³²² Letter dated 7 October 1863 (Welles 1863, 279). On the same day, Dahlgren penned a letter to Assistant Secretary A. Fox, stating “I send you a lengthy official report of the new torpedo vessel “David” (National Archives Record Group 109, Vessel Files, M1091, roll 7.

³²³ Solomon 1976, 45.

The alias, however, had been in use since at least March 1864, as it can be found within the Middleton correspondence.³²⁴

The association of the biblical reference to small watercraft carrying potent weaponry is so important to historians that it has been applied not only to David Ebaugh's semi-submersible, but to a host of similar craft. Alex Roland dedicated an entire chapter to post-ACW underwater warfare, entitled "David Triumphant", in which he writes abstractly about centuries of a weaker opponent boldly dependent upon a mightier foe, "Goliath stirred in them dreams of power, sent them searching for engines of fulfillment. When they took to the field, they sought out the largest foe: Bushnell against *Eagle*, Mix against *Plantagent*, and finally *David* against *New Ironsides*."³²⁵ Roland states that "underwater warfare was the Davidic response to the hierarchy of power. The underwater explosion next to the soft underbelly of the ship was the sling and the stone with which maritime Davids attacked ships of the line."³²⁶ As applicable as this biblical reference may be to describe Ebaugh's torpedo boat, the moniker was, according to Ebaugh himself (and in direct opposition to other sources) eponymous. Ebaugh mentioned, almost as an afterthought at the end of his first letter to William Campbell, "P. S. The David was named for me."³²⁷ Regardless of the origin of the name, *David* did go on to battle a larger and mightier foe, demonstrating that both the eponymous application of Ebaugh's name as well as the biblical association were equally appropriate.

³²⁴ Leland 1964, 42.

³²⁵ Roland 1978, 177.

³²⁶ Roland 1978, 16.

³²⁷ Ebaugh 1953, 35.

CHAPTER VII
DAVID'S NAVAL SERVICE

Expectations of *David's* success were high even before the completion of the vessel, as expressed in a communique of Francis Lee, "I would further state that the small torpedo steamer (Winans' model), now building in Cooper River, is nearly completed [as of 25 July], and we have good reason to expect will aid materially in the defense of this city."³²⁸ Lee, suffering the construction stalemate of his ram, enumerated some of the advantages of *David*:

1st Propelled by Steam power it requires fewer men to work it

2nd The determination of one man controls the working of the vessel, which on the now [sic] boats the faint-heartedness of one is disastrous to the expedition

3rd The great speed it possesses enables it to perform its work with dispatch and to outstride the enemy in case of an attack by barges

4th Its movement is nearly noiseless

5th It presents but little to view above the waterline ³²⁹

These factors gave rebellion-supporting residents of Charleston hope, particularly during the second round of attacks on the harbor defenses in the summer of 1863 while *David* was still being constructed at Stony Plantation (about 30 miles or 48 km north of Charleston by rail).³³⁰

³²⁸ F. D. Lee to A. N. T. Beauregard, 25 July 1863, ORA Vol. 28 pt. 2 (1890), 230.

³²⁹ Letter to A. N. T. Beauregard 1 October 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

³³⁰ An 1862 rail schedule for the North-Eastern Railroad lists the mileage from the N.E.R.R. wharf to Monck's Corner as 29 miles (*Running of Trains on the North Eastern Railroad, Special Schedules 1862*, Charleston, South Carolina). Measuring with Google maps yields a direct measurement of 28 miles, but a meandering river route would be a few miles longer. Lieutenant Glassell, *David's* first commander, noted that he was told by Theodore Stoney that the boat has been brought down to the wharf by rail (Glassell 1877, 229). However, as noted by David Ebaugh, "It was sent to Charleston to have the machinery put in. It was there hoisted out of the water by a crane on the N.E.R.R. wharf, put on a car and carried to the R. Road shop." The shop was a few hundred yards from the wharf. Ebaugh thus implies the vessel was sent to Charleston via the Cooper River (Ebaugh 1953, 33).

Around the time the Union's July-September offensive ended, *David* was floated downriver to Charleston and made ready for action.

Glassell was sent back to Charleston in August 1863 after serving a short tenure on CSS *North Carolina* near Fort Fisher at Wilmington, North Carolina. The Lieutenant, a friend of Theodore Stoney, was informed of *David* and Stoney arranged for Glassell to command the vessel. In September 1863, *David* was transferred to Glassell for at least one trial:³³¹ "On examination I determined to make a trial. She was yet in an unfinished state. Assistant-Engineer J. H. Toombs [sic] volunteered his services, and all the necessary machinery was soon fitted and got in working order, while Major Frank [Francis] Lee gave me his zealous aid in fitting on a torpedo."³³²

Records of testing are limited perhaps due to wartime security measures. The few available sources only comment on the great estimated speed of the boat, estimations that vary significantly. Lee sent an enthusiastic report to Beauregard:

I venture once more to address through you a communication to the Commanding General on the subject of torpedoes. I am induced to do so by the very perfect success of an experiment recently made in this harbor by which it was shown that a small propeller adapted for carrying the 'Spar torpedo' and of peculiar model could be made to obtain enormous speed. The Commanding General may remember my exhibiting a drawing of a Cigar shaped boat some months since with which I proposed using the torpedo.³³³

The speed that this boat has obtained far exceeds the expectations of every one. Some of her crew report to me a speed of twenty miles per hour with the tide. From what I have myself observed I believe her speed exceeds that of any boat of her size afloat and is not less than fourteen miles per hour.³³⁴

³³¹ Confirmed in Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P. G. T. Beauregard's Papers 1864-1865.

³³² Glassell 1877, 229-30.

³³³ A similar statement about sketches of the Cigar-shaped vessel appears in a letter to Captain John Ferguson, who may have later built one or more similar vessels, 24 October 1863, ORA Vol. 28 pt. 2 (1889), 442-3.

³³⁴ Letter to A. N. T. Beauregard 1 October 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

Lee reports “some of her crew” estimated *David’s* speed at 20 miles per hour (mph), which equates to a speedy 17 knots or 32 kilometers per hour (kph), while Lee’s personal observation was an estimated 14 mph (12 knots or 22 kph).³³⁵ David Ebaugh offered a lower approximation of the vessel’s speed, “A few days later the boat was run over to Fort Johnson and back, making a speed of ten knots.”³³⁶ Glassell reported an even lower estimate of “six or seven knots.”³³⁷ Likewise, Gabriel Rains estimated the speed of *David* at six to eight knots.³³⁸ No comments were recorded about *David’s* seaworthiness, leakage, or maneuverability.

In a letter to South Carolina Governor Milledge Bonham, militia Brigadier General Wilmot DeSaussure wrote that *David* was ready for service as early as Friday 18 September, but the mission was aborted.³³⁹ He stated, “A new torpedo boat has been completed, it lies very low in the water being segar [sic] shaped and showing at its centre about three feet of height: there is hope that it will accomplish something. It was to have gone out on Friday night, but there was too much light. The mobile boat [*H. L. Hunley*] has also been raised and is again in the hands of the naval officers.”³⁴⁰

³³⁵ Smythe 1907, 56. Smythe had clearly read many of the official records and may have taken the figure from the freshly published ORN volumes.

³³⁶ Ebaugh 1953, 34.

³³⁷ Glassell 1877, 230.

³³⁸ “The Little boat, which could make some 6 or 8 knots per hour...”, Schiller 2011, 85.

³³⁹ *David* may have been ready for service as early as 30 August. In a letter, dated 30 August 1863, Augustine T. Smythe notes, “The torpedo boat is ready to do her part” (Emerson and Stokes 2017, 54-5). According to moon phase charts, the new moon had occurred on 15 September, so there must have been other factors to discourage deployment. *David* was used in a sortie on 5 October 1863, when the moon was a day away from the last quarter, but at the time of the attack, the moon had not yet risen, as recorded by Smythe in a letter to his sister, “This is a lovely night. Just cool enough to be pleasant, clear & bright but no moon-light. The moon rises now about 11 P.M.” (Emerson and Stokes 2017, 63).

³⁴⁰ Letter from Brigadier-General Wilmot Gibbs DeSaussure to South Carolina Governor Milledge Luke Bonham, 20 September 1863, document number GLC06373, Gilder Lehrman Institute of American History, New York. Supporting the anecdote of DeSaussure is a passage in a letter dated 5 October 1863 from Susan Middleton to her cousin, Harriott Middleton, “The three torpedo-boats [Lee’s ram, *H.L. Hunley*, and *David*] are again ready for action, and to go out the first dark night- there has been too much moonlight lately for them to venture” (Leland 1963d, 212). In a letter dated 7 December 1862, Susan Middleton refers to the DeSaussure’s being fearful of shells coming into the city, too close to their home, showing contact between the families. It is probable that the information shared by DeSaussure and in the Middleton letters came from the same source (Leland 1962, 33). Susan was aware of Francis Lee’s *Torch* as seen in a letter from 22 November 1862 (Leland 1963d, 218-9), and of the submarine, *H. L. Hunley*. In a separate letter, dated 10 October 1863, Susan writes, “The diving-boat [*H. L. Hunley*], too, is again ready, and hopes to accomplish something soon” (Leland 1963d, 213-4). Susan writes of the second sinking of *H. L. Hunley*, on 15 October 1863, in a letter written just four days after the tragedy. Taken together, the three torpedo boats Susan referred to in the letter of 5 October are certainly: *David*, the submarine *H. L. Hunley*, and Francis Lee’s torpedo ram *Torch*.

In Special Orders No. 186, issued on the same day that *David* was reported to have been first ready to operate, Assistant Adjutant-General John Otey assigned Glassell to special service and assigned to him assistants who included prominent figures Theodore Stoney and James Tomb:

No. 186
VII. Lieutenant Glassell, C.S. Navy, having volunteered for the duty, will report to Brigadier General Ripley for special service against the fleet of the United States off this harbor. He will be assisted by Captain Theodore Stoney as first officer, James H. Tomb, engineer, and Charles Scemps and James Ables as assistants.
By command of General Beauregard

Charleston, S.C. September 18, 1863

Jno. M. Otey
Assistant Adjunct-General³⁴¹

However, it was four days later when Flag-Officer Tucker informed Glassell of his “special Service” as commander of *David*. Since the crew was not formally notified until that time, rumors of plans to use the boat earlier appear premature:

Lieutenant W. T. Glassell,
Charleston, S.C.

Flagship Charleston
Charleston, September 22, 1863

Sir: You will assume command of the torpedo steamer “David,” and when ready, will proceed to operate against the enemy’s fleet off Charleston Harbor, with a view of destroying as many of the enemy’s vessels as possible, reporting the results to me.

Very respectfully, your obedient servant

John R. Tucker³⁴²

One week later, Lee, having witnessed the trial of *David*, described Glassell’s plan of action, “Lt. Glassell in command of the finished boat will attack the Enemy as soon as the nights become

³⁴¹ John M. Otey, Assistant Adjutant-General, to Lieutenant Glassell, 18 September 1863, ORN Vol. 15 (1902), 11-2.

³⁴² Flag-Officer Tucker to Lieutenant Glassell, 22 September 1863, ORN Vol. 15 (1902), 12.

dark. He goes out with a single vessel in the midst of the Enemys [sic] enormous fleet. Against such unfair odds, a failure on his part should I conceive prove disastrous to the enterprise just proposed.”³⁴³

In the period between the initial assignment of the crew and the first mission, the crew, for unknown reasons, was altered. Charles Scemps and James Ables were replaced by James Stuart (alias Sullivan, according to Glassell) as fireman and J. Walker Cannon as pilot.³⁴⁴ Stoney, although assigned the duty of first officer, mysteriously did not execute that responsibility. By this time Stoney was already busy with the formation of the Southern Torpedo Company (STC) to produce similar vessels, which may account for his absence.

Fearing another attempt to capture the city by sea, the Confederates were now eager to deploy *David*. Augustine Smythe, a Confederate Signaler aboard CSS *Palmetto State*, wrote in a letter dated 4 October, “There is an expedition on post to-night wh[ich] promises very fairly a success but I can only tell you that it is a little torpedo boat, a steam one this time, which is going to try one of the Monitors. They went down last night but the Yankees had all their launches strung across the channel and they could not slip by so to-night they are going to run over the bar & come in the rear of them.”³⁴⁵

No other sources document *David*'s deployment on 3 October, but as Smythe wrote again on the night of 5 October, “The torpedo boat did not go down last night but has gone to-night.”³⁴⁶

This would be *David*'s *magnum opus*.

Mission I- *New Ironsides* (Charleston Harbor)

A log of activity in Charleston Harbor shows a buildup of Union ships in the days leading up to *David*'s deployment. On the morning of 5 October there were at least 35 vessels inside the bar, a shallower portion of the harbor. These included *New Ironsides*, four monitors, two mortar boats,

³⁴³ Letter from F. D. Lee to A. N. T. Beauregard, 1 October 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

³⁴⁴ Glassell 1877, 230.

³⁴⁵ Letter from Augustine T. Smythe to his sister, 4 October 1863, Emerson and Stokes 2017, 63.

³⁴⁶ Letter from Augustine T. Smythe to his sister, 5 October 1863, Emerson and Stokes 2017, 68.

seven wooden gunboats, 20 supply vessels, and “a small craft having the appearance of a submarine boat,” which was first spotted in the harbor on 4 October 1863. In addition, there were 11 more Union vessels just off the bar and 19 more in Light House Inlet at Morris Island.³⁴⁷

In the attempts to capture Charleston earlier in 1863, the Union monitors had proven to be less of a threat than expected, but the heavily armed and armored *New Ironsides* was considered the real menace. It was this mighty ship that the inexpensive and hurriedly built *David* had been designed to target. *David's* most significant mission was carried out the night of 5 October 1863, under a third-quarter moon, just 17 days after being assigned a crew. This was the fourth attempt to destroy *New Ironsides* by means of a torpedo.³⁴⁸ Under a hazy and poorly lit sky, *David* made its historic sortie, weaving through a myriad of enemy vessels to attack the most formidable ship in the entire Union fleet.³⁴⁹

David charged at *New Ironsides* and delivered a crippling blow to the ship's hull, proving both her worth and Francis Lee's expectations. With the explosion however, a geyser of seawater rained down into *David's* smokestack and hatch (cockpit) threatening to swamp the mostly submerged boat. Panic ensued. Believing *David* to be sinking, the crew of four abandoned ship. Glassell, the commander, and James Sullivan, the fireman, were fished from the water and captured by Union forces. *David* was believed lost along with her remaining crew. Nevertheless, *David* had met Goliath, and seemingly won.

The attack is well chronicled by both Confederate and Unions sides.³⁵⁰ As commander of *David*, Glassell's account, written in 1877, seems the most relevant summary of the mission:

The 5th of October, 1863, a little after dark, we left Charleston wharf, and proceeded with the ebb tide down the harbor. A light north wind was blowing, and the night was slightly hazy, but star-light, and, the water was smooth. I desired to

³⁴⁷ The submersible craft was later identified as an anti-torpedo craft, likely similar to the Union submersible *Alligator*. National Archives, Record Group 109, War Department Collection of Confederate Records, Military Department Log of Activity on Charleston Harbor, Ch. 2 Vol. 192, 103-5.

³⁴⁸ The first was during the first naval attack on Charleston on 8 April when *New Ironsides* sat over a large stationary electric mine that failed to detonate. The second was the planned attack by a small fleet of launches on the morning of 12 April, when all the Union vessels vanished from the harbor. The third attempt was made by Francis Lee's torpedo ram on 20 August.

³⁴⁹ *Wilmington Journal* (Wilmington, N.C.) 8 October 1863 (reprinted from the *Charleston Courier* 7 October 1863) reported, “The weather being dark and hazy, favored the enterprize.”

³⁵⁰ Various reports, ORN Vol. 15 (1902), 10-21.

make the attack about the turn of the tide; and this ought to have been just after nine o'clock, but the north wind made it run out a little longer.

We passed Fort Sumter and beyond the line of picket boats without being discovered. Silently steaming along just inside the bar, I had a good opportunity to reconnoiter the whole fleet of the enemy at anchor between me and the camp fires on Morris' Island.

Perhaps I was mistaken; but it did occur to me that if we had then, instead of only one, just ten or twelve torpedoes [torpedo boats], to make a simultaneous attack on all the ironclads, and this quickly followed by the egress of our rams, not only might this grand fleet have been destroyed, but the 20,000 troops on Morris' Island been left at our mercy. Quietly maneuvering and observing the enemy, I was half an hour more waiting on time and tide. The music of drum and fife had just ceased, and the nine o'clock gun had been fired from the admiral's, ship, as a signal for all unnecessary lights to be extinguished and for the men not on watch to retire for sleep. I thought the proper time for attack had arrived.

The admiral's ship, *New Ironsides* (the most powerful vessel in the world), lay in the midst of the fleet, her starboard side presented to my view. I determined to pay her the highest compliment. I had been informed, through prisoners lately captured from the fleet, that they were expecting an attack from torpedo boats, and were prepared for it. I could, therefore, hardly expect to accomplish my object without encountering some danger from riflemen, and perhaps a discharge of grape or canister from the howitzers. My guns were loaded with buckshot. I knew that if the officer of the deck could be disabled to begin with, it would cause them some confusion and increase our chance for escape, so I determined that, if the occasion offered, I would commence by firing the first shot. Accordingly, having on a full head of steam, I took charge of the helm, it being so arranged that I could sit on deck and work the wheel with my feet. Then, directing the engineer and fireman to keep below and give me all the speed possible, I gave a double-barrel gun to the pilot, with instructions not to fire until I should do so, and steered directly for the monitor. I intended to strike her just under the gangway, but the tide, still running out, carried us to a point nearer the quarter. Thus we rapidly approached the enemy. When within about 300 yards of her a sentinel hailed us: "Boat ahoy! boat ahoy!" repeating the hail several times very rapidly. We were coming towards them with all speed, and I made no answer, but cocked both barrels of my gun. The officer of the deck next made his appearance, and loudly demanded "What boat is that?" Being now within forty yards of the ship, and plenty of headway to carry us on, I thought it about time the fight should commence, and fired my gun. The officer of the deck fell back mortally wounded (poor fellow), and I ordered the engine stopped. The next moment the torpedo struck the vessel and exploded. What amount of direct damage the enemy received I will not attempt to say. My little boat plunged violently, and a large body of water which had been thrown up descended upon her deck, and down the smokestack and hatchway.

I immediately gave orders to reverse the engine and back off. Mr. Toombs [sic] informed me then that the fires were put out, and something had become jammed in the machinery so that it would not move. What could be done in this situation? In the meantime, the enemy recovering from the shock, beat to quarters,

and general alarm spread through the fleet. I told my men I thought our only chance to escape was by swimming, and I think I told Mr. Toombs [sic] to cut the water pipes and let the boat sink.

Then, taking one of the cork floats, I got into the water and swam off as fast as I could.

The enemy, in no amiable mood, poured down upon the bubbling water a hailstorm of rifle and pistol shots from the deck of the *Ironsides*, and from the nearest monitor. Sometimes they struck very close to my head, but swimming for life, I soon disappeared from their sight, and found myself all alone in the water. I hoped that, with the assistance of flood tide, I might be able to reach Fort Sumter, but a north wind was against me, and after I had been in the water more than an hour, I became numb with cold, and was nearly exhausted. Just then the boat of a transport [coal]³⁵¹ schooner picked me up, and found, to their surprise, that they had captured a rebel. The captain of this schooner made me as comfortable as possible that night with whiskey and blankets, for which I sincerely thanked him. I was handed over the next morning to the mercy of Admiral Dahlgren. He ordered me to be transferred to the guard ship *Ottowa* lying outside the rest of the fleet. Upon reaching the quarter-deck of this vessel, I was met and recognized by her commander, William D. Whiting. He was an honorable gentleman and high-toned officer. I was informed that his orders were to have me put in irons, and if obstreperous, in double irons. I smiled, and told him his duty was to obey orders, and mine to adapt myself to circumstances I could see no occasion to be obstreperous. I think Captain Whiting felt mortified at being obliged thus to treat an old brother' officer, whom he knew could only have been actuated by a sense of patriotic duty in making the attack which caused him to fall into his power as, a prisoner of war. At any rate, he proceeded immediately to see the admiral, and upon his return I was released, on giving my parole not to attempt an escape from the vessel. His kindness, and the gentlemanly With permission of with which I was treated by other officers of the old navy, I shall ever remember most gratefully. I learned that my fireman had been found hanging on to the rudder chains of the *Ironsides* and taken on board. I had every reason to believe that the other two, Mr. Toombs [sic] and Mr. Cannon, had been shot or drowned, until I heard of their safe arrival in Charleston. I was retained as a prisoner in Fort La Fayette and Fort Warren for more than a year, and learned while there that I had been promoted for what was called "gallant and meritorious service." What all the consequences of this torpedo attack upon the enemy were is not for me to say. It certainly awakened them to a sense of the dangers to which they had been exposed, and caused them to apprehend far greater difficulties and dangers than really existed should they attempt to enter the harbor with their fleet. It may have prevented Admiral Dahlgren from carrying out the intention he is said to have had of going in with twelve ironclads on the arrival of his double-turreted monitor to destroy the city by a cross-fire from the two rivers. It certainly caused them to take many precautionary measures for protecting their vessels which had never before been thought of. Possibly it shook the nerve of a brave admiral and deprived him of the glory of laying low the city of

³⁵¹ Symonds 1987, 142.

Charleston. It was said by officers of the navy that the ironclad vessels of that fleet were immediately enveloped like women in hoop-skirt petticoats of netting, to lay in idle admiration of themselves for many months. The *Ironsides* went into dry dock for repairs.³⁵²

Another account, published in the *Charleston Courier* on 7 October, presents new details that illuminate our understanding the vessel, the actions of the crew, and the sortie:

From the Charleston Courier, 7th inst.

A Gallant Naval Exploit

One of the most daring and gallant naval exploits of the war, distinguished by the greatest coolness, presence of mind and intrepidity [sic] of the men associated in the enterprise, was performed Monday night. This was no less than an attempt to blow up the United States steamer *New Ironsides*, lying off of Morris Island. Though not fully meeting the expectations of those who conceived the plan and those who carried it into execution, it has called forth the unbounded admiration of our citizens for the brilliant heroism of the actors, in their dangerous but patriotic and self-sacrificing undertaking. A general feeling of deep anxiety prevails to learn the fate of two of the gallant spirits who went out with the expedition. There is every reason to believe, however, that these gallant men, with the means of safety about their persons, endeavored to reach shore, and have been picked up by some of the enemy's launches. We gather the following particulars from the other participants in the affair:

The torpedo steamer *David*, with a crew of four volunteers, consisting of Lieut. Wm. T. Glassell, J. H. Toombs [sic], Chief Engineer, and James Sullivan, Fireman of the gunboat *Chicora*, with J. W. Cannon, Assistant Pilot of the gunboat *Palmetto State*, left South Atlantic wharf between six and seven o'clock on Monday evening, for the purpose of running out to the *Ironsides*, exploding a torpedo under that vessel near amidships and if possible blowing her up.

The weather being dark and hazy, favored the enterprise. The boat, with its gallant little crew, proceeded down the harbor, skirting along the shoals on the inside of the channel until nearly abreast of their formidable antagonist, the *New Ironsides*.

They remained in this position for a short time, circling around on the large shoal near the anchorage of the object of their visit. Lieut. Glassell, with a double-barreled gun sat in front of Pilot Cannon, who had charge of the helm Chief Engineer Toombs [sic] was at the engine, with the brave and undaunted Sullivan, the volunteer fireman, when something like the following conversation ensued:

³⁵² Glassell 1877, 230-4; reprinted in Glassell 1937, 16-22.

Lieut. Glassell.—“It is now 9 o’clock. Shall we strike her?”

Pilot Cannon.—“That is what we came for. I am ready.”

Engineer Toombs[sic].—“Let’s go at her, then, and do our best.”

Sullivan (Fireman).—“I am with you all and waiting.—Go ahead.”

The boat was now put bow on and aimed directly for the Ironsides. As the little steamer darted forward the lookout on the Ironsides hailed them with “Take care there, you will run into us. What steamer is that?” Lieut. Glassell replied by discharging one barrel at the Yankee sentinel, and tendering the gun to Pilot Cannon, told him there was another Yankee, pointing to one with his body half over the bulwarks, and asked Cannon to take care of him with the other barrel.

The next moment they had struck the Ironsides, and exploded the torpedo about fifteen feet from the keel, on the starboard side. An immense volume of water was thrown up, covering our little boat, and going through the smoke stack, entered the furnace, and completely extinguished the fire.

In addition to this, pieces of the ballast had fallen in the works of the engine, rendering it unmanageable at that time. Volley after volley of musketry from the crew of the Ironsides and from the launches began to pour in upon them. Lieutenant Glassell gave the order to back, but it was found impossible. In this condition, with no shelter and no hope of escape, they thought it best to surrender and hailed the enemy to that effect. The Yankees, however, paid no attention to the call but barbarously continued the fire. It was then proposed to put on their life preservers, jump overboard, and endeavor to swim to the shore. All but Pilot Cannon consented. The latter, being unable to swim, said he would stay and take his chances in the boat. Lieutenant Glassell, Engineer Toombs [sic], and Sullivan, the fireman, left the boat. The first two having on life preservers and the latter supporting himself on one of the hatches thrown to him by the Pilot. Engineer Toombs becoming embarrassed without his clothing in the water got back to the boat and was assisted by Cannon.

The boat was then rapidly drifting from the Ironsides.—He now fortunately found a match, and lighting a torch crept back to the engine, discovered and removed the cause of its not working, and soon got it in order. They commenced to run the gauntlet of the Monitors and launches. The latter seemed inspired with a seeming dread of something supernatural, and opened a path right and left for the little steamer. The Ironsides fired two eleven inch shot at the party as they sped away, but fired completely over them. The crews of the Monitors which the steamer was obliged to pass on her return, were also out and commenced a heavy fire of musketry upon her as she was passing. The launches made way evidently from a wholesome regard for her explosive character. Engineer Toombs [sic] and Cannon reached their wharf in the city about midnight, fatigued, and presenting a wornout appearance, but rejoicing at their fortune and narrow escape.

With regard to the damage of the Ironsides nothing positive is known. At the moment of striking there was a great consternation on board. It was reported that the crew in gangs were hard at work at the pumps all day yesterday. Small boats were seen continually passing between the Ironsides and the Monitors. At nightfall, however, she remained at her old anchorage.

Such is the narrative of this brilliant affair, which, had it been an entire success, would rid us of the most formidable foe engaged in this siege. Some few have styled it a rash undertaking, but it needs just such an example to lead to still greater deeds in the present condition of our good old city, and the country at large.³⁵³

Tomb and Cannon were able to rescue the floundering *David* and return to Charleston Harbor. Francis Lee questioned Tomb about the attack and made the following report:

Report of Capt. Francis D. Lee, C. S. Engineer Corps

Charleston, October 7, 1863

General: On making special inquiry of experts as to the probable thickness of timber at that point of the Ironsides struck by the torpedo carried by the little steamer *David*, I have learned that by comparing the dimensions of the Ironsides with our own rams, the solid material could not have been much short of 20 feet. I do not believe that the charge used (70 pounds of musket powder) could break entirely through such a thickness as such depth; but I believe that serious damage must have done.

It is reported that the torpedo-steamer did not feel the explosion and was entirely unharmed by it. There is, therefore, no reason why the charge may not be greatly increased; although at the same time I cannot for one moment doubt the efficiency of the charge used, when fired in contact with the side of the Ironsides, and not in close proximity to the bow or stern, where there is an enormous mass of timber.

I have just seen the engineer of the *David*, who expresses great confidence in the boat and in the torpedo, and who desired me to prepare a torpedo of a larger size, *i.e.*, a capacity of 100 pounds rifle powder, which will be submerged to a depth of about 8 feet, with which he proposes to renew the attempt.

I have the honor to be, very respectfully, your obedient servant,

FRANCIS D. LEE
*Captain of Engineers*³⁵⁴

³⁵³ *Wilmington Journal* (Wilmington, N.C.) 8 October 1863- reprinted from the *Charleston Courier* (Charleston, South Carolina) 7 October 1863.

³⁵⁴ Report of Captain Lee to Brigadier-General Thomas Jordan, 7 October 1863, ORA Vol.28.1, 733-4.

Even with such detailed testimony, two nagging questions persist about the recovery of the abandoned boat. First, Glassell instructed the crew to cut the water intake pipes, yet the task was not completed. This was presumably due to the panic induced by the small arms fire upon at the boat, miscommunication, or other factors.

Second, the fire of the boiler was extinguished by the large volume of water that rained down the smokestack. The coals were doused, making rebuilding the fire a seemingly difficult and time-consuming chore. Gabriel Rains offered a plausible anecdote concerning fast rekindling of the fire:

The little boat was about to leave the wharf on which lay some lightwood and a gentleman present remarked to the engineer Tomb, 'You had better take it.' 'Well, pitch it in,' he said, which was done accordingly, and the David departed.³⁵⁵

A few paragraphs later, Rains added,

Can[n]on the pilot & engineer Tomb stuck to the boat & we may well imagine their joy when on turning over rocky ballast from off the drenched fire, some live coals were found, which served with the lightwood immediately to rekindle the fire into a blaze, which raised the steam in the boiler still hot...³⁵⁶

David Returns to Port

Lieutenant C. L. Scanton, of C. S. S. *Chicora*, had a chance encounter with Tomb upon the return of *David* to the harbor the night of the attack on *New Ironsides*. Scanton recounts that Tomb mistakenly believed *New Ironsides* to have been destroyed. "I happened to be the officer of the deck on the

³⁵⁵ Schiller 2011, 85.

³⁵⁶ Schiller 2011, 86. General Beauregard alternatively offers that the fire was re-lit from the crew's bull's-eye lantern, Beauregard 1988, 518.

Chicora for the midwatch, and at about four bells I recognized his [Tomb] light signal and hailed him. He answered that it was the torpedo boat David- he had sunk the Ironsides and Lieutenant Glassell and the pilot were lost. We believed it until the next morning, when the Ironsides was observed at her anchorage and apparently uninjured.”³⁵⁷

Engineer Tomb’s report, submitted after he learned that *New Ironsides* had not been sunk, offers a slightly more colorful description of the entire incident:

CHARLESTON, S. C., October 6, 1863.

SIR: I have the honor to report that on Monday evening, 5th instant, Lieutenant W. T. Glassell, Confederate Navy, in charge of the propeller David (a small submerged steamer), with the following crew, viz, James H. Tomb, acting first assistant engineer; Walker Cannon, pilot; James Sullivan, second fireman, started from the city and proceeded down the main Ship Channel, passing through the entire fleet of the enemy’s vessels and barges until we arrived abreast of the U.S. frigate *Ironsides* at 8:30 p. m. We then stood off and on for thirty minutes waiting for the floodtide to make.

At 9 p. m., everything being favorable, and every one in favor of the attack, we headed for the *Ironsides*. When within 50 yards of her we were hailed, which was answered by a shot from a double-barreled gun in the hands of Lieutenant Glassell. In two minutes we struck the ship (we going at full speed) under the starboard quarter about 15 feet from her sternpost, exploding our torpedo about 6 ½ feet under her bottom. The enemy fired rapidly with small arms, riddling the vessel, but doing us no harm. The column of water thrown up was so great that it recoiled upon our frail bark in such force as to put the fires out and lead us to suppose that the little vessel would sink. The engine was reversed for backing, but the shock occasioned by the jar had been so great as to throw the iron ballast among the machinery, which prevented its working. During this delay the vessel, owing to the tide and wind, hung under the quarter of the *Ironsides*, the fire upon us being kept up the whole time. Finding ourselves in this critical position and believing our vessel to be in a sinking condition, we concluded that the only means of saving our lives was to jump overboard, trusting that we would be picked up by the boats of the enemy. Lieutenant Glassell and the fireman (James Sullivan) swam off in the direction of the enemy’s vessels, each being provided with a life preserver, and were not seen afterwards. The pilot stuck to the vessel, and I being overboard at the time and finding that no quarter would be shown, as we had called out that we surrendered, I concluded it was best to make one more effort to save the vessel. Accordingly, I returned to her and rebuilt my fires; after some little delay got up steam enough to move the machinery. The pilot then took the wheel and we steamed

³⁵⁷ Stanton 1914.

up channel, passing once more through the fleet and within 3 feet of a monitor, being subjected the whole time to one continuous fire of small arms, the *Ironsides* firing two XI-inch shot at us.

The pilot (Mr. Cannon) has won for himself a reputation that time can not efface, and deserves well of his country, as without his valuable aid I could not have reached the city.

The conduct of Lieutenant Glassell was as cool and collected as if he had been on an excursion of pleasure, and the hope of all is that he may yet be in safety.

The fireman (James Sullivan) acted in a manner that reflected credit upon himself, having remained at his post until relieved by me.

Very respectfully, your obedient servant,

J. H. TOMB,
Acting First Assistant Engineer, C S. Navy.³⁵⁸

Tomb wrote at the end of the statement that James Sullivan had “acted in a manner that reflected credit upon himself, having remained at his post until relieved by me.” However, a report from an interview of Sullivan, after his capture, suggests a slightly different version of events. Rear Admiral Dahlgren conducted the interview and reported, “The prisoner says that, fearing the explosion, he jumped overboard just as the torpedo was hailed.”³⁵⁹ According to all other accounts, this would have been before shots were fired at the deck crew of *New Ironsides* by Glassell and well in advance of the torpedo explosion, suggesting Sullivan may have lost his nerve in the closing moments of the attack. A similar story was recorded by Augustine Smythe, a soldier aboard CSS *Palmetto State*, “Gloriously did our little boat do its duty last night, if the report from town is true; striking the Ironside [sic] & tho’ not sinking her at once, injuring her seriously. The way we hear the story is that she ran down to the neighborhood of the Ironsides, when they opened on her with their great guns & small, at the same time calling to them to surrender. Lieut. Glazel [sic] or someone cried out ‘We surrender’ & then Lieut. G. & the fireman of the craft jumped overboard.”³⁶⁰

The story spread that *David* had been sunk. A report in the *Baltimore American* on 10 October stated, “the Rebel steamer was undoubtedly lost” and that crew members Tomb and Cannon “are supposed to have been drowned.”³⁶¹ Another report, published 15 October, reiterated the mistaken

³⁵⁸ Report of Acting First Assistant Engineer Tomb, 6 October 1863, ORN Vol. 15 (1902), 20-1.

³⁵⁹ Rear Admiral Dahlgren to Secretary Welles, 7 October 1863, Welles 1863, 279.

³⁶⁰ Letter from Augustine T. Smythe to his sister, 6 October 1863, Emerson and Stokes 2017, 68.

³⁶¹ *New York Times* (New York, N.Y.), 15 October 1863 reprinted from the *Baltimore American* (Baltimore, M.D.) on 14 October 1863.

idea that *David* had been lost, “The torpedo was charged with forty pounds of powder, and it exploded directly amidships of the Ironsides, probably sinking the rebel steamer at the moment it was fired.”³⁶² Although reports of the sinking of *David* were inaccurate, they were also not purely fictitious creations of the reporters as *New Ironsides* commander Captain Rowan reported similarly:

Nothing could be seen from the gundeck, and to fire at random would endanger the fleet of transports and other vessels near us. The marine guard and musketeers on the spar decks saw a small object at which a very severe fire was kept up until it drifted out of sight, when two of the monitors, the *Weebawken* and *Catskill*, passed under our stern and were close to it, when it suddenly disappeared. Two of our cutters were dispatched in search of it, but returned without success.

I hope our fire destroyed the torpedo steamer, and infer the fact from the statement of Lieutenant Commanding Glassell, who acknowledged that he and Engineer Tomb and pilot [Sullivan], who constituted the crew at the time of the explosion, were compelled to abandon the vessel.³⁶³

However, by 18 October a report from three Confederate deserters confirmed to Dahlgren that *David* had in fact been saved, was back in Charleston, and ready to renew actions against the Union fleet, but was seemingly inactive since the attack. One Confederate officer observed that “the *David* is still quiet, as the nights are too clear for her to operate successfully.”³⁶⁴ Still, the rumor mill continued to grind. A Northern journalist provides a sole account that *David* was on patrol the night following the *New Ironsides* attempt, “On Tuesday night, it was supposed that the rebels meditated a second attack on the Ironsides. A boat of the same kind, believed to have been a small steamer, approached our picket line, but was discovered and driven off after some firing.”³⁶⁵

One civilian source noted rumors that *David* was to go out each of five days after the *New Ironsides* attack.³⁶⁶ During that time, from 6 to 10 October, three sightings were reported. Around 21:30 on 7 October a crew member of *Catskill*, D. B. Corey, recalled that while on picket duty he heard musket fire coming from one of the monitors. He went to investigate “and was told there was

³⁶² *New York Times* (New York, N.Y.), 15 October 1863.

³⁶³ Captain Rowan to Rear Admiral Dahlgren, 6 October 1863, ORN Vol. 15 (1902), 12-3.

³⁶⁴ Letter from Augustine T. Smythe to his father, 18 November 1863, Emerson and Stokes, 2017, 74.

³⁶⁵ *New York Times* (New York, N.Y.), 15 October 1863.

³⁶⁶ Letter of Susan Middleton dated 10 October 1863, Leland 1963d, 214.

some kind of craft going toward the fleet.”³⁶⁷ He rowed in pursuit of what appeared to be a large vessel without oars, but found nothing. Two nights later, around 22:15, Benjamin Dean of the schooner *Dan Smith* ordered his men to fire on a vessel he believed to be a torpedo boat that moved fast and with little noise. Upon firing some sixty rounds at the torpedo boat, the vessel backed off headed south.³⁶⁸ Less than one hour later D.B. Corey, again on picket duty, recorded that he spotted “something which appeared to be about 10 feet long above the water, going very fast. It appeared to extend some ways under water by the ripple it made both ahead and astern.”³⁶⁹ Again, the mysterious vessel disappeared without identification. However, there are no Confederate records of activity involving *David* during this period.

Rumors also abound about the extent of damage suffered by *New Ironsides*. A letter from a sailor, freshly assigned to *New Ironsides*, penned three days after the attack makes it clear that even the crew of *New Ironsides* was unclear about the condition of the vessel:

U.S.S. Ironsides
Off Morris Island
Oct 8th/63

Dear Ma

As I am at present fixed here I take the first opportunity of letting you know what has transpired since I left you. I sailed in the Paul Jones on Wednesday following my departure from Phil. and arrived at Charleston on Sunday. On reporting to the Admiral for duty the next day he ordered me to this ship, but on coming on board I found that her complement of officers was full. Capt Rowan said I had better go on board one of the Monitors, and that he would see the fleet captain about it. That night however a vacancy was made rather unexpectedly. A short time after 9 P.M, just as I was turning in, the officer of the deck hailed something. The hail was followed instantly by two or three musket shots and a tremendous crash and explosion, that sounded as if the ship’s timbers were all smashed in. The drum beat to quarters, and as I had not yet been stationed, I went on deck to see what was up. The marines were keeping up a heavy fire of musketry on some small object in the water, that in the darkness looked as much like a barrel as anything else. In a few minutes it drifted out of sight or sunk. Many tons of water were thrown on deck by the explosion, but on examination the ship was not injured in the least, beyond having a few storeroom bulk heads demolished by the concussion. A man had his leg

³⁶⁷ Report of Acting Master Alvin Phinney, 8 October 1863, ORN Vol. 15 (1902), 29.

³⁶⁸ Report of Acting Master Benjamin Dean, 10 October 1863, ORN Vol. 15 (1902), 30.

³⁶⁹ Report of Acting Master Alvin Phinney, 10 October 1863, ORN Vol. 15 (1902), 29.

broken, and the officer of the deck was shot through the body, by a musket fired from the nondescript craft, just as he fired at it.

The next morning we found that two men had been picked up by vessels near us, one of whom was recognized as an ex-naval officer. He turned out to be the commander of the infernal machine which tried to destroy us. He stated that she was a small steamer on the same principle as Winans' cigar ship, with an outrigger to her bows carrying the torpedo. She was so constructed as to be almost entirely under water, excepting a very low smokestack. On exploding the torpedo, which was done by simply running against the side, an additional effect was produced which he had not counted on. The immense body of water thrown up came down his smokestack putting his fires out, and entirely destroying his motive power. The vessel was also probably damaged by the concussion.

Finding they could not get away they all (five in number) jumped overboard to avoid the musketry which we were pelting them with. The other three are supposed to be shot or drowned, and the machine sunk. This is the rebs story and it seems probable. It is not likely that a man of the coolness and daring to perform such an operation, would jump overboard from his vessel unless she was sinking.

In consequence of Mr Howard (the officer of the deck at the time,) being disabled, I am to be kept here, which arrangement suits me very well, as the ship is certainly the most desirable one to be in, of the whole fleet, in all respects. Nothing can show her tremendous strength and power of endurance more than this fruitless attempt. Had she been a wooden vessel or of a different model, she would have been blown to pieces. We had the divers here yesterday to examine her under water, and they report that not a plate or bolt is started. We have lively times at night now, passing it nearly all the time, at quarters with orders to fire at every thing we see; so the *New Ironsides* is not a very nice place for visiting in the evening. If my first night's experience on board is a sample I certainly can no longer complain of monotonous duty.

Your Aff son

L. West³⁷⁰

Union supporters maintained there was little injury to *New Ironsides*, which was buttressed by the continued presence of the ironclad in the harbor.³⁷¹ A correspondent of the *Baltimore American* reported on 10 October, "she is now as effective for offensive operations as ever" and "She is now regarded here [Charleston] as torpedo-proof."³⁷² The article certainly served to reassure Federal

³⁷⁰ Letter from Lewis H. West to R. West, 8 October 1863. GLC03836, Gilder Lehrman Collection of the Gilder Lehrman Institute of American History, New York.

³⁷¹ *Army and Navy Journal* (New York) Vol. 1 No. 8, 17 October 1863, 121.

³⁷² *New York Times* (New York, N.Y.), 15 October 1863 reprinted from the *Baltimore American* (Baltimore, M.D.) 14 October 1863.

supporters that torpedoes were not the giant killers that the Rebels would had have them believe.

Meanwhile, intelligence was also being gathered by Confederates. General Beauregard soon noticed that *New Ironsides* was no longer firing her big guns, an observation that also did not escape popular conversation.³⁷³ In a letter from Susan Middleton to her cousin, dated 9 November, she wrote:

You have of course observed that the "Ironsides" has not fired at all since she was struck by the torpedo. The escaped prisoner, belonging to the "Chicora," declares that all her guns have been taken out, and that they are afraid to go to sea in her, as one of her compartments is full of water. The "David" is to go out again the first favourable night-- many people think those four men [Glassell, Tomb, Cannon, and Sullivan] ought to have the reward promised [\$100,000 from John Fraser and Company] for the destruction of the "Ironsides" and there is a plan for at least making up a handsome sum for them.³⁷⁴

In actuality, the torpedo attack was not successful in sinking the ironclad, but the great warship was undoubtedly damaged and leaking.³⁷⁵ The extent of the damage was not immediately clear. Only after coal supplies had been diminished, some six weeks later, was the true nature of the impairment revealed. Rear Admiral Dahlgren was adamant that the severity of damage should not be made public as he must have been aware of the psychological boost the enemy would have gained in knowing the formidable ship was crippled. Instead, Dahlgren chose to leave the injured vessel at anchor to serve as a mental lash to the Confederates for failing to sink the ship:

No. 258. Confidential.

U.S.S. PHILADELPHIA,
Off Charleston, November 19, 1863.

SIR: Captain Rowan informs me that upon removing coal in the bunkers of the Ironsides, it is discovered that the damage done by the torpedo was much more serious than first appeared.

³⁷³ Remarks Relative to Iron-Clad Gunboats, 14 November 1863, ORA Ser. 1 Vol. 28 pt. 2 (1889), 503-4; ORN Vol. 15 (1902), 694, 695; Beauregard 1878, 45; 1879, 519.

³⁷⁴ Leland 1963d, 215.

³⁷⁵ Beauregard 1878, 519; Remarks of General Beauregard, 14 November 1883, ORN Vol. 15 (1902), 695.

I have not yet received a written report, as the examination is not yet concluded, but will inform the Department at the earliest date.

I need not urge the importance of keeping the facts from publicity. Everything will be done here to that end, though it is difficult to evade the researches of public correspondents.

I have the honor to be, very respectfully, your obedient servant,
JNO. A. DAHLGREN,
Rear Admiral.³⁷⁶

New Ironsides's commander, Commodore S. C. Rowan, conveyed to Dahlgren a description of the extent of the damage at the end of November 1863, which included a detailed report of T. H. Bishop, *New Ironsides's* carpenter:

U.S.S. NEW IRONSIDES,
Off Morris Island, November 28, 1863.

ADMIRAL: I enclose herewith, in obedience to your order, the report of the carpenter, Mr. Bishop, giving a detailed account of the injuries this ship received by the explosion of the torpedo.

The ship is very seriously injured, and ought to be sent home for repairs as soon as it is possible to spare her services here.

I have the honor to be, very respectfully, your obedient servant,
S.C. ROWAN,
Captain

Despite all evidence to the contrary, *e.g.*, the report of *New Ironsides's* carpenter, the report of Captain Rowan, and the Confederate ledgers of activity in Charleston Harbor documenting no shots fired by the ironclad, J. Vaughan Merrick, of Merrick and Co., designers and builders of *New Ironsides*, reported, after the ship was destroyed by fire in December 1866, that the ship had suffered little damage as a result of the attack in October 1863, stating, "But, beyond driving a deck-beam on end to shattering a knee, doing no material damage to the ship."³⁷⁷ However, Merrick lists all cannon

³⁷⁶ Report of Rear Admiral Dahlgren to Gideon Welles, regarding injuries sustained by the USS *New Ironsides*. ORN Vol. 15 (1902), 16-7.

³⁷⁷ Merrick 1867, 81.

firing activity of the vessel while on duty in Charleston Harbor, and again, none is listed after 5 October 1863, thus supporting reports of heavy damage.³⁷⁸

Aftermath of the New Ironsides Attack

Union Rear Admiral Dahlgren, impressed with the Confederate torpedo boat, fully understood the significance and importance of a weapon such as *David* and conveyed his admiration for the new weapon in a letter to Augustus Fox just days after the attack. “It seems to me,” he wrote, “that nothing could have been more successful as a first effort, and it will place the torpedo among certain offensive means.”³⁷⁹ Dahlgren’s reluctant admiration of *David* led to his request that Fox have a similar vessel constructed and delivered within thirty days. He felt it would be an effective weapon for a proper siege of Charleston, offering a sketch (Figure 23) made from a description of *David* obtained from Glassell as a guide.³⁸⁰

Delivering the torpedo to the enemy had been effective in crippling *New Ironsides*, reducing the formidable ship to an intimidating presence rather than a genuine threat, yet the greater achievement of the mission was two-fold and lies in the wake of the attack. First, Dahlgren reacted to the attack by issuing precautionary orders for defensive chains, netting, and fenders to be placed around all blockading vessels, and for constant circling of picket boats after sunset when the semi-submersible was most stealthily hidden in the water.³⁸¹ Glassell’s colorful description of the federal precautionary tactics neatly summed up the new arrangements: “the ironclad vessels of that fleet were immediately enveloped like women in hoop-skirt petticoats of netting.”³⁸² As a consequence of the measures initiated by Dahlgren, quick movement of the blockaders was limited.

Although somewhat limiting, the freshly enacted precautions may have saved the Rear Admiral himself. Only eleven days after the crippling of *New Ironsides*, *David* was reportedly spotted

³⁷⁸ Merrick 1867, 80-1.

³⁷⁹ Letter from Rear Admiral Dahlgren to Augustus Fox dated 7 October 1863, National Archives, Record Group 45, Subject Files, M1091 AD, Roll 7. The same quote was reiterated in an extract from the diary of Rear Admiral Dahlgren, 30 November 1863, reproduced in the ORN Vol. 15 (1902), 19.

³⁸⁰ Report of Rear Admiral Dahlgren to Asst. Sec. of the Union Navy, Fox 18 October 1863, ORN Vol. 15 (1902), 51. Invoice held at the National Archives, Record Group 45, Confederate Navy Subject Files, M1091, roll 7.

³⁸¹ Various reports and orders of Rear Admiral Dahlgren, ORN Vol. 15 (1902), 238-9, 244, 271.

³⁸² Glassell 1877, 230-4; reprinted in Glassell 1937, 16-22.

by the picket boat of Dahlgren's Flag-Steamer, *Philadelphia*, and by one or two other vessels, but upon being discovered, abandoned the effort and returned to port.³⁸³ An intercepted dispatch confirms that *David* had been seen and chased the same evening, "If the vicinity of the 'Ironsides' is lighted with a calcium light, may show the approach of torpedoes. We chased one night before last."³⁸⁴

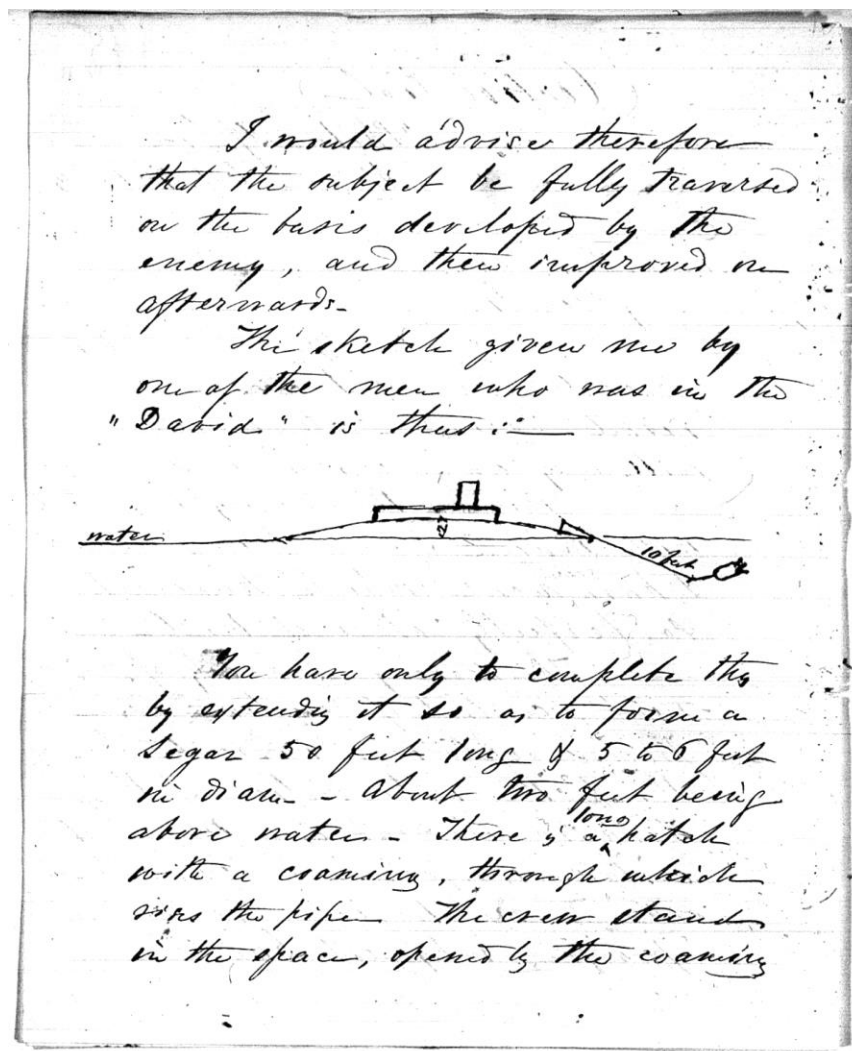


Figure 23. Excerpt from a letter from John Dahlgren to Asst. Sec. of the Navy Fox. National Archives, RG 45, Vessel Files, M1091.

³⁸³ Rear Admiral Dahlgren to Secretary Welles, 17 October 1863, ORN Vol. 15 (1902), 48.

³⁸⁴ Military Department Log of Activity in Charleston Harbor, Ch. 2 Vol. 192, 18 October 1863, 137.

With the first quarter moon came another report of a *David* sighting. Around 3:00 in the morning of 20 October, crew of the ironclad *Catskill* reported firing on a low and dark object approaching, first towards the starboard quarter, then passing on towards *New Ironsides*. The object then approached again from the port quarter, “so near aft that we could not bring our turret guns to bear upon it.”³⁸⁵

H. L. Hunley had sunk again on 15 October and Lee’s torpedo ram was not used after its sortie against *New Ironsides* in August, so the vessel was certainly *David* as it was the only active torpedo boat in Charleston at the time. *David*’s logs, assuming logs were kept, have never been located, and no known Confederate documents confirm that any of these sightings were of *David*.

As expressed by Louis Schafer about the use of torpedoes, “The North’s response to such an innovative strategy was precisely what the South had hoped for-- one of apprehension and caution.”³⁸⁶ Consequently, a secondary, albeit equally important, achievement of the *New Ironsides* attack was the after-shock of terror that reverberated throughout the Union forces. An effect vividly articulated by Union Captain Barnes, “A curious and novel spectacle-- a mighty frigate with her tremendous armament and crew of seven hundred men absolutely put to flight by four men in a little boat of less than a ton burden, whose only armament was a few pounds of powder extended on a spar ahead of her!”³⁸⁷ Even if *David* made no sorties after the attempt on *New Ironsides*, the vessel had become a fearsome specter.

The attack of 5 October inspired hope in *David* as an offensive weapon and captured the imagination of both Charleston civilians and military men alike. By early November 1863 requests were being made to Flag Officer Tucker by Confederate volunteers requesting service on the torpedo boat and to “emulate the deeds of Lt. Glassel [sic].”³⁸⁸ The volunteers were rejected, as Brigadier General W. B. Taliaferro pointed out, “we have but one ‘Torpedo Boat,’ the crew of which

³⁸⁵ Report of Lieutenant-Commander Greenleaf Cilley of USS *Catskill*, 20 October 1863, ORN Vol. 15 (1902), 63-4.

³⁸⁶ Schafer 1996, 3.

³⁸⁷ Barnes 1869, 137. Later paraphrased in Matthews 1915, 181.

³⁸⁸ Requests made on 4 November 1863 were submitted to Flag Officer Tucker Chief of Staff on 8 November 1863, National Archives, Record Group 109, War Department Collection of Confederate Records, Military Department Letters Received Ch. 2 Vol. 23, 323.

is already made up-- should an opportunity occur at any future time, I will be happy to gratify prvt E. A. Terry.”³⁸⁹

In each of the Union’s five post-*New Ironsides* attack torpedo boat sightings, as well as in the attack of *New Ironsides*, the vessel was fired upon with large numbers of shots from small arms. Doubtless some of the projectiles pierced *David*’s wooden hull, although no crew member was injured by gunfire. Signals recorded the previous night’s activity in Charleston Harbor in the log of 6 October, “Trouble among the Navy vessels; heavy musketry firing near the Ironsides, ...Have not yet learned the cause of the alarm. Firing seemed to be around the Ironsides: it Continued some 15 minutes.”³⁹⁰

Former Confederate Navy officer and historian J. Thomas Scharf reported, “The *David* bore the scars of 13 bullet holes received from the fire of small arms of the *New Ironsides*,” which is supported by several other accounts.³⁹¹ This number appears very small if, in fact, *David* had been subjected to heavy fire over multiple nights as implied by these sightings. One possible explanation is that at least some of the sightings were not of *David*, but of one or more mock-ups that “consisted of a raft of boards 15 feet long, with a long box in the center to represent the hatch, and a piece of stovepipe to represent the funnel,” one of which was captured by the crew of *New Ironsides* on 22 October and broken up, and another recovered the following night.³⁹²

Sometime over the week following the last sighting, during which the full moon was approaching, and sorties would have likely been abandoned anyway, *David* was sent for repairs and modifications. Tomb was granted command of the vessel after Glassell’s capture, and during this time was given permission to make any alterations to *David* he deemed necessary. These included the addition of iron to the hull above the water line to protect against small arms fire. He also ordered replacement of the military-supplied fixed torpedo spar with a retractable version more akin to the original version furnished by Ebaugh.³⁹³ A repair invoice (Figure 24) from Eason and Brother

³⁸⁹ Taliaferro did not acknowledge requests other than that of Private Terry. Response of Taliaferro to Tucker 9 November 1863, National Archives, Record Group 109, War Department Collection of Confederate Records, Military Department Letters Received Ch. 2 Vol. 23, 327.

³⁹⁰ National Archives, Record Group 109, War Department Collection of Confederate Records, Military Department Letters Sent, Charleston Harbor, Ch. 2 Vol. 192, 108.

³⁹¹ Scharf (1887, 759). Also see Bassham 1998, 136; Interview of prisoner Belton, ONR Vol. 15 (1902), 13, 228-9.

³⁹² Report of Lieutenant-Commander Cilley, US Navy, commanding USS Catskill, regarding picket duty performed by the vessel, ORN Vol. 15 (1902), 72.

³⁹³ Extract from the notebook of First Assistant Engineer Tomb, ORN Vol. 15 (1902), 358; Tomb 1914, 168. Invoice, National Archives, Record Group 45, Confederate Navy Subject Files, M1091, roll 7.

Shipbuilders lists 3000 lbs (1360 kg) of steel plate “For Torpedo Steamer David” at a cost of \$3750, or \$1.25 per pound.³⁹⁴

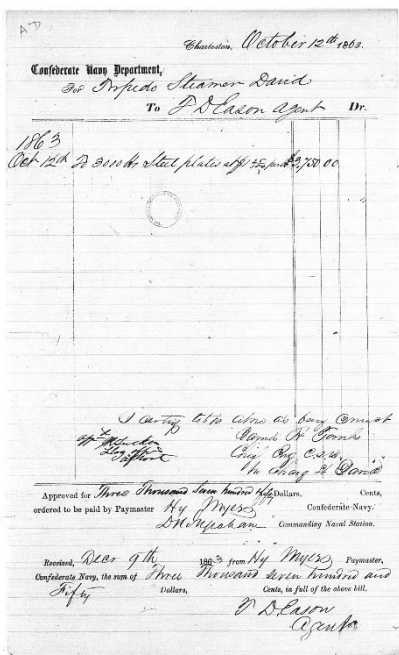


Figure 24. October 1863 invoice for work on *David* by Eason Brothers. Shipbuilders. National Archives, Record Group 45, Confederate Navy Subject Files, M1091.

In addition, Eason Brothers also made 550 1/2” bolts and 100 1/2” spikes for the boat and bent the plates of steel purchased just days after the attack on *New Ironsides*.³⁹⁵ Based on the dated painting (28 October) made by Chapman (Figure 25) showing the installation of the strips of steel plates, the work took place at the end of the month. The strips are also clear in a sketch made by Confederate sailor George Carleton on 9 November 1863. (Figure 26). In November more plate steel was purchased, approximately 600 additional pounds (272 kg), and in December an eccentric was manufactured (for the engine), as shown on an invoice dated 13 December 1863 (Figure 27).³⁹⁶

³⁹⁴ It is unclear if Ebaugh knew James Eason or if Eason was in any way involved in the initial construction of *David*, but by the early-1870s Ebaugh had moved into the city and his next-door neighbor was James Eason on Drake Street (Wiley 2008, 57- 8).

³⁹⁵ Invoice, National Archives, Record Group 45, Confederate Navy Vessel Files, M1091, roll 12.

³⁹⁶ Invoice, National Archives, Record Group 45, Confederate Navy Vessel Files, M1091, roll 12.



Figure 25. Painting by Conrad Wise Chapman of *David* being repaired, 28 October 1863. Reprinted with permission of the American Civil War Museum (Richmond, Virginia).

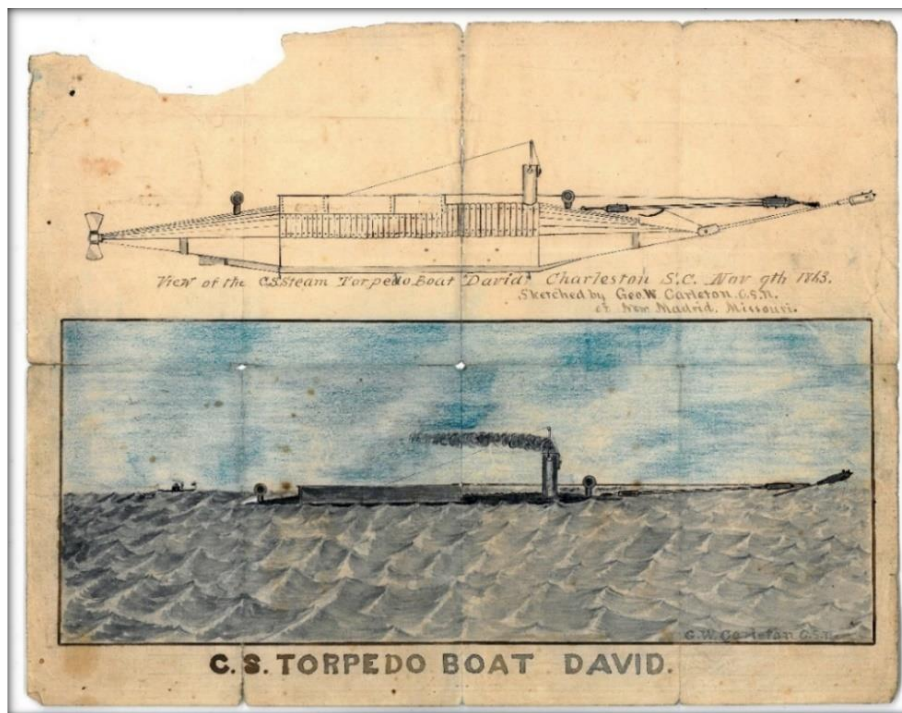


Figure 26. Sketch of *David* by George W. Carleton, 9 November 1863. Reprinted with permission of the American Civil War Museum, Richmond Virginia, FIC2008.00858.

Charleston, Dec 12 1863

Confederate Navy Department,
For Torpedo Steamer David.

To J. M. Eason & Bro Dr.

1863	Octo. To Making 800 pin bolts			
	100 1/2" Spikes	\$	200 00	
	Bending plates of steel		50 00	
Nov	365 lb of Boiler plate 2 1/2"		456 25	
	2 plates of steel 15 1/4"		195 00	
	One piece Boiler plate 6 1/4"		61 00	
	Carriages		12 00	
Dec	Making one Brass Counter of fitting	\$	256 00	
				\$1250 25

I certify to the above as being correct
 Commr H. Stork
 app. J. M. Eason
 J. M. Eason & Bro

Approved for *McWhorter* Unit *Myer* Dollars,
 25 Cents, ordered to be paid by Paymaster *Myer* Confederate Navy.
McWhorter Commanding Naval Station.

Received, *Nov 12th* 1864 from *Myer* Paymaster,
 Confederate Navy, the sum of *Two hundred thirty*
 Dollars, *two* Cents, in full of the above bill.
J. M. Eason & Bro

Figure 27. December 1863 invoice for work on *David* by Eason Brothers. Shipbuilders. National Archives, Record Group 45, Confederate Navy Vessel Files, M1091.

During the early days of work on Lee's torpedo ram (Nov 1862), there were two Confederate ironclads being built, *Chicora* and *Palmetto State*. Beauregard argued that, given the limited supply of materials for new constructions, it was foolish to attempt a third new vessel simultaneously and that the focus should be on producing one at a time. He also contended that priority should be given to Lee's torpedo ram.³⁹⁷ That request was ignored. *David*, a vessel that was both inexpensive and easily replicated, gave Beauregard renewed hope after the initial test in combat. Likewise, it renewed his frustration that materials were not made available for more vessels, but instead were allocated for construction of Confederate ironclads. In November 1863, Beauregard penned the following complaint to Secretary of the Navy Mallory, detailing his dissatisfaction with ironclads and support of small torpedo boats:

³⁹⁷ Letter from General Beauregard, 13 October 1862, ORN Vol. 13 (1901), 812.

CHARLESTON, S. C.,
November 14, 1863.

Our gunboats are defective in six respects.

First. They have no speed, going only from 3 to 5 miles an hour, in smooth water and no current.

Second. They are of too great draught to navigate our inland waters.

Third. They are unseaworthy, by their shape and construction, as represented by naval officers. Even in the harbor, they are at times considered unsafe in a storm.

Fourth. They are incapable of resisting the enemy's 15-inch shots at close quarters, as shown by the Atlanta, in Warsaw Sound last spring.

Fifth. They cannot fight at long range, their guns not admitting an elevation greater than from 5° to 7°, corresponding to 1¼ to 1½ miles range. Even at long range, naval officers are of opinion that the oblique sides and flat decks of our gunboats would not resist the plunging shots of the enemy's 200 and 300 pounders.

(The best proof of the total failure of the three ironclad gunboats, Chicora, Palmetto State, and Charleston, constructed at such cost and labor, is that, although commanded by our most gallant officers, they did not fire one shot in the defense of Fort Sumter during the naval attack of the 7th of April last, nor have they fired a shot in the defense of Morris Island and Sumter during the present siege which has lasted over four months, excepting on one occasion, the assault on Sumter during the night of September 8 last, when the Chicora fired a few shots on the enemy's boats and barges.)

Sixth. They are very costly, warm, uncomfortable, and badly ventilated, consequently sickly.

The enemy's iron-clads being invulnerable to shots above water beyond 800 yards, they should be attacked below water. The best way to accomplish this is by means of swift sea-going steamers, capable of traveling 10 or 12 miles an hour, shot-proof above water and armed with Capt. F. D. Lee's submarine repeating spar torpedo, which is both simple and certain in its operation. Not one of his submarine torpedoes has yet failed to explode on striking a resisting object. The experiment of the David, a small cigar torpedo-boat, against the New Ironsides, shows the effect of a 70-pound torpedo, only 6 feet below water, on the thick sides- over 5 feet of that sea monster. Since the attack, about one month ago, the New Ironsides has not fired one shot, notwithstanding the renewed bombardment of Sumter has been going on twenty days and nights, showing evidently that she has been seriously injured. Moreover, she has left her anchorage only once for about half an hour, when she returned to her former position, abreast of Morris Island. It is stated that a proper sized steamer, 400 or 500 tons, built like a blockade runner, but made shot-proof, and armed with one of Lees repeating submarine torpedo apparatus, could be built, in about three months working time in England, for the sum of about \$250,000.

I venture to say that with one of those vessels here, the blockade of Charleston could be raised in less than one week, and the army of Gilmore captured very shortly afterward. Half a dozen of these steamers would raise the blockade of our Atlantic and Gulf coasts, and enable us to recover the navigation of the Mississippi River. Indeed, a few years hence, we will ask ourselves in astonishment,

how it was that with such a great discovery, offering such magnificent results, we never applied it to any useful purpose in this contest for our homes and independence. It is evident, according to Lord John Russell's own views, that those steamers can be constructed in England, as shot-proof, unarmed blockade runners, without incurring the risk of being seized by the English Government.

G. T. BEAUREGARD,
*General, C. S. Army.*³⁹⁸

Mallory responded to these complaints by declaring that the Confederate ironclads were designed for harbor defense and were well suited for that task. Herein lies the fundamental difference between the strategies of Mallory and Beauregard; Mallory was focused on defensive measures, for which he decided the ironclads sufficient, while Beauregard stressed offense.

Unfortunately, efforts to construct torpedo boats abroad were fruitless and clearly neither the Confederate Navy, nor the army, were willing to divert funds or materials to building them stateside, leaving Beauregard to find creative means by which to obtain the needed offensive weapons. In the meantime, the semi-submersible, *David*, and the submersible, *H. L. Hunley*, both unique, privately built vessels serving the Confederate Navy, were left with the enormous task of sinking vessels to re-open Charleston Harbor for free trade.

If any offensive activity was undertaken with *David* in November and December 1863, it is undocumented. There are no reported Union sightings of a torpedo boat during this period. The likelihood of *David* going out beyond the bar of the harbor during this time is unlikely as Union General Quincy A. Gilmore resumed bombardment of Charleston and its defenses, lasting 41 days of November and December, in an attempt to take Fort Sumter.³⁹⁹ Susan Middleton wrote on 27 January 1864 regarding the inactivity of *David*, "I never hear a word of 'war-news' nowadays, not a whisper even of the torpedo-boats."⁴⁰⁰

An undated notebook entry by James Tomb hints that Dahlgren's mandated constant picket duty during this period prevented offensive sorties: "When the "David" reported to the flag-officer [Tucker] for duty his orders were to watch for the enemy in case they made an attempt to enter the

³⁹⁸ P. G. T. Beauregard Remarks Relative to Iron-Clad Gunboats, 14 November 1863, ORN Vol. 15 (1902), 694-5; ORA Vol. 28 (1889), 503-4.

³⁹⁹ Williams 1954, 200.

⁴⁰⁰ Leland 1964, 34.

harbor, and use the “David” to the best advantage, keeping out of the line of fire as much as I could, and watch for a chance to use the torpedo.”⁴⁰¹

The period of apparent inactivity might also be explained by the opinion of Secretary Mallory in December, who stated that *David* had lost the element of surprise and was therefore no longer useful as an offensive weapon. Mallory, as previously noted, was always inclined towards the use of Confederate ironclads despite their limited effectiveness up to this time:

It is proper to say, however, that it will always be in the power of the enemy to anchor his ship and protect her against torpedo boats by means familiar to the seaman and readily attainable, and similar to those now employed to protect the *Ironsides*. And it is believed that the Federal ironclads anchored at Charleston Harbor can protect themselves against such attacks with more certainty than against those made by heavy guns or heavy rams.⁴⁰²

Towing the Submersible, *H. L. Hunley*

Sometime in December 1863 or early January 1864, *David* was issued new orders. Tomb, in a 1905 presentation to the Association of the Survivors of the Confederate Navy, told his audience that amidst a pause in offensive activity, he was ordered to tow the submersible we now call *H. L. Hunley*, commanded by Lieutenant George Dixon, out of Charleston Harbor to save the crew of the manually-powered vessel from physical exhaustion en route to their objective.⁴⁰³ Dixon was allowed to select sorties on which he needed the assistance of *David*. Upon their approach to a potential target, the tow-line was to be detached and each vessel was to select a separate Union gunboat, creating a multi-vessel attack as suggested earlier by Glassell.⁴⁰⁴ No such attack is recorded in the official records during this time. However, on 1 February, a sortie may have been in the offing, at least in the opinion of one Northern newspaper: “An attempt was made on the night of the 1st

⁴⁰¹ Extract from the notebook of First Assistant Engineer Tomb, ORN Vol. 15 (1902), 358.

⁴⁰² Secretary of the Navy Mallory to South Carolina Congressman William Porcher Miles, 19 December 1863, ORN Vol. 15 (1902), 701.

⁴⁰³ Tomb’s presentation was reprinted in *Confederate Veteran* (Tomb 1914, 168-9).

⁴⁰⁴ Tomb 1914, 169.

inst[ant], by a Rebel ram, in company with a cigar-shaped torpedo-boat to destroy the gunboats *Housatonic* and *Nipsic*, which were doing guard duty in the south channel near Beach [Breach] Inlet. The design was frustrated by the sinking of the torpedo. This is the third infernal machine which the Rebels have lost in Charleston Harbor.”⁴⁰⁵

H. L. Hunley had been operating out of Breach Inlet for some time. The ram mentioned in the report was presumably the submersible and it was not sunk, but wisely dived en route back to the docks to escape harm. In the same issue of *Army and Navy Journal*, only a few pages later, there is a report stating that on 11 February another attempt was made on *Housatonic* and *Nipsic* involving two similarly described vessels. One was described as an “an iron infernal machine” that “sprang a leak before getting into action, and turning back, sank.”⁴⁰⁶ This reported sinking is certainly also a mistaken case of the submersible diving. Union officers believed *David* had been lost a few months earlier in the challenge to *New Ironsides*, which may account for a third vessel believed to have been lost.⁴⁰⁷ In actuality, none had been permanently sent to the sea floor, yet.

At this time, *H. L. Hunley* was equipped with a towed torpedo, attached to the stern of the vessel, unlike *David* which utilized a bow-mounted spar torpedo. When *David* was used in towing the submarine, these configurations placed the torpedoes at opposite ends of the train, with *David* leading the effort.⁴⁰⁸ There was an assumed element of safety since the torpedoes were at opposite ends of the train. However, after a near-disaster involving *H.L. Hunley*'s towed torpedo, *David* no longer served as a tow-vessel. Tomb responded, “The last night the “David” towed him [Dixon] down the harbor his torpedo got foul of us and came near blowing up both boats before we got it clear of the bottom, where it had drifted. I let him go after passing Fort Sumter, and on my making report of this, Flag-Officer Tucker refused to have “David” tow him again.”⁴⁰⁹

⁴⁰⁵ *Army and Navy Journal* (New York) Vol. 1 No. 26, 20 February 1864, 401.

⁴⁰⁶ *Army and Navy Journal* (New York) Vol. 1 No. 26, 20 February 1864, 413.

⁴⁰⁷ *Army and Navy Journal* (New York) Vol. 1 No. 8, 17 October 1863, 121.

⁴⁰⁸ *H. L. Hunley*'s torpedo was originally to be towed behind the diving vessel in order for the vessel to surface on the other side of the vessel being attacked (Schafer 1996, 10). This was a failed precautionary measure first developed by Robert Fulton for his *Nautilus* of 1805 (Parsons 1922, 26-7). After Tomb's complaint, *Hunley*'s torpedo was spar-mounted in a manner similar to *David*, but triggered by a cord held by a crew member after the barbed torpedo had been secured to the enemy hull and the vessel backed away (Alexander 1902). More recent archaeological work shows the torpedo to actually have been a Singer Group product that was spring-loaded to explode upon contact (Brown and Neyland 2016, 180).

⁴⁰⁹ Notes from the Papers of Tomb, ORN Vol. 15 (1902), 334-5. Campbell (2005, 83-4) details a more colorful, if less detailed version of this story.

Tomb told the *Survivors of the Confederate Navy* audience that the entanglement incident happened in the same month as the destruction of *Housatonic*, which occurred on 17 February 1864. Therefore, the near-disaster must have occurred in mid-February, after the second sighting of the two vessels working together.

Shortly after the incident, Beauregard requested *David* to be assigned to duty in the Stono River, a few miles south of Charleston Harbor and accessible via inland waterways.⁴¹⁰

Hdqrs. Dept. S. C., Ga. and Fla.,
Charleston, S. C., February 11, 1864

Sir: Can not the "David" be assigned to duty in the Stono River? The enemy having removed the torpedoes laid near the obstructions, I think it would be extremely desirable, before sending this boat to the Stono, to destroy one or two more of the enemy's small guard boats that picket between Schooner Creek and Cumming's Point, so as to make the enemy fear an attack on the latter spot.

Respectfully, your obedient servant,

G. T. Beauregard
General, Commanding⁴¹¹

Tucker did not immediately grant Beauregard's request.⁴¹² On 13 February, Beauregard clarified his application with a second request.⁴¹³ Again, Tucker failed to comply with the General's request as there is no record of torpedo boat activity on the Stono River in February 1864. It is likely that Tucker's lack of response was due to mechanical problems with *David*. A repair invoice dated 13 February, lacking any detail of services rendered, reads, "Repairing Steam Torpedo Boat David & Materials furnished." The bill for \$475.50 must have been for a rather substantial repair, as

⁴¹⁰ Tomb 1914, 169.

⁴¹¹ General Beauregard to Flag-Officer Tucker, 11 February 1864, ORN Vol. 15 (1902), 710.

⁴¹² Tucker's response to Beauregard has been lost, as noted in the ORN. "In reply to your letter* of yesterday..." As noted at the bottom of the page, "* Not Found" ORN Vol. 15 (1902), 711.

⁴¹³ General Beauregard to Flag-Officer Tucker, 13 February 1864, ORN Vol. 15 (1902), 711.

comparison to other invoices show labor was inexpensive, yet materials were increasingly quite costly.⁴¹⁴

Only six days after Beauregard's original request to use *David* on the Stono River, *H. L. Hunley*, operating solo, sank the Union gunboat *Housatonic*. The *Housatonic* sinking renewed and even strengthened the Union Navy's fear of torpedo warfare, particularly by a "David" as the submersible was also commonly called. In response, Rear Admiral Dahlgren wrote to Commodore Rowan of *New Ironsides* about further strengthening defenses against torpedo boat attack:

FLAG-STEAMER PHILADELPHIA,
Port Royal harbor, S. C., February 19, 1864.

SIR: The *Paul Jones* is just in, with the unpleasant news of the disaster to the *Housatonic*.

I shall leave here for Charleston as soon as one of the steamers can be made ready. The *Nipsic* and *Paul Jones* both need coal and some slight but necessary repairs.

The success of this attempt will no doubt cause a resort to the torpedoes along the whole line of blockade, and it behooves the commanding officer to resort to every precaution to avert a series of disasters.

As the torpedo boat passed by the ironclads within the bar, I think the inference is fair that the means used to protect them have been tried by the Davids, perhaps, unknown to us, and found sufficient.

All vessels at anchor, inside or outside, are therefore to use outriggers and hawsers with netting, or, if outside, are to keep underway.

You will take any further measures that you may deem necessary to keep off these torpedoes.

You will at once clear the inner harbor of all vessels not required for the blockading vessels. Some can leave for this place or Stono, and those which remain inside must anchor in the least water, with outriggers, etc.

The *Wabash* may leave for this port, as she is not capable of much movement, and is too valuable a mark for the torpedoes.

Respectfully, your obedient servant,

J. A. DAHLGREN,
Rear Admiral, comdg. South Atlantic Blockading Squadron.⁴¹⁵

⁴¹⁴ A separate repair bill (Figure 29), detailed later in the manuscript shows labor for services on the engine and of the boiler were each charged at \$25, while a replacement spar was charged at \$220, and a smokestack replacement was \$250. National Archives, Record Group 45, Confederate Navy Subject Files, roll 8.

⁴¹⁵ Order of Rear Admiral Dahlgren to Captain Rowan, 19 February 1864, ORN Vol. 15 (1902), 338; Distribution of vessels as of 15 April 1864, ORN Vol. 15 (1902), 400, 434. In a separate order from Dahlgren, he described *Wabash*, as of 3 June 1864, as "useless," ORN Vol. 15 (1902), 466. Repairs were completed and *Wabash* was re-assigned to Florida on 18 July 1864, ORN Vol. 15 (1902), 573.

In January, *Wabash* had been sent to Port Royal for repairs, but was still in need of an overhaul after its return to Charleston, and continued to serve outside the bar of the harbor for several months. The Confederates may have recognized that *Wabash* was plagued by mechanical issues, but even though it was still an objective worthy of a \$100,000 reward, no attempt to sink the stressed steamer was recorded.⁴¹⁶ Approximately three weeks after Dahlgren suggested *Wabash* be sent for repairs, *David* was assigned a new offensive objective; to be employed south-west of Charleston Harbor for a sortie against USS *Memphis* on the North Edisto River, some six to eight nautical miles (10 to 13 km) from the Stono River.⁴¹⁷

Mission 2: *Memphis* (North Edisto River)

It had been five months since *David*'s first sortie when documented offensive activity was renewed with *David*. The boat was now under the command of Engineer Tomb.⁴¹⁸ J. Walker Cannon had returned as pilot and there were two new crew members, A. Coste as a second pilot and James Lawless as fireman.⁴¹⁹

Because stealth was such an important aspect of *David*'s function, sorties continued to be planned based on the presence or absence of moonlight and nighttime visibility. Therefore, on 3 March 1864, with a new moon phase approaching, Tomb proceeded via inland waterways from Charleston to the North Edisto River/Stono Inlet (Figure 28) with the Union screw steamer *Memphis* as the target.⁴²⁰ The following night, 4 March, the steamer was located, but no attempt was

⁴¹⁶ No attempt was made to sink *Wabash*, but the damaged frigate was not actually sent to Port Royal again until early May, Distribution list of South Atlantic Blockading Vessels, ORN Vol. 15 (1902), 242.

⁴¹⁷ The repairs were insufficient, yet the vessel was returned to duty and transferred to Florida in mid-July. It was still "reported to be in bad condition, much decayed" in September 1864 (Report of Rear Admiral Dahlgren, 25 September 1864, ORN Vol. 15 (1902), 689.) *New Ironsides*, as has already been shown, was in a terrible state, needed repairs, and also served as a threat by presence only. The big frigate was likewise recommended to be sent for repairs, in Philadelphia, on 14 May and was ordered to be removed from service of the South Atlantic Squadron later in the month (Secretary of the Navy Gideon Welles issued the order for *New Ironsides* to proceed to Philadelphia on 23 May 1864, ORN Vol. 15 (1902), 439). *New Ironsides* was not actually sent to Philadelphia until after orders were issued in June 1864 by Rear Admiral Dahlgren.

⁴¹⁸ The attack on *Memphis* is reported by several parties from each side of the conflict in the ORN Vol. 15 (1902), 356-9.

⁴¹⁹ Campbell 2005, 84; Extract from the Notebook of Tomb, ORN Vol. 15 (1902), 358-9. In Tomb 1914 (169), crew member names were listed as "Pilots Cannors and Acosta and Fireman Lawless."

⁴²⁰ Campbell 2005, 84. In a report from William Gibson to Commodore S. C. Rowan, 3 April 1864, a Confederate deserter from Battery Pringle on the Stono River, told of seeing torpedo boats in March 1863, "Several in number;

made to sink it due to a mechanical problem with *David*. As Tomb reported, the water “feed pipe gave out and we decided to return up the river.”⁴²¹ Tomb meant that the water-intake pump had failed, as he explained in a notebook entry.⁴²²

On the subsequent night, 5 March, around 23:30, at approximately the same location on the river, the pump failed again. This time, instead of aborting the mission, Tomb navigated *David* into a section of marsh and made an impromptu repair, then proceeded towards *Memphis*:

About 12:30 A.M. of the 6th we came within hailing distance, but paid no attention to the hail, and they began firing upon us with small arms; but the shot, striking the steel shield, passed off without doing any injury to the boat or crew. The next moment the *David* struck her on the port quarter under the counter, the engine of the *David* backing at the time. The blow was a fine one, but the torpedo failed to explode. We then made a turn to port and came back at her on the starboard side; but as the *Memphis* had been working ahead, we passed under her counter, carrying away a portion of *David*'s stack, made a glancing blow, and again failed to explode the torpedo. Failing in our last attack, we decided to return to Church Flats and examine the torpedo, etc. As we steamed back up the river the *Memphis* made use of her heavy guns, but all the shot passed well over us and did no damage.

Reaching Church Flats and making an examination of the torpedo, we found that the first blow was a good one, as the tube containing the acid was mashed flat, but, being defective, had failed to explode. The other one was not a good blow, as the lead tube on the outside was bent the least bit, but the tube containing the acid was not broken. The torpedo contained ninety-five pounds of rifle powder, thirty pounds more than we used on *Ironsides*; had the tube been perfect, we would have blown the whole stern from the *Memphis*.⁴²³

one of these, about six weeks ago, came into the *Stono* and remained a few days near Battery Pringle; then went back to Charleston, or rather up the *Stono* (this is about the time of the attack upon the *Memphis* in Edisto)” ORN Vol. 15 (1902), 393.

⁴²¹ Tomb 1914, 169.

⁴²² “The night of the 4th we got near enough to the *Memphis* to see her lights, but our pumps failed to work and we returned up river. The next night about the same hour and spot the pumps again failed to work.” Extract from the notebook of First Assistant Engineer Tomb, ORN Vol. 15 (1902), 358.

⁴²³ Tomb 1914, 169. A similar, but less detailed version of this account can be found in the ORN Vol. 15 (1902), 358-9.

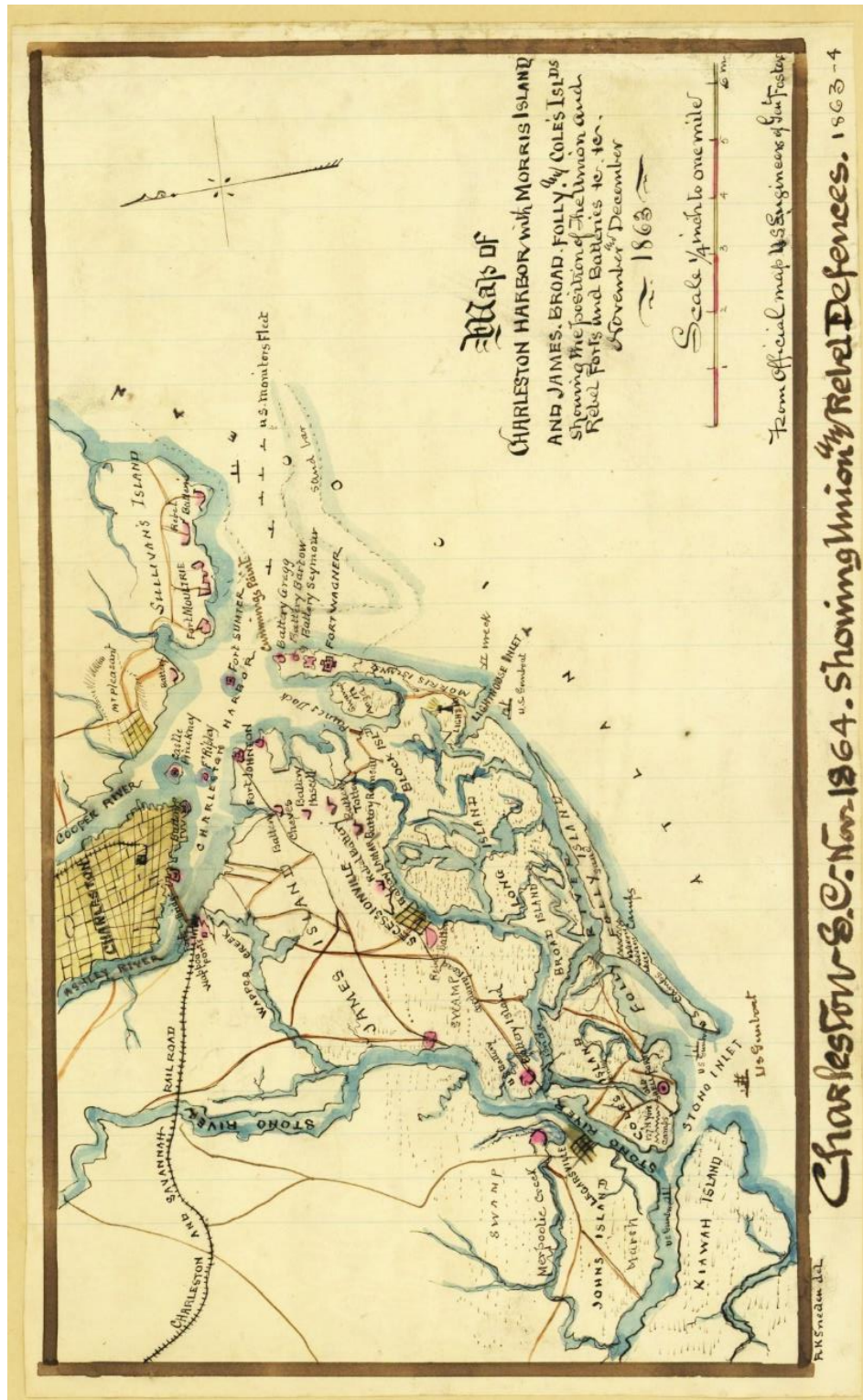


Figure 28. December 1863 map of Charleston Harbor. Robert Knox Sneden, *Robert Knox Sneden Diary, 1861-1865* Vol. 7, p. 311. Reprinted with permission of the Virginia Museum of History & Culture, Richmond, Virginia.

The failure of the torpedo was an embarrassment and became a source of contention between Tomb and Lee, who had created the torpedo and its contact-sensitive fuse. Tomb claimed the torpedo fuse was defective. In response to Tomb's accusations, Lee penned a fuming letter to Flag-Officer Tucker stating he had warned Tomb, in the presence of Theodore Stoney, of the age and potential unreliability of the torpedo:

CHARLESTON, March 8, 1864.
Brig. Gen. THOMAS JORDAN,
Chief of Staff:

GENERAL: It is reported that on Saturday night, March 5, 1864, Engineer Toombs [sic], C. S. Navy, in charge of the cigar torpedo steamer David, struck an armed vessel of the enemy in the North Edisto, but failed to destroy her in consequence of the torpedo not exploding. As this occurrence may disturb the confidence heretofore felt in the torpedoes prepared by me, I deem it due to myself to state that about 10 days since I saw Engineer Toombs, and in the presence of Mr. Theodore Stoney distinctly told him that the torpedo then on the David could not be relied upon, it having been exposed for the last six months to every vicissitude of weather and climate. I further told him that I would furnish to the vessel a new torpedo, thoroughly tested, and that could be relied upon. Notwithstanding this advice, Mr. Toombs [sic] went on the expedition above reported without the slightest knowledge on my part, and carrying the old torpedo. Under these circumstances it is scarcely necessary to ask why the expedition proved fruitless. The most common precaution indispensable to the proper use of all fire-arms, i.e., not to rely on a charge of long standing, has been here neglected.

With the facts as above stated it may readily be determined whether the disaster may be most fairly attributed to a failure of the torpedo prepared by me, or to a willful disobedience to commonsense instructions on the part of Engineer Toombs [sic].

I have the honor to be, general, very respectfully, your obedient servant,
FRANCIS D. LEE;
Captain of Engineers.⁴²⁴

Stoney initially supported Lee's version of the damning conversation. However, only a day later he recanted witnessing Lee's condemnation of the torpedo, forcing Lee to withdraw his complaint. Stoney, not desiring to be involved in a dispute among peers, also declined to support

⁴²⁴ Letter from F. D. Lee to Flag-Officer Tucker, 8 March 1864, ORN Vol. 15 (1902), 357-8.

Tomb's version of the conversation as well. Regardless of the cause for the torpedo malfunction, the result was embarrassment for both men and disappointment for the Confederate Navy:

[Theodore Stoney to Flag-Officer Tucker]
CHARLESTON, March 9, 1864.

I deem it proper for me to state that the above letter was submitted to me on the morning of the 8th of March by Capt. Francis D. Lee, and upon its perusal I did state that the facts therein reported were correct, whereupon Captain Lee forwarded the letter to its destination. Upon the subject being again brought to my attention this day I cannot recollect in the conversation alluded to in the above letter that Captain Lee directly condemned the torpedo, but that he advised Engineer Toombs [sic] to use one of his new torpedoes that he conceived far more perfect. To the best of my knowledge and belief Captain Lee had no conversation with Mr. Toombs [sic] on the dimensions of charges of gunpowder necessary to obtain the best results.

THEODORE STONEY.

[Francis Lee to Flag-Officer Tucker]
CHARLESTON, March 9, 1864.

As the only witness to the conversation above alluded to was Mr. Theodore Stoney, I deemed it proper before forwarding my letter of March 8 to submit it to Mr. Theodore Stoney's inspection, in order to ascertain if his recollection of the facts therein stated agreed with mine. Not until he confirmed my report did I forward the letter.

As Mr. Stoney now believes himself in error, and as consequently I am not sustained in my recollection of so much of the conversation as refers to my directly condemning the torpedo used by the David, I deem it proper to withdraw so much of my letter as bears upon that point.

FRANCIS D. LEE,
Captain of Engineers.⁴²⁵

⁴²⁵ F. D. Lee's letter is reprinted, along with Stoney's response, and Lee's retraction of blame in the ORA Vol. 35 pt. 2 (1891), 345-6.

Tomb's modifications to *David* had been effective in protecting the vessel and crew from small arms fire, yet there was still damage to *David*; part of the smokestack had been damaged. The commander of *Memphis*, R. O. Patterson, believed *David* to have been more severely injured in the confrontation:

U.S.S. MEMPHIS,

North Edisto River, South Carolina, March 6, 1864.

SIR: I have the honor to report that an attempt has been made by the rebels to blow up this ship, but am happy to state did not succeed. At 1 a. m. a torpedo boat was discovered about 50 yards distant, approaching us rapidly on the port quarter, from up river. We immediately beat to quarters and slipped the chain; in an instant the torpedo was under our port quarter, and we could not bring a gun to bear on her. The watch being armed at the time, we were enabled to concentrate a rapid fire with muskets, revolvers, and pistols down upon her, and into what looked like a hatchway, nearly in the center; the rapid firing seemed to stop her progress, and, dropping about 12 feet astern, in an instant she darted ahead again and at the same time we rang to go ahead, and our propeller, I think, must have caught and broken some of her gear, as she appeared to be disabled and drifted up river. In a few moments they showed a light, at which we fired a 12-pounder rifle shot; she then disappeared and an armed boat was immediately dispatched to search for and capture her if possible, but returned without success. This torpedo boat was about 25 feet long, painted lead color, and in appearance was like a ship's boat in the water, bottom up.

I am, sir, very respectfully, your obedient servant,

R.O. PATTERSON,

Acting Master, commanding.⁴²⁶

An invoice (Figure 29), dated 6 April, a month after the attempted attack, details repairs made by shipbuilders at Eason Brothers Shipyard. Patterson mentioned that the propeller damaged some of the gear of *David*. This appears to be damage to the spar. The repairs made by Eason Brothers included repair of the smokestack jacket and replacement of the spar with a new socket fabricated for the torpedo, but also maintenance on the engine and boiler, hinting at the level of service and wear the vessel had seen.⁴²⁷

⁴²⁶ *Memphis* Commander Patterson to Commodore Rowan, ORN Vol. 15 (1902), 356-7.

⁴²⁷ Repair invoice, National Archives, Record Group 45, Confederate Navy Subject Files, M1091, Roll 8. A second invoice, dated 13 February 1864 simply notes "Repairing Steam Torpedo Boat 'David' and materials," but offers no details of the repairs.

AR Charleston, April 6th 1864

Confederate Navy Department,
For Steam Torpedo David

To *Jill Eason & Bro* Dr.-

<i>Putting patch on boiler bottom</i>	100 00		
<i>Repairing Smoke Stack Jacked &c</i>	250 00		
<i>Services of Hand on Engine</i>	25 00		
<i>Services of Boiler Maker on boat</i>	25 00		
<i>One Torpedo Staff, fitted with Lockett &c</i>	220 00		
<i>Carriages</i>	4 00		
		\$624 00	

Approved
James O. Fort
 Chief En. Com.

Approved
Thos. M. ...
 Pay Officer

Approved for *Six hundred twenty four* Dollars,
 Cents, ordered to be paid by Paymaster *Thos. M. ...* Confederate Navy.
J. H. Ingraham Commanding Naval Station.

Received, *April 4* 1864 from *Thos. M. ...* Paymaster,
 Confederate Navy, the sum of *Six hundred twenty four* Dollars,
 Cents, in full of the above bill.
J. M. Eason & Bro

Figure 29. April 1864 Invoice for repair work to *David* by Eason Brothers. Shipbuilders. National Archives, Record Group 45, Confederate Navy Subject Files, M1091.

The *New York Herald* reported on the attack on *Memphis*, but the resulting article was so erroneous that Commander Patterson was angered and extended a few more details about the event in a request “to correct its absurdities”.

Sir: Having seen in the New York *Herald* of April 22d, an account— so called— of the attack by a Rebel torpedo boat upon this vessel, on this river, which account does great injustice to myself and all concerned, allow me, through your columns to correct its absurdities, and furnish the public with a true statement.

On the 6th of March, at about 1 A.M., the Quartermaster discovered a dark object, like a log, coming toward the ship, *against the tide*. This aroused his suspicions, and he reported at once to the officer of the deck, who, upon discovering the object, and seeing it rapidly approaching, was satisfied of its hostile intent, gave immediately orders to “slip,” and called “all hands to quarters.” The cable slipped *at once*, and, on backing clear of the buoy-rope, it is supposed by those who saw the “dead” under our counter, that the propeller struck and disabled her as she backed out, and headed upstream. A boat was quickly lowered, and an armed crew was sent after the scoundrels; but owing to the darkness of the night, and extreme smallness of the Rebel boat, they succeeded in escaping. The true character of our antagonists we were not aware of until some ten days since, when a refugee from this vicinity came on board, and reported that the torpedo boat was brought by water some thirty miles from Charleston; that he was that morning stationed on the beach near *us*, with horse and wagon, to pick up what might drift ashore; and that he heard the one in charge of the boat tell his master “that they might have succeeded in blowing us up, but that the fools were wide awake and ready for them,” and that “so severe a fire of small arms was opened on them that they barely escaped.” This statement is as brief and correct a justification as I can pen, in contradiction of such absurd reports as that “two torpedo boats were butting this ship for half an hour, to the infinite amusement of her crew, who were not aware of their real character,” and that an attempt was made at the same time to destroy our “consort,” which is the more absurd, as we have had no “consort” since we arrived at this station.

R. O. Patterson, Acting Master, Commanding
U.S.S. Memphis, N. Edisto River, May 24th, 1864⁴²⁸

Patterson pointed out that the torpedo boat was approaching against the tide. Presumably, this strategy was to allow for an escape using the incoming tide, which Patterson confirmed by stating that the torpedo boat, although assumed injured, “headed upstream.”⁴²⁹ Also noteworthy is the newspaper’s statement that two torpedo boats were involved in the attempted attack. A similar report appeared in San Francisco, California’s *Daily Evening Bulletin* on 2 June 1864, “Not a month ago the *Memphis*, lying in the Edisto blockading, was visited one night by two torpedo boats, which

⁴²⁸ *Army and Navy Journal* (New York) Vol. 1 No. 43, 18 June 1864, 709.

⁴²⁹ *Army and Navy Journal* (New York) Vol. 1 No. 43, 18 June 1864, 709.

had come down from Charleston to blow her up, and her consort as well.”⁴³⁰ The source of the reports is certainly the same and no other corroborating evidence of two torpedo boats has been found; *David* was the only known active torpedo boat at that time.

Tomb’s account of the *Memphis* mishap, as recorded in official records,⁴³¹ differs slightly from that of his memoirs with two additional paragraphs. The first notes that Tomb was delayed in returning to Charleston, “We were detained at Church Flats two or three days waiting instructions from Flag Officer Tucker, but not receiving them returned to Charleston.”⁴³² Tomb’s description of the delay is confirmed in a report of a Confederate deserter. When questioned about sighting torpedo boats, the deserter reported that, “one of these, about six weeks ago, came into the Stono and remained a few days near Battery Pringle; then went back to Charleston, or rather up the Stono (this is about the time of the attack upon the *Memphis* in Edisto).”⁴³³ With the attempt of 6 March and a delay of two to three days, this places *David* back on the wharf in Charleston on 8 or 9 March. A clue from the ORN, in a communique from Commodore Rowan to Gideon Welles, coupled with a passage from Tomb’s memoirs, shows Tomb arrived back in Charleston on 9 March:

[Tomb’s memoir entry]

When ready for duty, I was ordered to North Edisto [River] to attack the U.S.S. *Memphis*, at anchor at that point. At this time I was also attached to the *Juno*, getting her ready to run the blockade, with a load of cotton for the Navy Department.⁴³⁴

[Commodore Rowan to Gideon Welles]

General Beauregard is in Florida and A. P. Hill is in command at Charleston. No troops have returned from Florida. They also state that the steamer *Juno*, a very fast vessel, formerly a mail boat between London and Glasgow, was the last that succeeded in getting in, about four months ago. She escaped on the night of the 8th instant with cotton for the Government.⁴³⁵

⁴³⁰ “Rebel Torpedo Exploits-- Attempt to Blow up the Frigate ‘Wabash’ off Charleston,” *Daily Evening Bulletin* (San Francisco, California), 2 June 1864.

⁴³¹ Extract from notebook of First Assistant Engineer Tomb, ORN Vol. 15 (1902), 358-9.

⁴³² Campbell 2005, 117-8.

⁴³³ Report of Lieutenant-Commander William Gibson to Commodore Rowan, 3 April 1864, ORN Vol. 15 (1902), 392-3.

⁴³⁴ Campbell 2005, 84.

⁴³⁵ In a letter from Commodore Rowan to Gideon Welles, the date of *Juno*’s departure is recorded, 18 March 1864, ORN Vol. 15 (1902), 369.

As shown above, *Juno* left Charleston on 8 March. Tomb recalled he arrived back in Charleston from the attempt on *Memphis* the night after *Juno* departed for London, thus missing the trans-Atlantic trip.⁴³⁶ Tomb's failure to board the blockade runner was fortunate as *Juno* was overloaded with cotton, consequently split amidships, and was lost at sea.

In addition to the date of *Juno*'s departure from Charleston being recorded in Rowan's message to Welles, Rowan also posited that the ship had eluded the blockading vessels, entering Charleston Harbor four months prior. This suggests *Juno* was on trans-Atlantic duty in late 1863, returning to Charleston sometime in December. Perhaps it is not coincidence that *David* was inactive during the final months of 1863. Tomb may have been carrying out engineering duties aboard *Juno* during that time, but definitive records have not been recovered to support this hypothesis.

Since Tomb missed his March 1864 voyage to London aboard *Juno*, he remained with *David*. U. S. Navy Commodore Rowan wrote to Gideon Welles that the commander of *Acacia* reported "having seen a torpedo boat on the night of the 11th instant [March], while cruising off Rattlesnake Shoal, but lost sight of it immediately."⁴³⁷ At the end of the month, Beauregard described *David* as having "exhausted itself in its attack on the Ironsides."⁴³⁸ The mechanical failures experienced during the sortie against *Memphis* tend to support that statement. However, within two weeks of Beauregard's comments, *David* would once again be called upon to attack an enemy vessel.

Mission 3: Blockaders (Saint Helena Sound/Ashepoo River)

Confederate Army reconnaissance identified a blockader in Saint Helena's Sound, near the mouth of the Ashepoo River. Confederate Brigadier General W. S. Walker thought the ship could be a prime candidate for attack by *David*:

HEADQUARTERS THIRD MILITARY DISTRICT,
Pocotaligo, March 15, 1864.

⁴³⁶ Campbell 2005, 79-81.

⁴³⁷ Commodore Rowan to Secretary of the US Navy Gideon Welles, 15 March 1864, ORN Vol. 15 (1902), 356. Rattlesnake Shoal is off the present-day Isle of Palms, across the harbor from downtown Charleston.

⁴³⁸ Letter from General Beauregard to Major-General W. H. C. Whiting, 31 March 1864, ORA Vol. 35 pt. 2 (1891), 396.

GENERAL: I have recently had closely reconnoitered by my scouts a blockader that has been lying for a year past at the mouth of the Ashepoo River. Private Crowd, of the Signal Corps, a half-brother of Captain Hartshorne, served nine years in the U. S. Navy. He got within a mile and a half of her with a tolerable glass. He pronounces her a corvette of about 800 tons burden, with four guns on a side probably two more as bow and stern chasers. Top of bulwarks about 12 feet from water line; complement of crew, 250 men. Her position is half a mile west of Otter Island. This precise position she has kept for months past. A pilot boat is anchored a half mile up the river; it is supposed with reference to guard against torpedoes.

The intermediate streams would be navigable from Charleston as far as the mouth of Mosquito Creek by one of the Davids. Whether that creek would be navigable for such a boat at high water I am not sure, but my impression is it would be. This would carry her to Bennett's Point, the end of what is marked on the map as Bear Island. Coal could be brought from the Jacksonboro depot to this point. From this point it would be 9 miles by the channel between Otter Island and Fenwick's island to the corvette. It would be necessary to come from Saint Helena Sound in order to avoid the tender on guard on the river side and to insure greater secrecy by an attack from an unexpected quarter. By taking advantage of a flood tide she could easily get to a position of safety after doing her work. If the plan is considered feasible, I will have any further information obtained that may be considered desirable.

I have the honor to be, very respectfully, your obedient servant,
W. S. WALKER,
Brigadier- General, commanding.⁴³⁹

Tucker transferred *David* south, via inland waterways, to make a third sortie in Saint Helena's Sound, near the Union stronghold at Port Royal. The orders did not specify a target for the torpedo boats, yet the intended victim was likely the corvette mentioned by Brigadier General Walker. The bay was weakly protected at the time by only two vessels: *Kingfisher*, a corvette, and a guard vessel, *Wildcat*.⁴⁴⁰ However, between the time of the reconnaissance report and the issuance of orders *Kingfisher* met a different misfortune. On 28 March, the vessel grounded while attempting to gain better position for protecting the Ashepoo River mouth.⁴⁴¹ Two days later, the vessel was deemed a

⁴³⁹ Letter from Brigadier- General W. S. Walker to Brigadier- General Thomas Jordan, 15 March 1864, ORA Vol. 35 pt. 2 (1891), 359.

⁴⁴⁰ Vessel distribution list, 15 March 1864, ORN Vol. 15 (1902), 365. *Hale* was under repair, but had been suggested by William Reynolds to assist in Saint Helena's Sound as soon as possible after repairs were completed in Port Royal, letter of William Reynolds to Commodore Rowan, 8 March 1864, ORA Vol. 15 (1902), 359.

⁴⁴¹ Report of Commodore Rowan to Secretary Welles, 2 April 1864, ORN Vol. 15 (1902), 383.

loss and salvage commenced.⁴⁴² As of 4 April, when orders were issued to send Confederate torpedo boats to Saint Helena's Sound, the gunboat USS *Dai Ching* had replaced *Kingfisher* in the bay.⁴⁴³

David had been used the previous month against *Memphis*, and although there were unsubstantiated reports of two torpedo boats used in that attack, the sortie to the Ashepoo would be the first to involve multiple "Davids," those of the Southern Torpedo Company, in a joint effort by the Confederate Army and Navy.

Remarkably little is written of *David's* expedition to the Ashepoo River. From James Tomb's memoirs, it is known that *David* did, in fact, join the cooperative venture.⁴⁴⁴ A report of Major-General A. R. Chisolm on 8 April, just two days after the mission began, stated that *David* had joined the expedition but the STC boats had to return to Charleston due to engine difficulties. The mission was consequently aborted. This mission is discussed further in Chapter VIII.

Mission 4: *Wabash* (Stono River)

Ten days after the aborted mission to the Ashepoo River an attempt was made to sink *Wabash* and claim the \$100,000 reward. Tomb briefly mentioned the attack on *Wabash* in his memoirs, and in his 1905 talk he related that:⁴⁴⁵ "The *David* returned to Charleston, and while on duty, passing out beyond Fort Sumter at night, did not make another attack on the blockading ships, except on one night in April [18th], when we ran out of Charleston, intending to strike the United States steamship *Wabash*; but there was such a heavy swell that in heading for the *Wabash* the sea would roll on

⁴⁴² Various reports of the vessels loss, ORN Vol. 15 (1902), 385-8.

⁴⁴³ In a distribution of vessels list dated 1 April 1864, three vessels are shown to have been at Saint Helena's Sound; *Kingfisher* (already lost at this point), *Dai Ching*, and *Wild Cat*, ORN Vol. 15 (1902), 390. The same is reported by Brigadier-General B. H. Robertson to Brigadier-General Thomas Jordan on 4 April 1864, ORA Vol. 35 pt. 2 (1891), 402.

⁴⁴⁴ The discrepancy appears when Tomb's account is compared to official records that indicate only two other boats participated in this mission. This discrepancy is discussed further in Chapter VIII.

⁴⁴⁵ "We ran out of Charleston one night in April 1864, intending to strike a ship we took to be the *Wabash*. We headed for her three times, but the heavy swell rolling over and into the 'David' compelled us to return to the harbor," extract from the notebook of First Assistant Engineer Tomb; ORN Vol. 15 (1902), 359. In his memoirs, Tomb wrote, "The *David* did picket duty beyond Fort Sumter, except running out one night in an effort to strike the frigate *Wabash* lying outside of the harbor, we came near another ship. We could have sunk the *Wabash* had the swell not rolled over and into the *David* and nearly filling her with water. We made three efforts to reach her but had to give it up and return to Charleston" (Campbell 2005, 176).

board the David, and she came so near sinking that we were compelled to return to Charleston. We headed for the Wabash three times.”⁴⁴⁶

A report by Captain John De Camp of *Wabash* confirms that his vessel was approached by a torpedo boat, and that he believed he may have destroyed the enemy boat with round shot:

U.S.S. WABASH,

Off Charleston, S. C., April 19, 1864.

SIR: I have to report that last night, at about 9:45, an object was discovered by Ensign Charles H. Craven, the officer of the deck, on the starboard quarter, distant about 150 yards, which corresponded in shape and movements to the torpedo boat which sunk the Housatonic. It moved rapidly up against the tide, till about the mainmast, then, turning, stood directly for the ship.

Ensign Craven opened fire with musketry, beat the gong for the crew to assemble at quarters, rang four bells for the engine to go ahead, opened fire with the watch, with the starboard battery, and gave orders for slipping the chain.

The men rushed quickly to their quarters, the ship moved ahead, the chain was slipped, and when the object was being left in the quarter, distant at the time about 40 yards, a round shot is supposed to have struck it; at all events the second shot struck in its immediate vicinity, and it was seen no more.

One round shot was fired from each of the spar-deck guns on the starboard side, and the crew were kept at their quarters, while with the helm hard aport the ship kept cruising round the spot.

The marines were also stationed along the starboard side, where they could use their pieces to advantage. Signal was made to the effect that Rams were coming, as that most likely to place the other cruisers on their guard, and soon the Canandaigua and Flag came up within hail.

Captain Davis, Paymaster Richardson, and Dr. Burbank all saw the object spoken of, which corresponded exactly to the description given of the torpedo boat which sunk the Housatonic, except that this had but one elevated place or turret.

I am, sir, very respectfully, your obedient servant,

J. De CAMP,
Captain.⁴⁴⁷

⁴⁴⁶ Tomb 1914, 169. This is similar to his memoir entry in Campbell (2005, 176).

⁴⁴⁷ Report of Captain De Camp, regarding the discovery of a suspicious object in the water supposed to be a torpedo boat, ORN Vol. 15 (1902), 405.

Newspapers once again reported that the torpedo boat was likely lost, “An unsuccessful attempt was made to destroy the frigate *Wabash* off Charleston, by a torpedo boat. The *Wabash* gave a broadside to the enemy, which sunk the same, and the crew escaped under cover of the heavy fire.”⁴⁴⁸ The same newspaper printed a more detailed account more than a month later, in which a correction was issued, that the torpedo boat had not been destroyed.⁴⁴⁹ In the panic of the incident, the crew of *Wabash* slipped the chain, but apparently did not attach a buoy to the chain before releasing it, thus losing an anchor and 70 fathoms (230 ft or 70 m) of chain. This was the only loss incurred in the attack and a negligible one at best.

The following night, *David* went out again to challenge *Wabash*, but found that not only had *Wabash* moved, but no other vessel was accessible for an attack. Tomb wrote in his memoirs, “We proceeded down to the bay the next night, but saw nothing of the enemy and while [pilot J. Walker] Cannon was willing to go farther and hunt them up, I thought it best after such a failure, to return.”⁴⁵⁰ This is the last recorded action of *David* in Confederate records.

Perhaps not coincidentally, Beauregard was given command of North Carolina and the Cape Fear area around Wilmington on 18 April. However, Beauregard did issue orders for another mission about two weeks later, on 1 May, for “the three army torpedo boats, under the control of Mr. Theodore Stoney, [to] leave this city tomorrow by inland navigation for operations against the enemy’s fleet in the waters of Port Royal.”⁴⁵¹ The plan seems to have been abandoned.

Regardless, news of the attacks on *Memphis* and *Wabash* by *David* spread quickly and fueled new conversations about defense against the stealthy machines of war. Fleet Captain Joseph M. Bradford, who later published a three-volume series on Civil War era torpedo use, was aware of the lack of effect of the gunboats’ big weapons on the semi-submersibles and offered the following opinion:

⁴⁴⁸ “The Eastern News” *Daily Evening Bulletin* (San Francisco, California), 29 April 1864. A similar story was published in the same newspaper over a month later, “no traces of the rebel *David* were to be seen, although a dozen night-glasses carefully swept the surface of the sea about the ship and towards the bar. What her fate was cannot of course be stated with certainty; but it is the opinion of all onboard the *Wabash* that she was struck and sunk by the shot from the frigate,” “Rebel Torpedo Exploits- Attempt to Blow up the Frigate ‘Wabash’ off Charleston,” *Daily Evening Bulletin* 2 June 1864.

⁴⁴⁹ “Rebel Torpedo Exploits- Attempt to Blow Up the Frigate ‘Wabash’ Off Charleston [Correspondence of the N.Y. ‘World’]” *Daily Evening Bulletin* (San Francisco, California), 2 June 1864.

⁴⁵⁰ Campbell 2005, 90.

⁴⁵¹ Order from General Beauregard (relayed by H. W. Feilden) to Brigadier-General H. A. Wise, 1 May 1864, ORN Vol. 15 (1902), 733-4.

FLAGSHIP NEW IRONSIDES,

Off Morris Island, South Carolina, April 23, 1864.

SIR: I have recently been thinking of some effectual means to destroy torpedo boats. These boats are known to be musket proof. There are in the several ordnance establishments a number of old blunderbusses and swivels. These, when pivoted, can be directed by hand to any point.

I propose to mount these swivels in the bows of light, fast-pulling boats, one or more to be attached to each exposed vessel, the boats at night to be kept down, swivel pivoted, ready to move in any direction. On the approach of torpedo craft, the boat to pull up to it at once and discharge her blunderbuss or swivel into her, repeating if necessary.

If there are not enough of these swivels ready in the several yards, they could be easily made or purchased. This fleet would require about 100 of them.

The projectile to be discharged should weigh not less than 1 pound. It might be hollow. I have mentioned my views to several officers, and they approve of them very highly.

Our present means of attacking these boats can amount to nothing unless by the accidental hitting of one from a ships gun or howitzer.

I have the honor to be, your obedient servant,

Jos. M. BRADFORD,

Fleet Captain, South Atlantic Blockading Squadron.

Other Activities of the “Davids”

Although Beauregard left Charleston and no other sorties are documented in Confederate records, the boats may have still been active. On 3 July 1864, requests were made for the use of “torpedo boats” by army officers, yet again, nothing seems to have been done to accommodate the requests.⁴⁵²

Still, more sightings of *David* or possibly another David-class vessel were reported. On 14 September 1864 the deck crew of USS *Winona*, stationed inside the bar undergoing repairs logged the following report:⁴⁵³

⁴⁵² E.g., Brigadier-General William B. Taliaferro suggested to Assistant Adjutant-General Charles S. Stringfellow on 3 July 1864 that “the torpedo boats should certainly go down to-night.” ORN Vol. 15 (1902), 748.

⁴⁵³ Distribution List of South Atlantic Blocking Vessels, 15 September 1864, ORN Vol. 15 (1902), 676.

September 14, 1864.—At 4:25 a.m. Off Breech Inlet. Engines not working. Saw a torpedo boat approaching us on the port beam. Hailed her, but received no answer. Struck 4 bells and beat to quarters, and opened on her with musketry and howitzers. Steamed ahead with helm a port; made signal “Torpedo boat near,” and spoke [with] the *Nipsic*, which, with the *Pontiac*, was steaming in toward us. Turned and stood off for Breech Inlet, but saw nothing more of the torpedo boat.⁴⁵⁴

It is unknown if this sighting is accurate and if so, was the vessel *David* or another David-class boat? However, an undated sketch of the deck arrangement of USS *Winona* by Alfred Waud, sketch artist for *Harper's Weekly*, has a rough pencil drawing of what is certainly a David-class vessel on verso (Figure 30), suggesting the artist may have associated the two vessels or drawn them at the same time.⁴⁵⁵

Other sketches by Waud are quite remarkable and precise in detail. The sketch of the torpedo boat has an obvious flaw; the smokestack is centrally located, suggesting that the crude image of the torpedo boat (and that of *Winona*) may have been from verbal description rather than observation or taken from an outside source. The centrally-positioned smokestack is a feature shared with another sketch that was published in *Harper's Weekly* in November 1863 (Figure 31), at least four months prior to *Winona's* arrival in Charleston, by an “Occasional Contributor.”⁴⁵⁶ Waud is

⁴⁵⁴ Abstract log of USS *Winona* 14 September 1864, ORN Vol. 15 (1902), 675. Also see the abstract log of USS *Nipsic*, *ibid* and the report of Rear Admiral Dahlgren, 25 September 1864, ORN Vol. 15 (1902), 689.

⁴⁵⁵ The sketches can be viewed on the Library of Congress website at <https://lccn.loc.gov/2004660415>. The LOC website provides the following information about Waud, “Alfred R. Waud (1828-1891) was the most prolific “special” artist of the Civil War. He was born in London, England, and was educated at the Royal Academy’s School of Design. He migrated to the United States in 1850, worked as an illustrator of periodicals and books until, at the outbreak of the war, he joined the staff of the *New York Illustrated News* as a field artist, or “special.” With pencil and sketchbook, he reported the opening months of the war and was present at First Bull Run, where, though caught up in the headlong Union rout, he was able to bring back his first battle sketches for reproduction as woodcuts in the *New York Illustrated News*. In October 1861 he accompanied the Union fleet in its attack on Hatteras Inlet. Early in 1862 he joined the staff of *Harper's Weekly* and remained throughout the war its most popular “special,” especially among the field soldiers, the sharpest critics of the art. As the war ground on, he continued to be in the thick of the battle, in the Wilderness with Lieutenant General Ulysses S. Grant’s army and, with his brother, William, who was also a highly distinguished field artist. He continued with *Harper's Weekly* as an artist-reporter during the latter 1860’s, producing an historic series of drawings of the postwar South on a trip down the Mississippi to New Orleans. Many of his works appeared with the *Century Magazine's* extensive series of articles on the war. They were later included in the book version, *Battles and Leaders of the Civil War*. Today, the Library of Congress maintains a collection of 2,300 original sketches by Waud and his brother.”

⁴⁵⁶ Distribution List of South Atlantic Blocking Vessels, 15 March 1864, ORN Vol. 15 (1902), 365.

known to have been a contributor to the periodical and it seems safe to presume that he drew both sketches given the shared error.

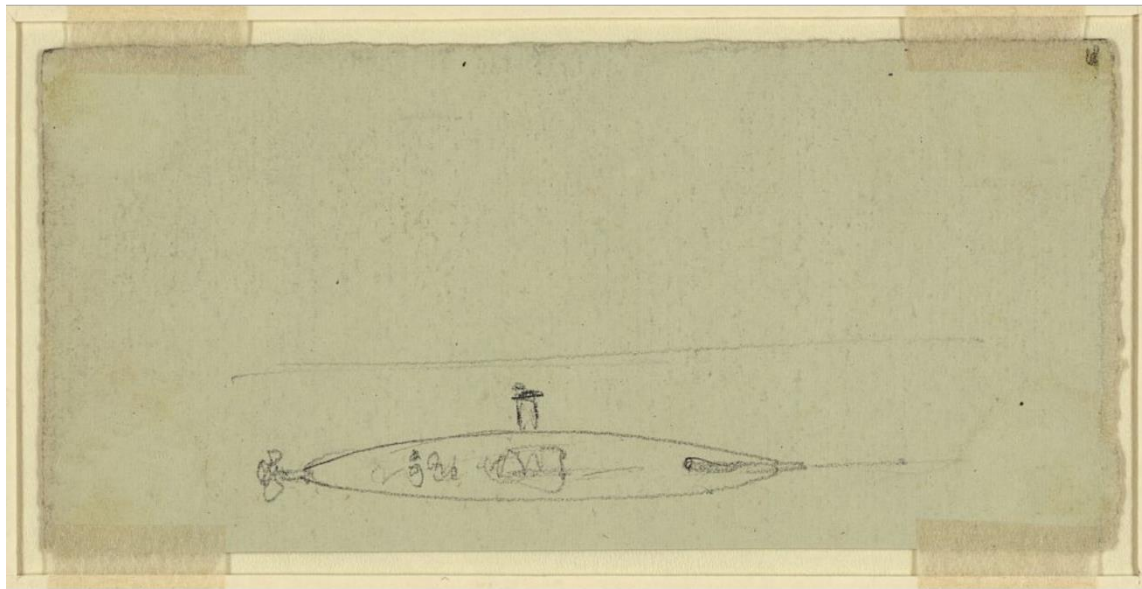


Figure 30. Unlabeled and undated pencil sketch of a “David” by Alfred Waud. Library of Congress, Morgan Collection of Civil War Drawings, DRWG/US- Waud, no. 584.

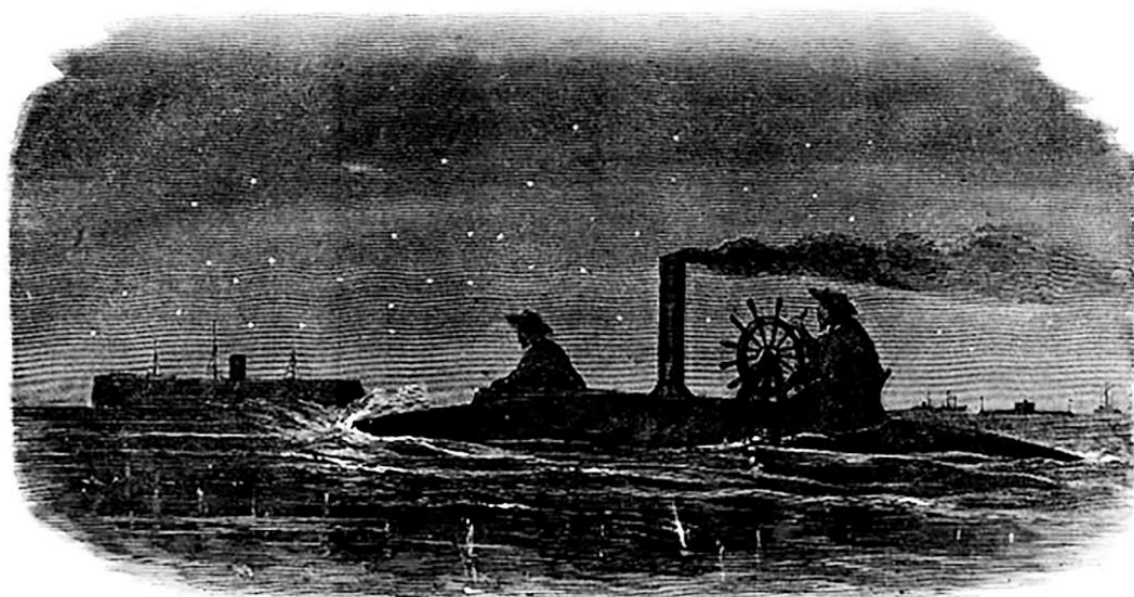


Figure 31. Artist’s rendition (likely Alfred Waud) as it appeared in *Harper’s Weekly* November 1863.

To determine if Waud was in Charleston at any point, a survey was made of the artist's work contained in the Library of Congress (LOC hereafter) collection. No evidence could be found to suggest Waud was in Charleston during 1863, further indicating the first "David" sketch was made by description rather than observation. Thirty sketches by Waud, dated either by the artist himself or by the LOC, made between February and December 1864, demonstrate that the artist was in Charleston as many as three times during the year, and certainly had an opportunity to gather information on David-class vessels during these trips.⁴⁵⁷

A rough production date of the "David"/*Winona* sketches may be inferred from certain facts. First, the undated sketch exhibits a movable spar, a feature added to *David* after the attempt to sink *New Ironsides*, suggesting the drawing was produced some time afterward. Second, if the sketched vessel is of another David-class vessel, then it cannot pre-date the first appearance of these David-class vessels in March 1864. Third, *Winona* arrived in Charleston in late-July 1864, and that rough date may be used as a *terminus post quem* (earliest) date of production of the sketch, presuming an association of the two vessels drawn on the same paper. However, the connection between Waud's sketches of *Winona* and the torpedo boat on the same page remains speculative, and may simply be two depictions made at distinct times without association.

Further sightings of torpedo boats continued. The crew of the sloop *John Adams* logged a sighting in October, "On the night of the 11th instant [November 1864] a torpedo craft was seen by our picket boats off Sullivan's Island, near Fort Beauregard, and was also seen by the lookout at Gregg, at daylight on the following morning, steaming up to and around Moultrie Point."⁴⁵⁸ Yet another November sighting was reported, "A torpedo craft was seen from Cumming's Point this forenoon, moving about in the vicinity of Castle Pinckney."⁴⁵⁹ These sightings, real or imagined,

⁴⁵⁷ In 1864, Waud made many sketches from various points in Virginia, his presence in Georgia can be documented in late May/early-June, then again in mid-October. Of the 30 dated images, only two were from South Carolina. One was of the destruction of USS *Housatonic* (roughly dated by Waud with a range of 7-17 February 1864) and the other dated by the LOC to 1863-1864, simply titled "Off Charleston." Therefore, he presumably passed the South Carolina (and likely Charleston) coast at least twice, but more likely three times in 1864. If the 14 September sighting was a David-class vessel, it likely happened while Waud was passing through Charleston to Georgia in the last trip south that Waud made that year.

⁴⁵⁸ Captain J. F. Green to Rear Admiral Dahlgren, 13 October 1864, ORN Vol. 16 (1903), 15.

⁴⁵⁹ Captain J. F. Green to Rear Admiral Dahlgren, 8 November 1864, ORN Vol. 16 (1903), 46; Rear Admiral Dahlgren to Secretary Welles, 8 November 1864, ORN Vol. 16 (1903), 51.

were the last of a “David” under steam in Charleston during the war, although the Union fleet was still actively on the lookout until the New Year of 1865.⁴⁶⁰

⁴⁶⁰ Rear Admiral Dahlgren to Captain Scott in view of expected attack by the enemy, 31 December 1864, ORN Vol. 16 (1903), 153-4.

CHAPTER VIII

OTHER DAVID-CLASS SEMI-SUBMERSIBLE STEAMERS OF CHARLESTON

In 1993, Willard Strong, a native of Monck's Corner, the area outside Charleston where *David* was conceived and built, noted, "The original David spawned an entirely new class of vessels and its role as an archetype cannot be overstated."⁴⁶¹ Details of other David-class vessels are poorly documented, leaving a void in their historiography. Furthermore, no attempt has been made to reconcile the quantity of David-class craft that was built. Evidence presented below demonstrates that ten can be confidently documented, with two other provisional possibilities, all of which were produced in the Charleston area. These are summarized in table form at the end of the chapter. Likewise, there has been little previous effort to discern David-class vessels from other types of torpedo boats built within the Confederacy. A brief survey of vessels, often mistakenly referred to as "Davids" in historical accounts, from Charleston and other cities appears in Appendix C. Some fusiform (cigar-shaped) vessels were taken as prizes of war to Northern ports for display or further examination and are briefly surveyed at the chapter's end.

Rumors of other 'Davids', based largely on the highly talked-about "Fish Boat" (*H. L. Hunley*) after its arrival in Charleston in August 1863, were not based in reality. No other semi-submersibles similar to *David* were under construction at the time of the attack on *New Ironsides*, and *H.L. Hunley* was a single production experimental craft that had only seen self-inflicted disaster.

Experiments with torpedo boats in Charleston, *i.e.*, rowed cutters, steam launches, and Lee's failed torpedo ram were unsuccessful, but when Francis Lee saw *David* upon its arrival in Charleston he was notably impressed with the little steamer. Just as the Union Navy ordered the construction of more monitor-style boats based on the experimental *Monitor* without a trial in combat of the original vessel, Lee wrote to Beauregard to suggest that a fleet of "Davids" be constructed before its inaugural combat mission. It was a clear demonstration of his confidence in David Ebaugh's unproven creation: "I would therefore respectfully suggest that such a fleet be constructed at various points of the state or Department near such water courses as will allow of a draft of not less than three feet which

⁴⁶¹ "Not a Submarine," Willard Strong, *Berkeley Independent* (Charleston, South Carolina), 24 November 1993.

will be sufficient for these boats to descend to the coast at such point as may be determined.”⁴⁶²

On 2 October 1863, before *David's* on attack *New Ironsides*, Beauregard penned an endorsement calling for the construction of nine similar vessels, “Approved and respectfully referred to the War Department for authority to have 3 of these Cigar torpedo boats built for use on the waters of So. Ca, 3 for those of Geo[rgia] and 3 for those of Florida.”⁴⁶³ The intent of the proposal was to establish flotillas of David-class torpedo boats to be stationed in multiple ports around the Confederacy. Just three days later *David's* inaugural sortie demonstrated that the small steamer could inflict damage on a greater foe and survive to be used another day. In a report on torpedo boat activities in Charleston, Lee wrote: “On the night of the 5th of October 1863 Lt Glassell attacked the ‘Ironsides’. The result of this expedition at once aroused every one to the importance of torpedo bearing steamers and the subscribers to the ‘marine torpedo steamer’ formed themselves into a company to build and equip steamers for harbor & coasting operations.”⁴⁶⁴

Lee decided that similar vessels could have great effect: “That a fleet of these little steamers is capable of destroying the enemy’s iron-clads is not only my opinion, but the conviction of every naval officer with whom I have conversed.”⁴⁶⁵ In a letter dated 15 October, Beauregard wrote in response to Lee that upon a *successful* attack, one dozen torpedo boats (modified David-class) would be approved for construction.⁴⁶⁶ As the attack by *David* had failed to sink *New Ironsides*, Beauregard’s superiors were unwilling to finance construction of similar vessels. Sensing the urgency of the matter, private parties assumed responsibility, and within a few months of the *New Ironsides* attack, Beauregard’s proposal to construct other “Davids” similar to the original was initiated.

⁴⁶² Letter from F. D. Lee to A. N. T. Beauregard, 1 October 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁶³ Letter of Endorsement, 2 October 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865. By 15 October, Beauregard had apparently signed a new endorsement for 12 torpedo boats, ORA Vol. 28 pt. 2 (1889), 420-1.

⁴⁶⁴ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁶⁵ These were to be modified versions of *David*. F. D. Lee to A. N. T. Beauregard, 15 October 1863, ORA Vol. 28 pt. 2 (1890), 420.

⁴⁶⁶ The proposal had grown from nine to twelve vessels without further explanation. General Beauregard to F. D. Lee, 15 October 1863, ORA Vol. 28 pt. 2 (1890), 420-1.

The Southern Torpedo Company (STC)

A decisive attack using a David-style boat became the goal of the privately funded Southern Torpedo Company (STC).⁴⁶⁷ It was formed by a group of businessmen and military personnel, working outside their military posts, including Francis Lee. The company was a nepotistic venture of those “subscribers to the [failed] ‘marine torpedo steamer’” (*Torch*) designed by Lee.⁴⁶⁸ The STC was conceived days before the attack on *New Ironsides* with the mission to construct more David-style vessels, to discourage the blockade, and allow its investors to collect the large cash rewards offered by John Fraser and Company.

Few details have been published about the STC and there are no publications dedicated to describing the company, its constituents, or its activities. Like many aspects of torpedo warfare, the STC is enveloped in a cloud of secrecy and mystery. Only a few fleeting mentions of the company appear in the ORA or ORN. Other sources of data, however, have come to light from various archival records and offer a better understanding of the guarded organization.

Once again, the Ebaugh letters are a substantive source of information. In them Ebaugh revealed that he used personal money to fund the construction of *David* and that “several Gentlemen had offered \$1000 each to build a boat” and “The Gentlemen was Mr. Theodore Stoney, Cap Chevis [Army Captain Langdon Cheves, designer of Battery Wagner and brother-in-law of],⁴⁶⁹ Theodore Wagner [President of John Fraser and Company], Dr. [Julien] Ravenel and Others.”⁴⁷⁰

Ebaugh also recollected *David* “was inspected by several gentlemen among whom was Capt. [James] Carlin, Capt Ferguson [John Ferguson], [Francis] Marrion Jones (shipbuilder), Theodore Wagner, Theodore Stoney, and others.”⁴⁷¹ Several of these men, *e.g.*, Theodore Wagner and

⁴⁶⁷ Smythe 1907, 57.

⁴⁶⁸ “The subscribers of the ‘Marine torpedo Steamer’ formed themselves into a company to build and equip steamers for harbor & coasting operations.” Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁶⁹ Easterby 1944a, 8. Cheves was a wealthy Southerner with diverse interests. During the “Seven Days Battles,” Cheves launched a revolutionary reconnaissance balloon of his own construction that was flown from the CSS *Teaser* on the James River and subsequently captured by Union forces 4 July 1862, (Easterby 1944b, 110). He was involved in the failed attempt to blow up *New Ironsides* with a large submerged torpedo in April 1863 and had been responsible for the construction of Battery Wagner, which he named after his good friend and brother-in-law, Theodore Wagner. Battery Wagner was reduced to rubble by shot from *New Ironsides* in the late summer of 1863.

⁴⁷⁰ Ebaugh 1953, 33. Crew member James Tomb recounts financing being partially provided by Dr. St. Julien Ravenel and Captain Theodore Stoney (Campbell 2005, 174). The fact that Army Captain Cheves was included means this event took place sometime before his death on 10 July 1863 and implies that construction of the vessel was in the earliest stages.

⁴⁷¹ Ebaugh 1953, 33.

Theodore Stoney, were included in the group that offered financing for the boat. Also included in the group of inspectors were Captain John Ferguson and F. M. Jones, both Confederate Navy shipwrights. Ebaugh recalled the men suggesting, “if I would let Mr. Jones have the machinery he would build a boat in 15 days,” to which Ebaugh took offense and refused to comply.⁴⁷²

No date is offered for the inspection of *David*, but contextual clues place the event after the hull of the boat was completed, machinery had been installed, and it had been floated down river to the North-Eastern Railroad (N. E. R. R.) shop near the city wharves to receive ballast. Placed within this series of events, the gentlemen likely inspected the vessel sometime in late August or early September 1863. By 18 September, South Carolina militia Brigadier General Wilmot DeSaussure, declared the boat was ready for active service and that same day a crew was assigned to the vessel.⁴⁷³ Theodore Stoney was detailed to Beauregard by DeSaussure,⁴⁷⁴ and the orders assigning a crew to *David*, most of whom were taken from the Charleston ironclad gunboats, included Stoney, who clearly had special interests in the little steamer. Whether those interests stemmed from financial contributions or otherwise remains unclear.⁴⁷⁵

Many of the inspectors and possible financers of *David* were the main advocates and catalysts for the construction of David-class vessels via the STC. At the same time, it seems that one of the inspectors, John Ferguson, decided to act on his own accord in producing similar vessels even before the STC was a Confederate sanctioned company. He partnered with F. M. Jones, but his initial interest in torpedo boat production was met with opposition from Francis Lee. In a letter dated 24 October, Lee recalled his own work with torpedo boats and voiced his complaints about Ferguson’s interest in reproducing Ebaugh’s design:

⁴⁷² Ebaugh 1953, 33-4. Francis Lee echoes the short time needed for construction, “But little skill is called for in the construction of the boats and in a few weeks from the time the work is commenced they may be ready for service.” Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁷³ Letter from Brigadier-General Wilmot Gibbes DeSaussure to South Carolina Governor, Milledge Luke Bonham, 20 September 1863, document number GLC06373, Gilder Lehrman Institute of American History. DeSaussure also served several terms in the South Carolina House of Representatives, including a period from 1860-1863, and also served as Secretary of the South Carolina Treasury from mid-1861 until 11 April 1862.

⁴⁷⁴ By Special Orders No. 87 of Brigadier General Wilmot DeSaussure, Stoney was detailed to Beauregard on the same day. National Archives, Record Group 109, War Department Collection of Confederate Records, M346, Citizen Files, Roll 988, Number 208, Theodore Stoney.

⁴⁷⁵ Stoney had previously served as Aid-de-Camp to Colonel A. M. Manugault starting on 2 May 1862. National Archives, Record Group 109, War Department Collection of Confederate Records, M346, Citizen Files, Theodore Stoney.

Charleston, October 24, 1863

Capt. John Ferguson:

Dear Sir: I have for the last two years been perfecting a new mode of naval attack, on which I had hoped to make a reputation as a military engineer. The great object I had in view in developing my plans was to defeat the enormous naval power of the enemy by a simple, cheap, and readily accomplished device. I first demonstrated, and afterward proved by actual experiment, that torpedoes borne at the extremities of spars may be exploded against the vessels of the enemy with little danger to the boats carrying them. I have designed a variety of vessels adapted for this special purpose, and have fallen on the cigar form as one giving greatest speed, and offering the least vulnerable surface above the water line. I have also devised a variety of torpedoes, and arranged various modes for firing them. Out of all of them I have selected the one now in general use by our gunboats as best offering the advantages sought, viz, certainty of fire, security against moisture, and safety in handling. This latter requisite I have laid great stress upon, inasmuch as the torpedoes had frequently to be placed in the hands of parties who would not exercise those proper cautions which a more delicate arrangement may require.

General Beauregard, impressed with the importance of the device proposed by me, has again and again addressed the authorities at Richmond, urging the construction of vessels to carry out my designs, but the Government is unwilling to do anything until some success is accomplished. Now, on the failure or success of any enterprise against the enemy hinges the action or refusal to act on the part of the Government, and at the same time my own professional reputation. For these reasons, I cannot deem it fair and proper that at this time the device or plan of any other person should be incorporated with mine without my sanction. I cannot deem it fair and proper that another party should take up my design, advanced as it is to, or nearly to, a perfected invention, and undertake to change or modify it in any way whatsoever without my approval and sanction. I conceive that it must be to the detriment of the public service if any or every person (none of whom could have possibly bestowed on the subject the long and careful study that I have) should be permitted to use, and perhaps abuse, my invention by incorporating with it their, perhaps, crude or inapplicable devices.

As I have before stated, my motive is far higher than pecuniary gain, and for this motive I am willing to labor on and give gratuitously the fruit of my labors to the Government, or to individuals working for the public good.

I have been induced to address this communication to you, having learned that you had made application to other parties for torpedoes, fired in a mode differing from mine, to be applied to small cigar steamers after my mode, already commenced by you. I have been instructed by General Beauregard to see General Rains in person, and will present him a copy of this letter. I will also send a copy to General Beauregard.

Very respectfully, your obedient servant,

FRANCIS D. LEE,

An unpublished report by Francis Lee on ironclads and torpedo boats in Charleston (see Appendix B) has proven a trove of valuable, albeit limited, information about the STC. In his report, Lee included a copy of a letter, dated 21 November 1863, from the president of the STC, Theodore Wagner announcing the formation of the STC to General Beauregard.⁴⁷⁷ The information provided to Beauregard was echoed in a subsequent letter, dated 22 November, with one major difference. It listed all the directors of the STC and their positions within the organization:

Charleston Nov 22nd 1863
G.T. Beauregard
Army Dept S.C. Ga + Fla

General

I am instructed by the President and Directors of the 'Southern Torpedo Company' to inform you that they have organized an association for the purpose of constructing and putting into active service a fleet of torpedo bearing vessels.

They have now to their credit abroad not less than forty thousand Dollars which with the means in hand here gives us a Capital amply sufficient for the purpose proposed.

It is their intention to construct from three to four steel clad torpedo bearing steamers of a class large enough for coast operations besides a number (from fifteen to twenty) of smaller vessels for service in the harbor of this department

Steps have been taken for immediately obtaining all the necessary material and machinery and with their funds abroad they will be enabled readily to obtain a full and constant supply of necessary articles that may not be purchased in this country.

The Confidence they feel in the efficiency of the mode of attack proposed induces them to believe that their torpedo fleet will sweep the enemy from my coast and open our parts of the commerce of the world.

The constant and devoted interest you have shown in every effort in this direction induces the Board to report to you their proceedings and to respectfully

⁴⁷⁶ Lee to John Ferguson, 24 October 1863, ORA Vol. 28 pt. 2 (1889), 442-3. Note that Lee implies the cigar-shape is his own design, referring to his original ram design of 1862 that was never built.

⁴⁷⁷ Theodore Wagner to General Beauregard, 21 November 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard's Papers 1864-1865.

request your official sanction and aid in pressing the under-taking to rapid completion.

The following are the names of the President and Director of the Company
viz

T.D. Wagner- President
Capt James Carlin- Director
R.T. Walker “
Theodore Stoney “
Capt J Ferguson “
Capt Francis D Lee “
Casper A. Chisolm “

I have the honor to be Yo. very Obt. Svt.
Theodore Stoney
Secretary + Treasr ⁴⁷⁸

That Wagner served as president of the STC demonstrates the insular nature of torpedo boat activities in Charleston, as he also served as the president of John Fraser and Company, the merchant firm offering cash rewards for the destruction of *New Ironsides*, *Wabash*, or a monitor. The proposed charter names not only the president, but the secretary and directors of the company, and includes several familiar personages, such as John Ferguson and Francis Lee, which suggests they had resolved their differences and had begun to work cooperatively. By late November, the STC received endorsement for torpedo boat production and soon started construction. Also note that at least two founding members of the Southern Torpedo Company, Stoney and Wagner, were listed among those who offered funding for *David*. These two men, and two others, Ferguson and Carlin, were among the group that later inspected the vessel and judged *David* to be unstable, presumably altering their opinions only following *David's* attack on *New Ironsides*.

All of the directors contributed unique experiences and expertise to the company. Wagner, an experienced business man, and the representative of John Fraser and Company, was a major shareholder in the Importing and Exporting Company of South Carolina, an unincorporated company composed of 97 Charleston businessmen and the five blockade-running firms chartered by

⁴⁷⁸ Theodore Stoney to General Beauregard, ORA Vol. 28 pt. 2 (1890), 525; National Archives, Record Group 109, Confederate Papers Relating to Citizens or Business Firms, compiled 1874-1899, M346, Roll 0163, Document Num. 72, 204, 208.

the South Carolina government.⁴⁷⁹ Consequently, Wagner had much to gain from a successful torpedo boat campaign against the Union blockade.

Little is known of R. T. Walker, other than that he was an army officer. John Ferguson, like Francis Marrion Jones, was an accomplished shipwright, and was responsible for the construction of several Confederate ironclads in Charleston, as well as portions of Francis Lee's ram *Torch*. Ferguson also built the famous steamer *Planter*,⁴⁸⁰ and, as seen in comments written by Lee, was interested earlier in replicating the untested *David* design.⁴⁸¹ Casper A. Chisolm was a Captain in the Confederate Army and had been recommended by Lee to oversee the final stages of production of the torpedo ram, had Lee been sent abroad. Chisolm was also responsible for implementing many of the electrically triggered torpedoes in Charleston, including the largest one that failed to explode under *New Ironsides* in the summer of 1863.

Captain Carlin's inclusion in the STC is significant. Prior to migrating to the United States in the early 1850s, Carlin was a British merchant mariner and, more importantly, a British subject. During the ACW, he, like Theodore Wagner, was a major shareholder of, but also a captain with the South Carolina Importing and Exporting Company, one of many common links between the directors of the STC. Carlin oversaw his own vessel and eight other blockade-runners that helped to keep imported materials coming to the Confederacy.⁴⁸² Carlin purchased Lee's ram and commanded it in the failed August 1863 attack on *New Ironsides*; the ram being a common thread linking the directors of the STC.

All ACW-related activities held potential for trouble in Carlin's homeland as explained in a recent biography of his life, "... his exploits had remained a family secret. Under the British Foreign Enlistment Act of 1819, British subjects who were proved to have aided recognised belligerents in a dispute in which Britain remained neutral were liable to very extensive fines and the confiscation of their vessels. The Act specifically covered enlistment in foreign military or naval forces or the building, equipping or dispatching of ships for employment in foreign military forces or their fitting

⁴⁷⁹ Carlin 2017, 120; Skelton 1974.

⁴⁸⁰ *Planter*, a commercial side-wheel steamer turned Army transport for the Confederacy, was commandeered by slave and ship pilot, Robert Smalls, who surrendered the vessel to Union forces on 13 May 1862. *Planter* then briefly served as a gunboat for the Union Navy. Smalls was appointed as the first African-American man to command a US ship, served in 17 naval battles, rose to the rank of major-general, published a newspaper, and served in Congress. For more on Robert Smalls see Lineberry 2017; Miller 1995.

⁴⁸¹ Ebaugh 1953, 33-4.

⁴⁸² Carlin 2017, 4.

out or armament for such enterprises.”⁴⁸³ Therefore Carlin’s involvement with the STC came with risks.

Shipbuilder F. M. Jones, another inspector of *David*, does not appear in documentation pertaining to the STC. Also of note is the conspicuous absence of both David Ebaugh and Dr. Ravenel from the list of STC directors. Given Ravenel’s rumored level of involvement in the project, by various students of the topic, as well as Ebaugh’s demonstrated level of involvement, their absence is surprising, yet again suggestive of the insular nature of the company. In his 1892 letters, Ebaugh recounted, “I was employed by the Torpedo Co to build two more boats of about same dimensions of the David.”⁴⁸⁴ By “the Torpedo Co” Ebaugh meant the STC, so he had a working relationship with the company even if he did not serve on the board. Ebaugh goes on to mention other parties that constructed “Davids” for the STC, including John Ferguson and F. M. Jones. “Mess Ferguson & Jones built several torpedo boats after the plan of the David but I never heard of them doing any execution.”⁴⁸⁵

It was likely Ravenel that introduced his friend Theodore Stoney to Ebaugh, yet there seems to be little evidence that Ebaugh and Stoney were more than occasional colleagues, especially given Ebaugh’s lack of a major role in the STC, a factor that cannot be easily explained. As Secretary and Treasurer of the STC, it was Stoney who petitioned Beauregard to sanction the enterprise, which Beauregard did just days after the formation of the company:

Mr. Theodore Stoney, Sec. and Treas. Southern Torpedo Co., Charleston, S.C.:

SIR: Your letter of the 23rd instant, announcing the formation of a Southern Torpedo Company, and asking my official sanction and aid in pressing the undertaking to rapid completion, has been received. Allow me to express my gratification at the organization of such a company, which I trust will meet with

⁴⁸³ Carlin 2017, xvi.

⁴⁸⁴ Ebaugh 1953, 34-5. Two David-class boats were under construction and were destroyed in March 1865 at Stony Landing Plantation.

⁴⁸⁵ Ebaugh 1953, 34. Ebaugh’s statement that Ferguson and Jones built David-class boats is strengthened by a bit of hearsay, later confused in historical records. A passage in the ORN (Vol. 22 (1908), 103-4) confuses Singer Secret Service Group member James Jones with Francis Marion Jones, when referring to potential torpedo boat designs for the Western theater, “of the designs of Jones (also from Lavaca), who was at Houston, Tex.” and later stating, “Jones, the originator and constructor of these[torpedo] boats, also constructed one which attempted to destroy the New Ironsides in Charleston, South Carolina” Historian Mark Ragan understood the Jones in question to be James Jones, not recognizing the Charleston builder as F. M. Jones (Ragan 2002, 242-3).

ample success in driving from our coast the enemys blockaders. Believe me, it is a step in the right direction. For over one year I have endeavored in vain to induce our Government to undertake the construction of a shot-proof sea-going steamer, armed with Capt. F. D. Lees repeating torpedo apparatus. By the decision of the so-called Earl Russell, there can be no difficulty in having vessels built in England as shot-proof blockade runners, which can be armed, as desired, at sea or in Charleston Harbor. The gallant attempt of the *David* against the *New Ironsides* shows what can be accomplished by such a method of naval warfare. There can be no doubt now that she has been so seriously injured as to be unable to participate further in the enemys bombardment of Sumter. In conclusion, I will be most happy to afford the company all the facilities in my power for carrying into effect their proposed plans and operations, and may fortune smile on their patriotic efforts.⁴⁸⁶

Over the course of the year following the *New Ironsides* attack, several other “Davids” were produced, three of which were likely fashioned by Ferguson and Jones (no documents have been located that reveal the exact number). It is perhaps not coincidental that the original plan proposed by Beauregard to the War Department was for nine vessels, as the total number of documented Charleston “Davids” (detailed below) was ten: *David* plus nine sister-vessels.⁴⁸⁷

Francis Lee was given much of the responsibility for STC vessel construction. Through Special Orders No. 264 issued by Head Quarters of the Department of South Carolina, Georgia, and Florida, on 7 December 1863, Lee was dispatched once again to Richmond to confer with the Chief of Engineering Bureau on the construction of torpedo-bearing vessels throughout the Confederacy.⁴⁸⁸ In Richmond, Lee was told he was to be transferred to Wilmington to oversee the construction of David-class torpedo boats, but he requested to remain in Charleston as relocation would disrupt work already underway with the privately owned STC. Lee’s request was granted and upon his return to Charleston, Beauregard ordered “Capt. F D. Lee Engr. is relieved from duty as Engr. in Charge of the City defenses in order that his whole time may be devoted to the construction of Torpedo Boats.”⁴⁸⁹ Lee wrote that “Preparations were then immediately made to

⁴⁸⁶ General Beauregard to T. Stoney, 25 November 1863, ORA Vol. 28 pt. 2 (1890) pt. 2, 525.

⁴⁸⁷ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁸⁸ Special Orders No. 264, 7 December 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁸⁹ Special Order No. 277 of General Beauregard, 18 December 1863, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

procure material necessary for the construction of twenty cigar torpedo steamers (that number having been approved).”⁴⁹⁰ Although Beauregard had originally proposed nine vessels to be constructed, and all evidence suggests this is the number actually produced, Lee stated that approval had come for machinery for twenty vessels. In another letter, Lee suggested he was taking initiative by ordering materials for twenty vessels, since “The order from Richmond does not state how many boats are required to operate in the several harbors on the coast, but I suppose I am within the mark by ordering twenty pairs of engines. I have therefore done so.”⁴⁹¹ Lee’s statements concerning the number of vessels planned for production, like his comments on *David’s* conception and design, seem to be the source of information that has perpetuated historical errors of exaggerated numbers of David-class vessels over the last 150 years.

Quantifying David-class Vessels

It has been suggested that the number of David-class vessels “will probably never be known, but it was apparently quite a number,” demonstrating the current limited understanding of the class as well as the need to attempt its quantification.⁴⁹² Sources that offer an estimate of the number torpedo boats run a large gamut: Union officers, spies, deserters, and even Confederate military personnel. Post-war accounts that allude to estimated quantities of vessels produced, or under construction during the war vary greatly, but historians generally cite twenty or more vessels of the David class, reflecting Lee’s request for twenty pairs of engines.⁴⁹³ Likewise, a Confederate deserter reported on 7 January 1864 that he “Has heard that twenty-five have been ordered to be built similar to the ‘David’.”⁴⁹⁴ Another report by Union officer Edward W. Schaffler made just a month before the evacuation of Charleston states, “There are some twenty or thirty cigar-shaped torpedo boats, calculated to carry four men each, laying around the ship-yards on the Ashley River. Probably about

⁴⁹⁰ Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁴⁹¹ Lee to D. B. Harris, 20 December 1863, ORA Vol. 28 pt. 2 (1889), 566.

⁴⁹² Campbell 2000, 130.

⁴⁹³ For example, Hovgaard (1887, 20) states “at least twenty”; Schafer (1996, 103) suggests “there were several dozen” while Still (1969, 19) simply states, “a large number of these small vessels were laid down.”

⁴⁹⁴ Report of deserter, Belton, 7 January 1864, ORN Vol. 15 (1902), 229.

eight or ten of them only are serviceable.”⁴⁹⁵ Other reports by deserters and Union officers more realistically suggest only four to ten torpedo-boats were under construction in 1864 and early 1865, eight being the most common number given, with up to four reported as completed or nearly ready for service.⁴⁹⁶

To quantify the number of vessels making up the class, it is necessary to compare available records dating up to the evacuation of Charleston, which are predominately Confederate, to those postdating the fall of the city, which are predominately Union records. In this manner, a more precise number of David-class vessels can be estimated.

David-class Vessels in Wartime Charleston

The STC quickly set to work to replicate the design of *David*. By the end of January 1864 Theodore Stoney wrote to Army Brigadier General Thomas Jordan, “GENERAL: The Southern Torpedo Company expect to have two more steamers afloat tomorrow or next day, and would respectfully place the same under the orders of the general commanding.”⁴⁹⁷ Captain M. M. Gray, in charge of torpedoes in Charleston, requested the use of one of the STC torpedo boats, but received no

⁴⁹⁵ Report of Edward W. Schauffler to Brigadier-General A. Schimmelfennig, 29 January 1865, ORA Vol. 47 pt. 1 (1895), 1016-7.

⁴⁹⁶ Report of confederate deserter, 7 January 1864, ORN 15 (1902), 229, “Has seen eight or ten in course of construction at the different ship yards on the Cooper River; those near the ironclad No. 3 are most advanced. At this, No. 3, there were four together; one just begun, two ready for their engines, and one nearly ready for launching. Had her engine in, all complete; is probably launched by this time; about the same size as the first one. Saw construction of two begun at yard No. 2 and two or three are just begun at yard No. 1.”; Rear Admiral Dahlgren to Secretary Welles, 13 January 1864, ORN Vol. 15 (1902), 238 “It seems there are ten ‘Davids’ building in Charleston, similar to that which torpedoed the *Ironsides*. Of these, one is completed and ready for service; the others are in different stages from the mere keel to a more advanced stage.”; Orders from Rear Admiral Dahlgren to additional precautions, 4 February 1864, ORN Vol. 15 (1902), 271, “Three [torpedo-boats] are now ready...”; Newspaper report, “General Beauregard’s barge crew deserted in a body, and came over to Admiral Dahlgren. Their news is very interesting to the fleet. It seems that the rebels have eight torpedo boats like the David that attacked the *Ironsides*. These boats are all ready, and expect to come down nightly. They are represented as larger and as carrying two persons more than the original one,” *Nashville Union* (Nashville, Tennessee), 28 February 1864; Examination of Charles Harris, C.S. Navy deserter from Chicora, 7 September 1864, ORA Vol. 35 pt. 2, 288, “There are, I think, about eight torpedo-boats, 8 feet in diameter and 50 feet in long; they come to a point at either end and propelled by steam”; Rear Admiral Dahlgren report to Secretary Welles, 29 December 1864, ORN Vol. 16 (1903), 151, “They [Confederates] are said to have four ironclads, with five torpedo boats, ...”; Report of Rear Admiral Dahlgren to Secretary Welles, 16 January 1865, ORN Vol. 16 (1903), 174, “Four torpedo boats are said by deserters to be ready for service, and upon them, in the confusion of action, as well as the torpedoes in the water and at the bows of the ironclads, the rebels are said to rely chiefly.”

⁴⁹⁷ Letter from T. Stoney to Brigadier General T. Jordan, 26 January 1864, ORA 35 pt. 2, 546.

response, presumably because the vessels were not yet combat ready. However, by 26 February, crews were being assigned to these new boats by Special Orders No. 55 of Beauregard, which directed seamen to join “Torpedo bearing Steamers belonging to Southern Torpedo Company.”⁴⁹⁸

A communique dated 18 March 1864 from Flag Officer Tucker to Flag Officer W. W. Hunter, commanding defenses of Savannah, Georgia, revealed two more vessels were also under construction. “The one I have had, the ‘David,’ belongs to a company. They have called on me to return the ‘David,’ which, of course, I am obliged to do. The station is building two of these boats to be turned over to me when completed, but I fear that will be some time yet.”⁴⁹⁹ Tucker suggested these two did not belong to the Company and therefore being built independently, most likely by Ferguson and Jones at the Navy Yard near Town Creek, and likely under the auspices of the STC.

In late March, Captain Gray again requested the use of a torpedo boat, but had neither a particular target in mind nor a specific plan of attack, although he did claim to have a crew prepared and torpedoes of Rains’s design at the ready.⁵⁰⁰ On 31 March 1864, Beauregard replied to a request for torpedo boats to be sent to Wilmington, North Carolina:

We have but three of those torpedo-boats ready and they belong to a company, not to the Government; they have been placed, however, at my service for this department. Moreover they are too large, I believe, for transportation on the cars. I shall commence using them against the blockaders as soon as dark nights will permit; then prepare yourself to hear of terrible doings about this harbor. The navy has the real David in its possession, but it seems to have exhausted itself in its attack on the Ironsides. It now keeps company with the gun-boats.⁵⁰¹

A third STC vessel was readied in the interim, bringing the sub-total to six--*David*, three completed and belonging to the STC, and two under construction by Ferguson and Jones. Still, Gray was again denied a “David” as plans were already made for a sortie, with orders issued just days later:

⁴⁹⁸ Emerson 2005, 127.

⁴⁹⁹ Letter from Flag Officer Tucker to Flag Officer Hunter, 18 March 1864, ORN Vol. 15 (1902), 719.

⁵⁰⁰ M. M. Gray to Brigadier-General Thomas Jordan, 31 March 1864, ORN (1903) Vol. 16, 423.

⁵⁰¹ Letter from General Beauregard to Major General Whiting, 31 March 1864, ORA Vol. 35 pt. 2 (1891), 396.

4 April 1864

Generals: Two torpedo-boats will leave the city probably on Wednesday next [6 April], and proceed by the Stono and inland waters to Ashepoo. It will be necessary to warn all guards, sentries, and pickets in your district not to fire upon or impede them. At night their signal will be two flashes of white light succeeding one another. Respectfully, your obedient servant.

H. W. Feilden
Captain and Assistant Adjutant-General.⁵⁰²

As discussed in Chapter VII, Tucker transferred Tomb and *David*, via inland waterways, to Saint Helena's Sound (Ashepoo River), about 40 miles (64 km) south of Charleston near the Union stronghold at Port Royal. Two STC vessels, under command of the army, were ordered to accompany *David* to make a combined attack, which failed when the two army vessels had to turn back due to mechanical failures.⁵⁰³ Why the third readied vessel was not included in Feilden's orders is unknown:

Charleston, S.C., April 6, 1864

Generals: The commanding general directs me to transmit for your information the following extract from an order issued from these headquarters today:

Two army torpedo steamers, under the command of Capts. Augustus Duqucron and E. R. Mackay, will proceed by inland navigation and attack the enemy's vessels in the waters of Saint Helena Sound and Port Royal or their tributary streams. The sole control and management of the expedition will devolve on Captain Duqucron, and all orders emanating from him will be obeyed.

Very respectfully, your obedient servant,
H. W. Feilden
Captain and Assistant Adjutant-General.⁵⁰⁴

⁵⁰² Confidential circular from H. W. Feilden to Generals W. S. Walker, H. A. Wise, and B. H. Robertson, ORA Vol. 35 pt. 2 (1891), 402; replicated in ORN Vol. 15 (1902), 724.

⁵⁰³ A. R. Chisolm to General Beauregard, 8 April 1864, ORA Vol. 35 pt. 2 (1891), 408; replicated in ORN Vol. 15 (1902), 724.

⁵⁰⁴ Captain Feilden to Generals Robertson and Walker, 6 April 1864, ORA Vol. 35 pt. 2 (1891), 406.

To further complicate matters of quantification, Tomb recounted the mission having *three* army-commanded torpedo boats in addition to *David*, which was under his command. He reported that the third army torpedo boat was lost due to error of the commanding officer:

A combination expedition was gotten up by the army. The officers in command of three torpedo boats (built by a company) were army officers, and I joined the expedition in command of *David*. It was a decided failure due to lack of organization, and on reaching Mosquito Island, the point we were to start from on our attack, all but the *David* were out of commission. Two had returned to Charleston disabled, and the third went to the bottom in 20 ft of water while at anchor at Mosquito Island, through neglect on the part of the commander, who, after fixing the torpedo, anchored the boat so near the shore that she grounded. When the tide went out she slid into deep water and went to the bottom, leaving *David* to finish the business.⁵⁰⁵

Tomb's memoirs are exceptional in that he gave a rare, yet brief description of the events that occurred in April 1864.⁵⁰⁶ In editorial comments included with Tomb's memoirs, editor Campbell, however, conflates two distinct sorties; the aforementioned assignment to Saint Helena's Sound and Ashepoo River in early April, and the other an attack on *Wabash* at the Stono River inlet ten days later, giving the impression of a single mission to Saint Helena's Sound and Ashepoo River with the 45-gun frigate, *Wabash*, as a target. Campbell wrote:

In mid-April of 1864, three torpedo boats, including the *David*, left Charleston and threaded their way through various streams and tributaries finally reaching the Ashepoo River on April 18. Two of the boats were army and commanded by Captains Augustus Duqucron and E. R. Mackay. [Tomb, in his memoirs, indicates that there were three army boats.] The third boat was the original *David*. Unfortunately, two army boats suffered engine problems (and if there was a third

⁵⁰⁵ Campbell 2005, 88-90.

⁵⁰⁶ For example, Ammen (1885, 71) dedicated one paragraph to the March 1864 attempt on *Memphis* and a second short paragraph to the April attempt on *Wabash*.

[army commanded boat], it evidently sank) and had to turn back, but the determined Tomb continued on alone. Late that night he headed for the *Wabash*.⁵⁰⁷

Campbell was understandably unable to reconcile the number of army-commanded torpedo boats. As shown, *David* was in fact called to duty in Saint Helena Sound, along with at least two (or three) army-commanded torpedo boats, but *Wabash*, was at that time in a state of disrepair, as noted in a communique of 11 March ordering all Charleston blockading vessels north to Bulls Bay, except *Wabash*.⁵⁰⁸ Consequently, the big frigate maintained its position outside the bar of Charleston Harbor, making it impossible for the ship to have been attacked on the Ashepoo River.⁵⁰⁹

A. R. Chisolm and James Tomb each reported that the other torpedo boats had to return to Charleston due to mechanical failures, yet another informant, Union Navy Lieutenant Commander James Parker of *Seneca*, recorded the testimony of a rebel deserter, James Gallagher, suggesting the return to Charleston was not immediate. Gallagher indicated that on the same day, 21 April, “there are three torpedo boats in the Stono, which are going to operate upon the gunboats here upon the first favorable occasion.”⁵¹⁰ Presumably these were *David* and the two remaining STC torpedo boats.

Gallagher’s statement suggests the troubled torpedo boats stayed in the inland waterways for at least 11 more days during which time *David* was used in a fourth sortie against *Wabash*. Tomb recalled, “The *David* was kept ready for service, and we would occasionally go down the harbor on picket duty, but outside of an unsuccessful attempt to reach the *Wabash* on the night of April 18th, we did not strike another ship.”⁵¹¹

Why were two army-commanded boats mentioned in several distinct army communiques, while three were recalled by Tomb or in other army messages? The answer to this may be that the third “David” was preparing for service at this time. Two weeks after the aborted April attack, on 1

⁵⁰⁷ Campbell 2005, 88-9.

⁵⁰⁸ Captain J. F. Green to Commodore Rowan, 11 March 1864, ORN Vol. 15 (1902), 363-4.

⁵⁰⁹ Various vessel distribution lists in the ORN show *Wabash* constantly “outside the bar” at Charleston; ORN Vol. 15 (1902): 1 March 1864, 346; 15 March 1864, 365; 1 April 1864, 390; 15 April 1864, 400. Commodore Rowan reported on 3 May 1864 that “I therefore sent an expedition to Bull’s Bay, under the command of Captain Green, in the *Canandaigua*, composed of all vessels of the outside blockade except the *Wabash*, on the morning of the 9th, to rendezvous off Bull’s Bay light-house; ORN Vol. 15 (1902), 420.

⁵¹⁰ Evidence suggest Gallagher’s report was made several days before 21 April, but recorded at that time. Report of James Parker to Commodore Rowan giving information received from a Confederate deserter regarding torpedo boats in the Stono River, 21 April 1864, ORN Vol. 15 (1902), 408.

⁵¹¹ Campbell 2005, 88.

May 1864, Beauregard instructed Brigadier General H. A. Wise to use the three torpedo-boats in a new sortie.⁵¹² Special Orders No. 122, for the proposed attack, was issued the following day, 2 May:

II. Three army torpedo steamers, under the command of a competent officer, will proceed by inland navigation and attack the enemy's vessels in the waters of Saint Helena Sound and Port Royal or their tributary streams. The sole control and management of the expedition will devolve on Mr. Theodore Stoney, and all orders emanating from him will be obeyed. By command of Major-General Jones.⁵¹³

Stoney's command of the army boats in the April and May expeditions suggests these were all regarded as STC vessels. *David* was not included in this plan. However, something must have happened to one of the boats, for in late May, Assistant Adjunct-General Feilden assigned crews to only two vessels under Stoney's direction. This enigma remains unsolved:

II. In pursuance to Special Orders, No. 122, paragraph II, from these headquarters, the army torpedo-boat No. 1, with the following crew, viz, E. R. Mackay, captain; Henry Mitchell, engineer; and William Baile, assistant engineer, will proceed to attack the enemy's fleet at any time that Capt. Theodore Stoney may direct.

III. In pursuance to Special Orders, No. 122, paragraph II, current series, from these headquarters, the army torpedo-boat No. 2, with the following crew, viz, W. E. Fripp, captain; J. Forbes, engineer; and H. Steward; assistant engineer, will proceed to attack the enemy's fleet at any time that Capt. Theodore Stoney may direct.

By command of Major-General Jones:
H. W. FEILDEN,
Assistant Adjutant- General⁵¹⁴

The mission ordered by Feilden does not appear to have taken place, for it lacks any further documentation. In fact, there are no later mentions of the army-commanded torpedo boats of Charleston,

⁵¹² Order from General Beauregard (relayed by H. W. Feilden) to Brigadier-General H. A. Wise, 1 May 1864, ORN Vol. 15 (1902), 733-4.

⁵¹³ Asst. Adjunct-General H. W. Feilden Special Orders No. 122, 2 May 1864, ORA Vol. 35 pt. 2 (1891), 460.

⁵¹⁴ Orders No. 143 of H. W. Feilden, 24 May 1864, ORA Vol. 35 pt. 2 (1891), 504.

nor of *David*, in Confederate records. Tomb recalled, “While in Charleston, about September 24, 1864, I was offered the command of a number of torpedo boats being built by private parties, and sent in my resignation to the Department, but was informed by the secretary of the Navy that ‘it could not be accepted, as my services were required in the position I was in, as Chief Engineer of the Fleet.’”⁵¹⁵ In this passage, Tomb implied *David* was retired in September, as he had been in command of the boat throughout 1864 prior to this time but he recalled no more missions after the mid-April attempt on *Wabash*.

To summarize the known vessels in Charleston prior to the February 1865 evacuation of Charleston: in addition to *David*, the STC had three additional torpedo boats built. At least two more David-class boats were constructed (possibly independently of the STC) by Ferguson and Jones, but never saw active duty. Therefore, based on Confederate records, only six David-class vessels can be documented to have been built in Charleston. Of the six, four were at least temporarily operational between March and May of 1864. This is roughly corroborated by a statement of Confederate deserters in December 1864, “They are said to have four ironclads, with five torpedo boats...”⁵¹⁶ and in a separate report from January 1865, “Four torpedo boats are said by deserters to be ready for service.”⁵¹⁷ It is possible that more “Davids” were being assembled but lack documentation in surviving Confederate records, a hypothesis that is buttressed by Union records post-dating the evacuation of Charleston.

Vessels in Post-evacuation Charleston

Confederate forces evacuated Charleston in February 1865 and Union troops occupied the city. References to David-class boats in the ORN and the ORA from this point take on a different nature; they are listed in reports prepared by Union engineers and officers who recorded abandoned, scuttled, and confiscated vessels. Comparison of these reports with Confederate records allow a better understanding of the number of vessels produced in Charleston.

Union observers were intrigued by the ingenuity of the David-class boats. Most of those found after the evacuation of the city were documented *in situ*, and several were later taken as Union

⁵¹⁵ Campbell 2005, 132.

⁵¹⁶ Report of Rear Admiral Dahlgren, 29 December 1864, ORN Vol. 16 (1903), 151.

⁵¹⁷ Report of Rear Admiral Dahlgren, 16 January 1865, ORN Vol. 16 (1903), 174.

prizes of war. The earliest intelligence comes from Union Rear Admiral Dahlgren's war diary, excerpts of which are contained within the pages of the ORN:

24 March 1865

Went around into the Ashley [River] and saw three torpedo boats; wanted repair; also one big fellow, 150 feet long, to hold 250 bales of cotton; machinery complete, and only wanting being put together.

25 March 1865

Went in tug along the Cooper [River] to look at torpedoes and saw at one wharf some 30 of the cast-iron torpedoes for frames. Higher up three torpedo boats; one new and nearly completed. Divers at work trying to raise the sunken torpedo boats that were in service.

26 March 1865

Saw several torpedo boats along the Cooper River.⁵¹⁸

The entry of 24 March marks the first reference to a large fusiform boat.⁵¹⁹ As we will see, this vessel was highly distinctive from the "Davids" and not part of the same class.

Dahlgren's entry of 26 March appears to replicate that of 25 March, but with less detail. A Union ensign also reported on some of the abandoned vessels and reiterated Dahlgren's report from 25 March. However, there was a difference. Ensign Dichman wrote, "Farther up the Cooper River were found two new torpedo boats, one nearly finished, with her machinery on board."⁵²⁰ Did the

⁵¹⁸Extract of diary of Rear Admiral Dahlgren, 1865-65, ORN Vol. 16 (1903), 372.

⁵¹⁹ This vessel *may* have been referenced as early as 12 April 1864 in a report by Commodore Rowan, transmitting abstract information received from contrabands, ORN Vol. 15 (1902), 396-7; "Has seen two small torpedo boats and one large one, 150 feet long which carries three guns; has a hole in her bow in order to fire a gun under the water." No other reference has been found to such a boat with the ability to fire a gun under water, therefore the description must be read with skepticism. This was likely Lee's torpedo ram *Torch* which did have two deck mounted guns. Although an underwater canon was proposed during the ACW, none are known to have been included on Lee's ram. See "Woodbury's Improved War-ship and Submarine Guns" *Scientific American* Vol. X, No. 25, 18 June 1864. The reference may be mistakenly referring to the spar support structure as "a hole in her bow". In this case, this would be the only reference found to the size of *Torch*, which can otherwise only be inferred by references to an engine room, multiple decks, and the fact that it was built upon the hulk of a Porter-designed vessel, whose other vessels in Charleston (CSS *Palmetto State* and CSS *Chicora*) were also noted as being 150 ft (46 m) in length.

⁵²⁰ Report of Acting Ensign Dichman, 25 March 1865, ORN Vol. 16 (1903), 406-7. Dichman was referring to scuttled vessels that were recovered later, discussed below.

officers encounter different sets of abandoned torpedo boats? The answer to this question is clarified by Union Chief Engineer B. E. Chassaing, who inventoried the vessels as part of a report to Dahlgren. In the report, Chassaing gave details of all the abandoned fusiform vessels he encountered.

29 March 1865

Sir: In obedience to your order, I have carefully examined all the torpedo boats lying on the banks of the Cooper and Ashley rivers, and have numbered them for convenience of reference. I submit the following report of the condition of hulls and machinery of these boats:

No. 1. Situated at the foot of Northeastern Railroad wharf. Hull in perfect condition; not entirely decked over on top, and no steering apparatus or rudder; she lies dry at low tide and floats at high water. The boiler is complete in the boat; most parts of the engine are on hand and in good condition; she needs a smokestack and line shafting.

No. 2. Situated at Northeastern Railroad wharf. Length outside, 50 feet; breadth of beam, 5 ½ feet (same as above). Hull in perfect condition and nearly complete, with exception of hatches. No machinery in this boat, but we have an engine without boiler which will answer the purpose.

No. 3. Situated near Chisolm's Mills. Fifty feet long; 5 ½ feet beam. Is sunk, but dry at low tide. Hull very imperfect, much worm-eaten, and unsound; has a large hole cut in port side and on top, aft. Is plated with one-fourth inch iron, and has a portion of torpedo apparatus attached. Boiler in bad condition; parts of engine removed and stack gone. Engine greatly corroded and worn; propeller attached; 3 feet 6 inches diameter, 20 inches face of blades, and about 15 feet pitch.

No. 4. Situated near Chisolm's Mills. Fifty feet long; 5 ½ feet beam. Is sunk, but dry at low tide. Hull much worm-eaten and cut up on top in vicinity of engine and boiler; a part of torpedo apparatus attached. Engine pulled to pieces and much corroded. One fan of propeller gone; smokestack in place, but in bad condition. Boilers in bad condition and many pieces of machinery missing.

No. 5. Situated near Chisolm's Mills. Length, 50 feet; 6 feet beam. Hull complete; lower part much worm-eaten and unsound; is cased with one-fourth inch iron. Engine and boiler passably good and nearly complete. Smokestack gone; propeller attached.

No. 6. Situated near Bennet's [Bennett's] sawmill, west side of city. One hundred and sixty feet long, 11 feet 7 inches beam. Hull in sound condition and nearly complete

externally. Boiler in place; also portion of engine. All these are in excellent condition; nearly the entire engine is on hand and is now being fitted in place.⁵²¹

Chassaing's report is the most comprehensive description of Charleston's fusiform vessels known and was used, along with David Ebaugh's letters and various other pertinent data, to build a catalog of David-class vessels (see Appendix D). In his report, Chassaing listed specific locations of the vessels he described, roughly matching Dahlgren's report, but not without dissonance (Figure 32). Dahlgren mentioned *seven* distinct vessels in his diary (three on the Ashley River, the large vessel, also on the Ashley River, and three on the Cooper River), while Chassaing listed only six, forcing the need for reconciliation of the records.

Chassaing reported that vessels No. 1 and No. 2 (Appendix D: Catalog Entries Nos. 1 and 2) were located at the Northeastern Railroad (N. E. R. R.) wharf, on the Cooper River on the east side of the peninsula. Vessels No. 3, No. 4, and No. 5 (Appendix D- Catalog Entries Nos. 3, 4, and 5) were located at Chisolm's Causeway, also the site of Battery Waring, on the Ashley River-west side of the peninsula.

Chassaing's vessel No. 6 was also located on the Ashley River. This is the same large fusiform vessel mentioned by Dahlgren on 24 March and is anomalous as it was a much larger blockade runner, not a torpedo boat. It is described in greater detail and cataloged as entry No. 13 in Appendix D. Therefore, Chassaing documented five David-class torpedo boats that were, at least during low tide, on shore and accessible for documentation.

⁵²¹ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

As mentioned, the 25 March 1865 entry of Dahlgren's diary cryptically indicates three additional vessels: "Went in tug along the Cooper to look at torpedoes and saw at one wharf some 30 of the cast-iron torpedoes for frames. Higher up three torpedo boats; one new and nearly completed. Divers at work trying to raise the sunken torpedo boats that were in service."⁵²² Later reports (published in the ORN) show that these three vessels were submerged at the time of Chassaing's examination of the torpedo boats and therefore were not included in his report, thus reconciling the report of Chassaing with that of Dahlgren.

About one month later, Dahlgren reported to Secretary Welles about the status of the scuttled vessels noting that there were three torpedo-boats, one of which was raised and in steaming order and the other two were expected to be so soon, demonstrating these three craft were distinct from the five described by Chassaing and raising the total number to eight confirmed David-class vessels.⁵²³ By 1 June, the second of the three submerged "Davids" had been salvaged: "The three torpedo-boats in service had been sunk in the Cooper River, off the city wharves. Two have been raised, and one put in good order so as to steam about the harbor; in length about sixty-four (64) feet, and five and one-half (5 ½) feet in diameter, capable of steaming about five (5) knots. There are six others that were under repairs,⁵²⁴ or being completed, of which two are now ready for service."⁵²⁵ Note that Dahlgren reported the torpedo boats were raised from the city wharves, which were on the Cooper River side of the Charleston peninsula, a few hundred yards/meters south of the Northeastern Railroad wharf.

Chassaing's vessels No. 1 and No. 2, abandoned on the shore near the Northeastern Railroad wharf, lack further identifying information and no photographs of these vessels are known. Their incomplete condition likely accounts for the reason why Confederate forces made no effort to scuttle or destroy them and the Union forces did not attempt to recover them as prizes. These vessels were left in place and ultimately sold at auction from the N. E. R. R. wharf in 1866 (Figure 33).⁵²⁶

⁵²² Extract for the diary of Rear Admiral Dahlgren, 25 March 1865, ORN Vol. 16 (1903), 372.

⁵²³ Welles 1865, 251, for a similar report see p. 260.

⁵²⁴ The large blockade runner was included in this tally.

⁵²⁵ Report of Rear Admiral Dahlgren, transmitting drawings and reports of torpedoes, torpedo boat, and obstructions, 1 June 1865, ORN Vol. 16, 387. Republished in Welles 1865, 260. Reiterated in Porter 1886, 765. Presumably, Dahlgren meant there were two of the eight ready for service, not two of the "six others."

⁵²⁶ *The Charleston Daily News* (Charleston, South Carolina), 1 January 1866.

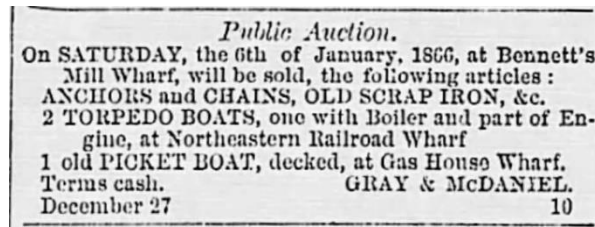


Figure 33. Advertisement for sale of two torpedo boats at N.E.R.R. *Charleston Daily News*, 1 January 1866.

Chassaing's vessel Nos. 3, 4, and 5 were abandoned at Chisolm's Causeway and were described as dilapidated and worn out, suggesting these were "Davids" that saw active service. David Ebaugh wrote that the wreck of the original *David* was abandoned at Chisolm's Causeway and implied that the machinery was salvaged, saying, "what became of her machinery I do not know."⁵²⁷ The father of Southern Torpedo Company, director Casper A. Chisolm, owned the causeway at the end of Tradd Street where Chassaing documented vessels Nos. 3, 4, and 5, which may account for their abandonment at this location.

Using surviving landmarks, it has been possible to match the location of two photographs of abandoned "Davids" to Tradd Street, where Chisolm's Mill and Chisolm's Causeway were located during the ACW. Comparing Chassaing's descriptions with the images, his vessel No. 3 can be identified in Figure 34.⁵²⁸ Likewise, vessel No. 4 can be identified in Figure 35,⁵²⁹ and has been argued to be the original *David* based on the information above, the photograph, and two other images of *David*: the painting by Chapman (Figure 25) and the drawing made by Carleton (Figure 26).⁵³⁰ As mentioned, in the Carleton drawing, made on 9 November 1863, the iron sheathing is in place, where it is only partially so in the Chapman painting. The Carleton drawing shows a direct match for the pattern of iron sheathing applied to *David*: laid longitudinally fore and aft of the constant diameter mid-section and transversely across the mid-section. These details make the identification of the vessel portrayed in each image highly likely to be that of the original *David*.

⁵²⁷ Ebaugh 1953, 35.

⁵²⁸ The house pictured is still in use at 170 Tradd Street.

⁵²⁹ The house pictured was located at 190 Tradd Street.

⁵³⁰ Littlefield 2015, 420-1.

No photograph or sketch of vessel No. 5 has been located. Nevertheless, the evidence suggests that Chassaing's torpedo-boats Nos. 3, 4, and 5 are certainly *David*, and two of the army-operated vessels owned by the Southern Torpedo Company, the earliest of the David class.⁵³¹ These vessels are described in more detail in Appendix D as Catalog Entry Nos. 3, 4, and 5.

The three vessels submerged in the Cooper River were not documented by Chassaing and consequently lack additional description. Ensign Dichman also failed to describe them. As noted by Secretary Welles, at least two of the scuttled boats were recovered later and "taken into service."⁵³² This is significant because two prize vessels were taken from that immediate area and the locations of the raised vessels are known from ship's logs, as is the location of their scuttling, making identification possible.

One of the three submerged hulls was made operational and was later taken to the Brooklyn Navy Yard as a prize. The prize became known as *Midge* (Figure 36),⁵³³ the single most widely photographed David-style torpedo boat. The second raised vessel was also taken as a prize, ultimately ending up at Annapolis, Maryland, and (Figure 37) according to a single Union communique (the only known source to use a name for the vessel) was called *Knat*.⁵³⁴ Although Dahlgren stated the intent to raise the third scuttled vessel, there is no evidence to suggest it was recovered. It appears to have been destroyed in late 1870 as written in the *Charleston Daily News*, "Magazine Creek- A torpedo boat was sunk at the same place, and will be blown up or otherwise disposed of."⁵³⁵ About a month later, the same newspaper reported, "The work of removing the obstructions in Old Town or Shipyard Creek, near the Etiwan Phosphate Works, which has been steadily progressing for the past few weeks, has been completed, and the bottom of the creek free from all remains of gunboats, docks, and torpedo boats."⁵³⁶

These three vessels have been assigned Catalog Entry Nos. 6 (*Midge*), 7 (*Knat*), and 8 in Appendix C.

⁵³¹ These vessels are likely those planned to be used in the Ashepoo River mission in April 1864. See Ch. VII, Mission 3 for more details.

⁵³² Welles 1865, 494. For the complete lists, see "Miscellaneous Captures" and "Prizes Adjudicated from the Commencement of the Rebellion to November 1, 1865", 457-519.

⁵³³ *Midge*, a name most likely given by Union officers. All photographs are shown in Appendix C.

⁵³⁴ The name *Knat* was also most likely given by Union officers.

⁵³⁵ *The Charleston Daily News* (Charleston, South Carolina) 16 November 1870.

⁵³⁶ *The Charleston Daily News* (Charleston, South Carolina) 20 December 1870.

Photo # 165-C-752 Damaged Confederate "David" type torpedo boat at Charleston, S.C., 1865



Figure 34. A "David" abandoned on the dock at low-tide on Tradd Street. Naval History and Heritage Command, Washington, D. C., Photo#165-C-752.



Figure 35. *David*, abandoned alongside the dock on Tradd Street and exposed by the low tide. Naval History and Heritage Command, Washington, D. C., Photo # 165-C-751. Colorized by Martin Jacob Wenzel - Colorized Past.



Figure 36. *Midge* at the Brooklyn Navy Yard. Reprinted with permission of Cowan's Auction House.

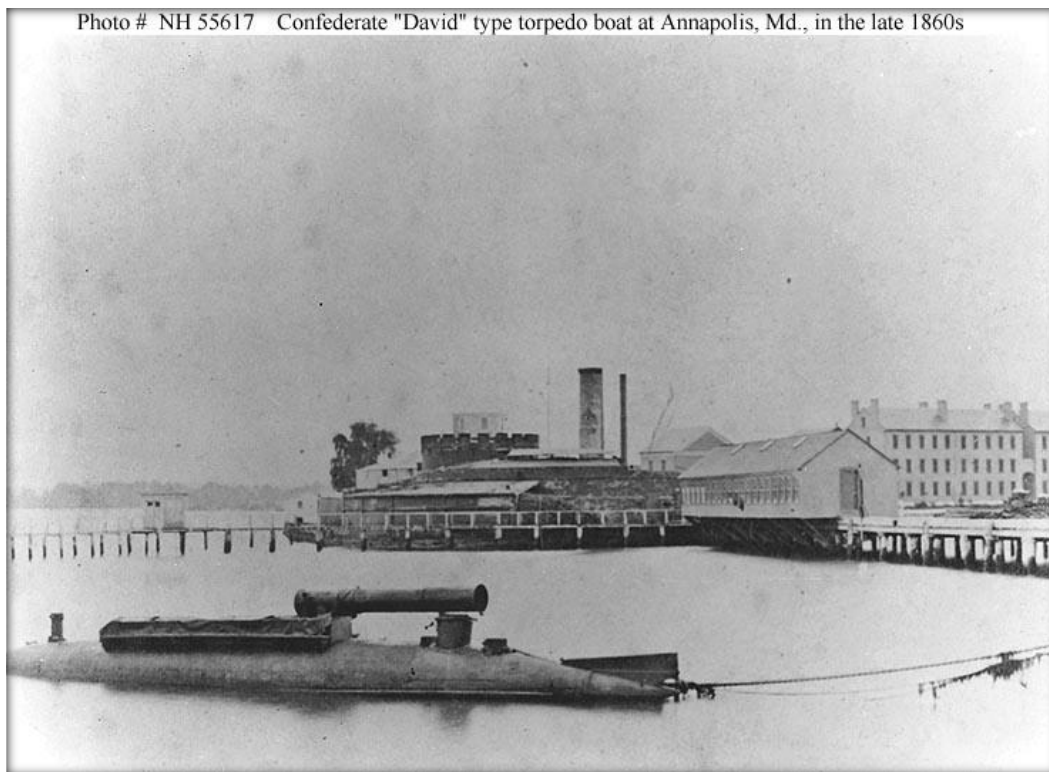


Figure 37. *Knat* at Annapolis (Maryland) Navy Yard, late 1860s. Reprinted with permission of the Naval History and Heritage Command, Washington, D. C., Photo #NH 55617.

In addition to the eight vessels accounted for in official documents (Catalog Nos. 1-8), Ebaugh wrote about two other “Davids” he was employed to build for the STC (Appendix D-Catalog Entries Nos. 9 and 10).⁵³⁷ Unfortunately, Ebaugh offers few details about the construction of the additional boats other than they were built to the same plans as *David*, and were never finished. Ebaugh hints at their ultimate fates:

I was employed by the Torpedo Co to build two more boats of about same dimensions of the David, also a Ram, the Ram was to be 100 feet long 8 feet diameter, twenty five feet of her bow was to be live oak, solid caped with heavy Iron, the Engines and boiler was brought from Scotland, run the blockade, these were being built at Stony landing when Charleston was evacuated and burnt by Gen. Potter’s troops or bummers.⁵³⁸

Fortunately, the fates of these vessels can be clarified by diary entries of US Army surgeon Henry Orlando Marcy. As mentioned, Marcy led the 35th United States Colored Troops as part of Potter’s troops as they entered the Charleston area immediately following the evacuation of Confederate forces. “Marcy’s duties included more than medicine. Although he tended to the sick and wounded and administered vaccines, he also supervised foraging parties, destroyed rebel property and carried out patrols.”⁵³⁹ On 3 March 1865, Marcy described the discovery of a nitre works and shipyard near Monck’s Corner, “On the Stono River⁵⁴⁰ a mile away was a small navy yard where torpedo boats were built, a nitre manufactory &c all under the care of one Mr. D. C. Ebaugh a mechanic and inventor of note formerly from Baltimore –who lived four miles in the opposite direction. It was deemed desirable to burn the yard and capture the Superintendent.”⁵⁴¹

⁵³⁷ These were in addition to the 100-foot-long ram, and a flat-bottom steamer, *Hardee*, the vessel that was confiscated and was the basis for Ebaugh’s \$25,000 claim against the Federal government.

⁵³⁸ Ebaugh 1953, 34-5. No other reference to Ebaugh’s 100-ft ram is known. However, it may have been among the vessels burned at Stony Landing by Union surgeon Orlando Henry Marcy.

⁵³⁹ “Dr. Marcy’s March,” Opinionator, *New York Times*, 13 February 2015, by Daniel J. Vivian, accessed 9 December 2016, http://opinionator.blogs.nytimes.com/2015/02/13/dr-marcys-march/?_r=1 .

⁵⁴⁰ This is a mistaken entry as Stony Landing is on the Cooper River. Marcy also mistakenly refers to Stony Landing as “Stono Landing” in the entry from the following day.

⁵⁴¹ Entry for 3 March 1865, Marcy 1865.

The following day Marcy returned to Stony and noted a few small construction details with a rudimentary sketch of the torpedo boats (Figure 38) that was distinct enough to confirm the basic shape as David-class vessels. Nothing is written of the ram mentioned by Ebaugh.⁵⁴²

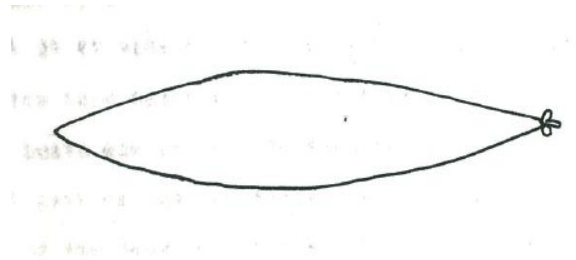


Figure 38. Rough sketch of a torpedo boat found at Stony Landing, March 1865. From the Collections of the South Carolina Historical Society, Henry O. Marcy, *Diary of a Surgeon in the U.S. Army, 1864-1866*, (34/496).

With the two additional Ebaugh vessels, the sub-total of David-class boats encountered by Union troops is ten. These have been documented with relative certainty, but at least two other documented vessels must be accounted for.

Provisionally Distinct Vessels

Appendix D- Catalog entry No. 11 is known only from a photograph taken by George S. Cook (Figure 39). Photographed at an unknown location in Charleston, the only information about this vessel comes from a short description written on the reverse face of the image:

Cook Collection #2229
Submarine "Charleston" on its side in a field
1864
The first "David"---

⁵⁴² "We returned to Stono [sic] landing and completed the Col's. work of last night. Found he had not burned any thing belonging to the Navy yard and only one of the 3 nitre sheds We completed the work." Entry for 4 March 1865, Marcy 1865. Even though Marcy refers to the 'torpedo boats' in plural form, he only details one boat. There is no mention of other vessels on the property.



Figure 39. Photo of a “David” by George S. Cook. Reprinted with permission of the Valentine Museum, Richmond, Virginia, Cook Collection #2229.

It is unclear who wrote the information or when it was written, so its accuracy cannot be verified. Almost every detail offered in the inscription is suspect. First, the vessel is not a submarine. Next, the rough date (1864) is suspect due to the pleasant scene of children picnicking around the vessel in the exposed open field/salt-marsh area. This is a dangerous setting for a picnic during an active war and suggests the photo may have been taken after the evacuation of Confederate troops. Therefore, the idea that the pictured vessel was the first “David” is also questionable.

The photo was published by James Barnes in *The Photographic History of the Civil War in Ten Volumes* (Vol. 6) in 1911. Barnes also hints that the vessel may not be the original *David* with the following text:

This peaceful scene, photographed by [George] Cook, the Confederate photographer at Charleston, in 1864, preserves one of the most momentous inventions of the Confederate Navy. Back of the group of happy children lies one of the 'Davids'.

The 'David' in the picture appears to be the first one built in the Confederacy.⁵⁴³

Barnes had researched the "Davids" and refers to the vessel in the image as "one of the 'Davids,'" but also states that it "appears to be the first one built in the Confederacy," echoing the inscription on the back of the original image. This suggests the inscription was written prior to the publication of Barnes's book in 1911. The way the planking is attached is consistent with the Chapman painting of *David* before the addition of iron plate, but does not match that seen in the drawing made by Carleton. It is unclear if the vessel in the Cook photograph was abandoned in an unfinished condition or was in the well-worn condition noted for *David* and the other commissioned torpedo boats. There is no visible damage, no holes in the vessel, and no marine growth or barnacles are attached to the planking. There is no visible evidence of the hatchway, hatchway coaming, smokestack, or vent tubes. The solid conical end closest to the viewer appears to have a socket hole, presumably for the attachment of a spar, indicating this is the bow end. The conical end also seems to be either roughly finished or damaged by exposure to the elements. The boat lists to starboard with the cockpit features hidden from view. No other distinguishing features are visible, making a definitive association to other photographed or described vessels problematic.

If, in fact, this is an unfinished vessel, it cannot be *David* as the original boat was well-used, but it best matches the unfinished vessel described by Chassaing (vessel No. 2), that he describes as lacking hatches: "No. 2 Situated at the Northeastern Railroad wharf. Length outside, 50 feet; breadth of beam, 5 ½ feet (same as above [No. 1]). Hull in perfect condition and nearly complete, with exception of the hatches."⁵⁴⁴

Photographs of other fusiform torpedo boats have included distinguishing landmarks in the background allowing for the location to be identified, yet this image offers no clues as to the vessel's location. The surroundings in the image do not match well with images of Chisolm's Causeway identified in Figures 34 and 35, the location Ebaugh gave as the final resting place of *David* and the

⁵⁴³ Barnes 1911, 267.

⁵⁴⁴ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

location of Chassaing's vessels No. 3, 4, and 5. It is, therefore, unlikely that the vessel in the Cook photograph (Catalog entry No. 11) is *David*. Nevertheless, this vessel cannot be definitively associated with those previously described and must be cataloged as a provisionally distinct vessel.

Catalog Entry No. 12 is known only from written sources. The vessel was taken as a prize from the Atlantic Wharf, south-eastern side of the Charleston peninsula, on 7 June 1865 and taken under tow from Charleston for transport to Philadelphia by the Union ship *Mingoe*. The torpedo boat was subsequently lost at sea near Cape Hatteras, North Carolina.⁵⁴⁵ Like Catalog Entry No. 11 it is likely not distinct from the ten *David*-class vessels documented in Charleston, but must be treated as potentially so due to lack of distinguishing features.

Of the ten discrete vessels, the final fate of all except No. 5 can be traced, meaning that Catalog Entry No. 12 could potentially be the same as No. 5, or a distinct, otherwise-undocumented vessel.

Other Non-David-style Fusiform Boats

Catalog entries Nos. 13 and 14 in this dissertation are not *David*-class torpedo boats, but are included here to clarify past confusion and to avoid future misunderstandings. Both were fusiform vessels, but neither was a torpedo boat as they differed in size (they were much larger) and function, (they were intended to be blockade runners). The first was described by Dahlgren as the “big fellow” on the Ashley River.

The city of Charleston sits on a peninsula formed by the convergence of the Ashley River on the west side and the Cooper River on the east side. The “big fellow” was also described by Chassaing who supplied a location for the abandoned boat, “Situating near Bennet’s sawmill, west side [Ashley River side] of the city,” but this can be confusing as there was also a Bennet’s Mill, the façade of which currently still stands (2020), on the east side of the peninsula bordering the Cooper

⁵⁴⁵ On 6 June 1865 Rear Admiral Dahlgren reported to Secretary Welles that a torpedo boat was taken in tow to Philadelphia by *Mingoe* (ORN Vol. 16 (1903), 342-3). However, on 9 June Lieutenant Commander S. P. Quackenbush, of USS *Mingoe*, reported the loss of the boat. Quackenbush lost his previous vessel, *Patapsco*, to a statically placed torpedo in Charleston Harbor on 15 January 1865 (Barnes 1869, 108-11; Schafer 1996, 169; Scharf 1887, 705; Welles 1865, 313-9).

River.⁵⁴⁶ Dahlgren reported the wreck to be on the Ashley River, which helps explain the location, but Ebaugh offered greater clarity. He wrote that in addition to *David*, a large fusiform-shaped blockade runner was abandoned at West Point Mill, which was situated between the Ashley River and Bennet's sawmill.⁵⁴⁷ Comparison of Chassaing's description of the large boat⁵⁴⁸ to that of Ebaugh's description establishes that the two men were describing the same vessel.⁵⁴⁹ As Ebaugh stated, "The large boat I built, intended to run the blockade, was captured. She was 163 feet long and 12 feet diameter. She was not complete—all the machinery was not in her. She was on the Ashley River near West Point Mill at the time of evacuation was taken to Brooklin [sic] Navy Yard, N. Y."⁵⁵⁰

Ebaugh described the vessel as "intended to run the blockade," indicating the purpose of the vessel. The location, at West Point Mill, may also be an indicator of purpose as "Charleston retail operations [of material brought in by blockade runners] began in a group of buildings on Bull Street between Ashley and Rutledge Avenues which became known as Bee Block. This location enjoyed proximity to the West Point Mill wharves where blockade runners docked after the siege of Charleston made Cooper River wharves inaccessible."⁵⁵¹

With both the vessel's purpose and location firmly established, it is possible to identify the vessel in a photograph made after the evacuation of Charleston at West Point Causeway (Figure 40) as Ebaugh's blockade runner.

⁵⁴⁶ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9

⁵⁴⁷ In his 2015 publication *The Confederate Steam Navy*, Donald L. Canney included a chapter titled, "Torpedo Craft and Submarines," in which he conflates Ebaugh's large blockade runner with Francis Lee's *Torch*. This conflation does not appear to originate before Canney's volume. However, Schafer (1996, 85) includes a picture of the large cigar-shaped boat in his chapter on Lee's torpedo ram, which may be the source of the error.

⁵⁴⁸ "One hundred and sixty feet long, 11 feet 7 inches beam. Hull in sound condition and nearly complete externally. Boiler in place; also portion of engine," ORN Vol. 15 (1902), 378-9.

⁵⁴⁹ In Rear Admiral Dahlgren's description, he reported a length of 150 feet. However, this discrepancy is clarified in a later report by Gideon Welles (report No.173), dated 28 April 1865, "A cigar-shaped steamer 160 feet long, and said to be able to carry 250 to 300 bales of cotton, new, and may be ready for sea in two weeks," ORN Vol. 16 (1903), 322, 337.

⁵⁵⁰ Ebaugh 1953, 35. In a separate letter, Ebaugh described the large boat again, giving the same dimensions and again mentions that the vessel was captured and taken to the 'Brookland [sic] Navy Yard', Ebaugh 1953, 35.

⁵⁵¹ Skelton 1967, 110.

Photo # 165-C-750 Confederate "enlarged David" type steamer at Charleston, S.C., 1865

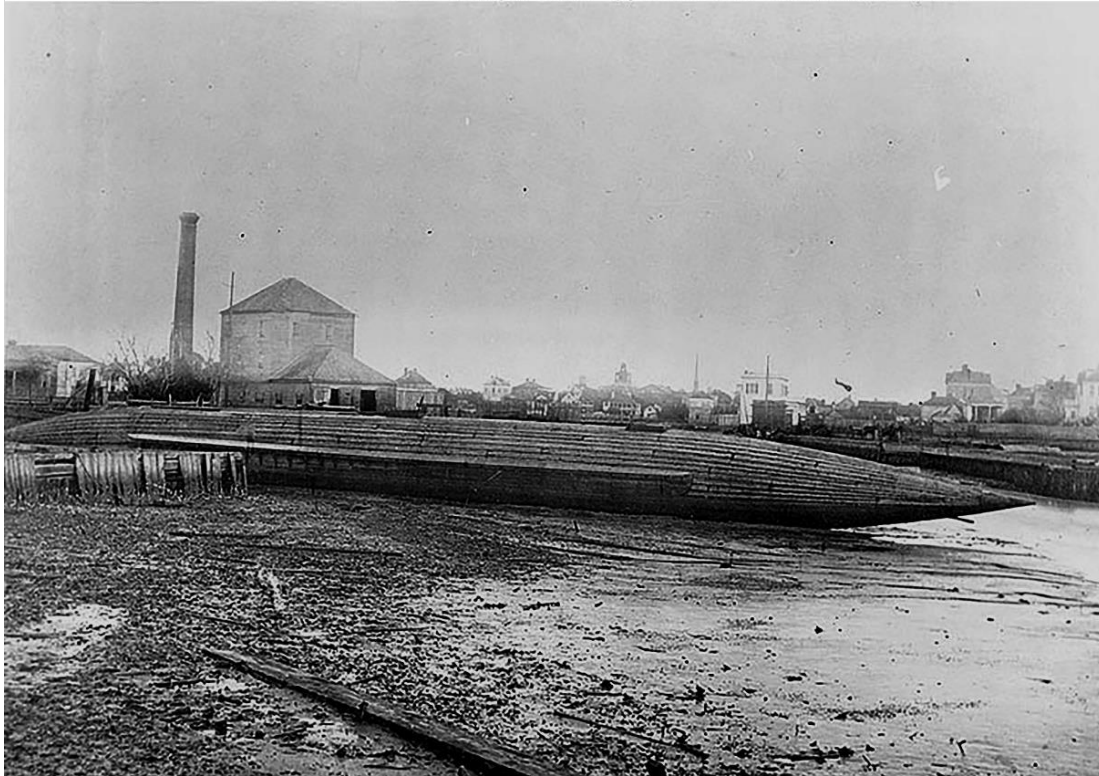


Figure 40. Ebaugh's large cigar-shaped boat abandoned at Charleston. Reprinted with permission of the Naval History and Heritage Command, Washington, D. C., Photo # 165-C-750.

Another similar large cigar-shaped boat was found in Charleston: *Preston*. The vessel was, like Ebaugh's large creation, a boat for smuggling and exporting cotton.⁵⁵² Unfortunately, nothing is known of its builder, its manufacture, or its dates of use, nor is anything known of who may have utilized the vessel, although John Fraser and Company or the Importing and Exporting Company of South Carolina would seem likely candidates.

Preston was taken from Charleston as a prize in May 1865, first to Port Royal, and later to the Washington Navy Yard. It was then transferred to the US Navy.⁵⁵³ It is unclear if the name of the

⁵⁵² *Preston* is listed among vessels in the Union Distribution of vessels of the South Atlantic Blockading Squadron, 15 June 1865, ORN Vol. 16 (1903), 345.

⁵⁵³ Report of Rear Admiral Dahlgren, 23 May 1865, ORN Vol. 16 (1903), 337. According to the logbook of *Preston* (National Archives, Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-

vessel was that used by the Confederates or if the vessel was renamed after seizure, but was likely given by Union officers, as a logbook for *Preston* exists in the National Archives showing a short, one-month period of use before the vessel was decommissioned due to several flaws.

Two photos of the large cotton-boat at the Washington Navy Yard have been identified. The images show the cigar-shaped boat tied to a floating dock surrounded by other identifiable vessels, confirming both the location and the large size of the vessel compared to the monitors moored around it (Figures 41 and 42). Basic descriptions of the vessel were published in various newspaper accounts and are provided in Appendix D.

Discussion

Union Engineer Chassaing described five David-class boats abandoned on the Charleston waterfront in February 1865. Three additional boats were found submerged, and two more were destroyed at Stony Plantation. Thus, a total of ten “Davids” can be confidently documented, all of which were constructed and found in the Charleston area. Provisional Catalog entries Nos. 11 and 12 likely numbered among those ten identified vessels, although the possibility that they were additional torpedo boats must be kept open.

The fates of the David-class vessels have been traced to the extent allowed by the limited documentation. Catalog entries Nos. 1 and 2 were sold for scrap in January 1866. It is a real possibility that vessel No. 2 is the same as provisional vessel No. 11, known only from a photograph; but this hypothesis remains unproven. Catalog entries Nos. 3 and 4 were abandoned, and some believe they are still in their original abandonment locations off Tradd Street but covered by fill material on

1946, *Logs of US Naval Ships 1801-1915*, E118, *Preston*), the vessel was commissioned in early August 1865 and retired less than a month later due to heavy hull leakage and lack of need for such a vessel in the US Navy.

Photo # NH 86237 Ships tied up off the Washington Navy Yard, D.C., 1865-66

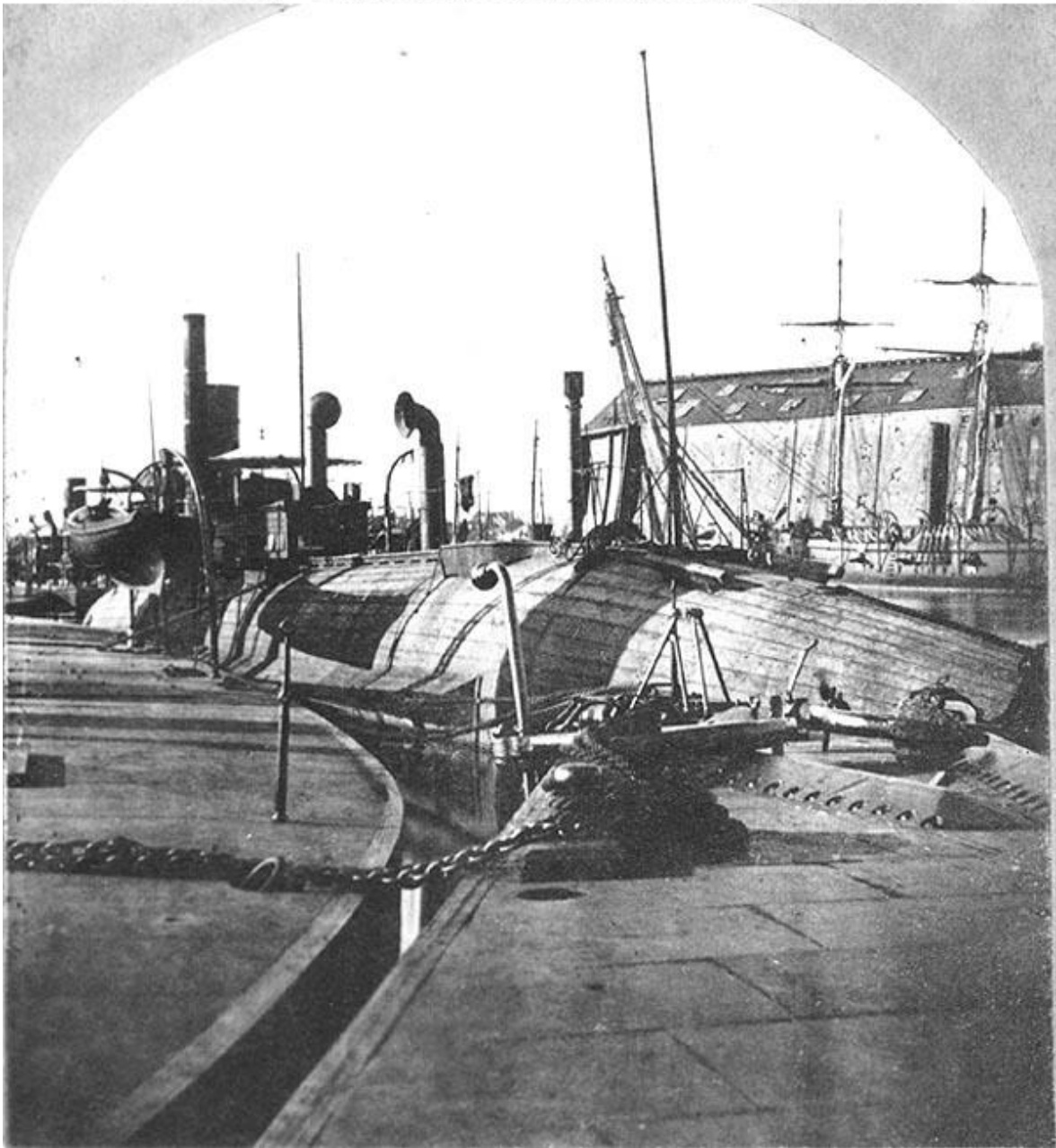
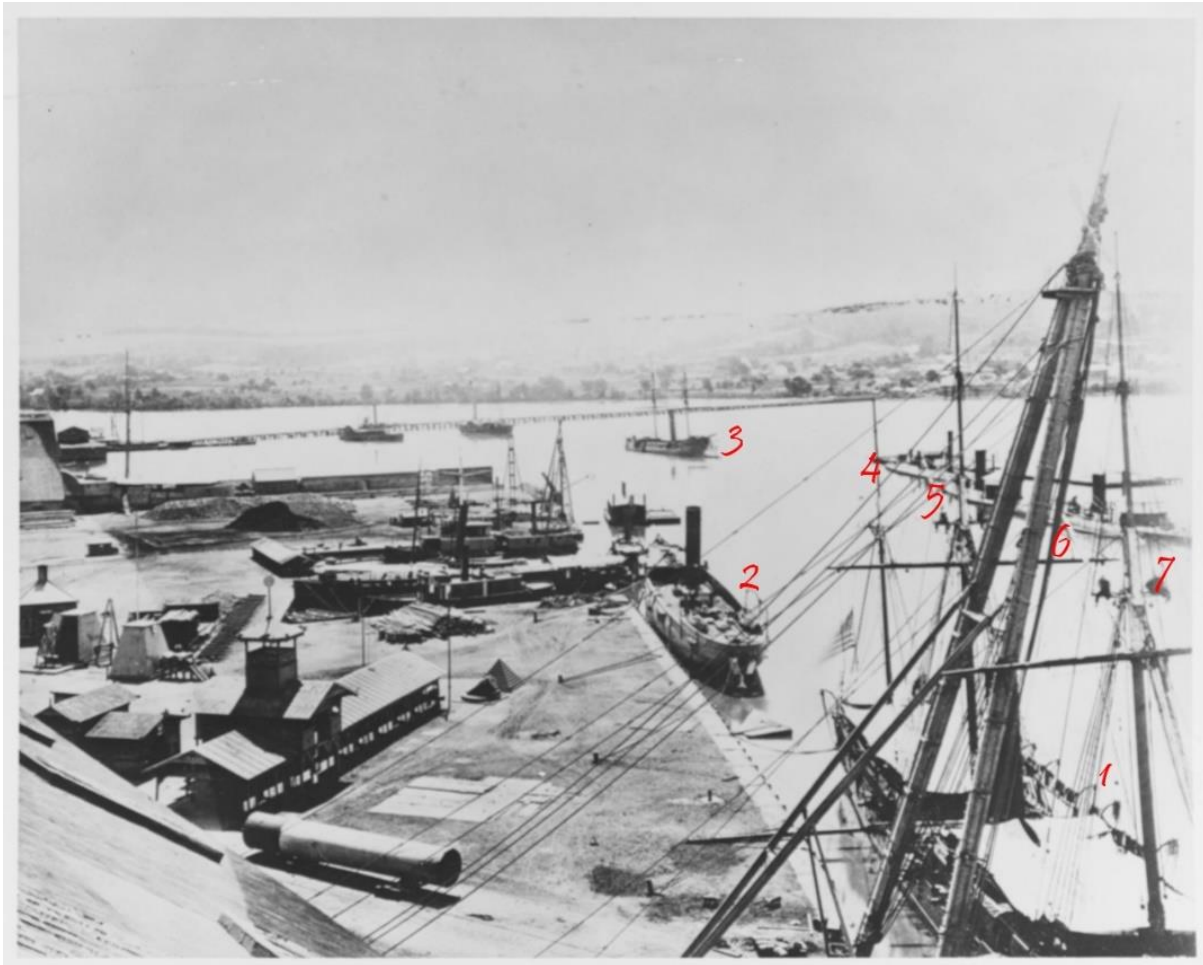


Figure 41. *Preston* tied to the dock at the Washington Navy Yard. Reprinted with permission of the Naval History and Heritage Command, Washington, D. C., Photo # 86237.



- | | |
|----------------------|----------|
| 1- Resaca | 216 x 31 |
| 2- Marblehead | 225 x 43 |
| 3- CSS Stonewall | |
| 4- Preston | ? x ? |
| 5- Chimo or Casco | 225 x 45 |
| 6- Mahopac | 225 x 43 |
| 7- Saugus (bow only) | |

Figure 42. View of *Preston* moored among other vessels at the Washington Navy Yard, June 1866. After Naval History and Heritage Command, Washington, D. C. Photo NH 57928.

reclaimed salt-marsh land.⁵⁵⁴ Vessel No. 5 was at Chisolm's Mill as of April 1865, yet its fate remains a mystery. Vessels Nos. 6 (*Midge*) and 7 (*Knat*) were scuttled, recovered, and taken as prizes to Northern ports (discussed in the next section). *Midge* survived until 1877 at the Brooklyn Navy Yard, while *Knat* survived at least two decades at Annapolis, eventually falling into disrepair before being discarded.⁵⁵⁵ Vessel No. 8 was also scuttled by the Confederates (along with *Midge* and *Knat*), and was likely destroyed in 1870 in efforts to remove obstacles from the Town Creek entrance, close to the Northeastern Railroad (N.E.R.R.) shop. Alternatively, the possibility exists that the vessel was recovered and was the one lost at sea while under tow to Philadelphia by *Mingoe* (Catalog entry No. 12). Catalog entries Nos. 9 and 10 were burned by Henry Orlando Marcy in March of 1865 at Stony Plantation. All 12 David-style boats are summarized in Table 1a and Table 1b along with the two large non-David class fusiform vessels (Nos. 13-14) often mistakenly referred to as "Davids."

David-style torpedo-boats were thus relatively rare; only 10 can be firmly documented. Beauregard intended to establish flotillas consisting of three vessels each to be used in three Confederate ports, but no evidence of David-style boat construction is known from any other Confederate city. In fact, the known vessels were all owned and built by a limited number of participants, most all of whom were associated with the original vessel produced by David Ebaugh, and later affiliated with the STC.

Evidence suggests the STC also intended to operate in other Confederate ports, including Tallahassee, Florida, yet no David-class vessel has been documented to have been built or operated outside of the Charleston area.⁵⁵⁶ Regardless of that fact, numerous post-war historians have misidentified other types of torpedo boats employed outside Charleston as David-class vessels. Some of the most commonly misidentified boats are discussed in Appendix D.

⁵⁵⁴ *Post and Courier* (Charleston, South Carolina), 21 January 1998; 10 March 2013.

⁵⁵⁵ Office of the Superintendent/Correspondence: Letters Received by the Superintendent, 1845-1887, Record Group 405.2.1 Entry 25, US Naval Academy Archives.

⁵⁵⁶ Lee was to be sent to Florida for torpedo boat service but was never actually sent. The STC offered funds for torpedo boats to be built in Tallahassee, but again, nothing came of the offer. National Archives, Record Group 109, War Department Collection of Confederate Records, Endorsements Chapter 2, no. 188, May-September 1864, 71.

Catalog No.	ORN/ ORA Identifier	Name	Last Known Location
No. 1	Chassaing's No. 1		N.E.R.R. Wharf- Charleston
No. 2	Chassaing's No. 2		N.E.R.R. Wharf- Charleston
No. 3	Chassaing's No. 3		Chisolm's Causeway- Charleston
No. 4	Chassaing's No. 4	<i>David</i>	Chisolm's Causeway- Charleston
No. 5	Chassaing's No. 5		Chisolm's Causeway- Charleston
No. 6	Submerged Vessel 1	<i>Midge</i>	prize vessel- Brooklyn Navy Yard
No. 7	Submerged Vessel 2	<i>Knat</i>	prize vessel- Annapolis Navy Yard
No. 8	Submerged Vessel 3		scuttled near City Wharfs- Charleston
No. 9	Ebaugh burned vessel No. 1		Stony Plantation
No. 10	Ebaugh burned vessel No. 2		Stony Plantation
Provisional David-class (may be the same as previous entries)			
No. 11	Cook image vessel		unknown
No. 12	<i>Mingoe</i> towed vessel		lost under tow- Cape Hatteras, N.C.
Non-David Class			
No. 13	Chassaing's No. 6		prize vessel- Brooklyn Navy Yard
No. 14		<i>Preston</i>	prize vessel- Washington Navy Yard

Table 1a. List of David-class vessels and other fusiform vessels.

Catalog No.	Ultimate Fate	Length	Image(s)
No. 1	sold at auction 1866	ca. 50 ft	
No. 2	sold at auction 1866	ca. 50 ft	
No. 3	abandoned	ca. 50 ft	NHHC 165-C-752
No. 4	abandoned	ca. 50 ft	NHHC 165-C-751
No. 5	?	ca. 50 ft	
No. 6	scrapped	ca. 64 ft.	NH 75466, NH 94257, Cowans Image, Harpers Weekly Image, NYPL Image
No. 7	unknown		NH 55617
No. 8	likely destroyed in 1870		
No. 9	burned Mar 1865		
No. 10	burned Mar 1865		
No. 11	unknown- possibly the same as No. 2		George S. Cook Image
No. 12	lost at sea- possibly the same as No. 8		
No. 13	?	160 ft	NHHC 165-C-750
No. 14	sold at auction- scrapped		NH 86237, NH 57928

Table 1b. List of David-class vessels and other fusiform vessels.

Summary of the Operational History of the “Davids”

Aside from a few possible sightings, no activity or sorties executed with David-class vessels can be documented beyond 1 May 1864. Their use appears to have been abandoned and the vessels unused for the remainder of the war. Several possible reasons for this can be suggested. Except for *David*, the other operational David-class vessels were mechanical disappointments, slow, and unreliable. Beauregard, Glassell, Lee, and Stoney all agreed that attacking with a fleet of torpedo boats was the most feasible plan, yet the initial failings of the “fleet” likely left them feeling less than confident in their effectiveness. Ebaugh’s design had proven successful, but when replicated by the STC, the

vessels simply fell short of expectations. However, the known presence of the flotilla of “Davids” in Charleston, regardless of its efficacy, stood as an omnipresent threat to Union vessels and deterred further attempts to take the city by sea.

In addition, after many months at sea, even if only statically positioned, many Union vessels needed repair and were rotated in and out of Charleston Harbor, including the two big potential cash prizes. *New Ironsides* was heavily damaged and suffering the effects of stationary harbor duty. *Wabash* was also in disrepair. With these vessels removed as viable targets, any chance of collecting the large cash reward offered by Fraser and Company was obviated, although the smaller \$50,000 prize offered for sinking a monitor was still available. Perhaps the directors of the STC felt less incentive to chase the smaller reward as construction of the STC torpedo boats was likely approaching that dollar figure.

Rear Admiral Dahlgren complained in early June 1864 that 13 steamers had been withdrawn from the South Atlantic squadron.⁵⁵⁷ Eleven vessels were under repair at that time at Port Royal,⁵⁵⁸ that number increased to 19 by mid-August.⁵⁵⁹ Regardless of the condition of the South Atlantic Blockading Squadron, the number of vessels at Charleston Harbor did not diminish, although with the absence of *Wabash* and *New Ironsides*, effective firepower was certainly reduced. Instead, vessels were merely shifted from less important bays and rivers to Charleston as needed.⁵⁶⁰ The number of blockading vessels, both inside and outside the bar of Charleston Harbor, fluctuated from 17 to 26 between October 1863 and October 1864, with the greatest concentration of vessels on blockade duty from December 1863 until mid-June 1864, averaging 23 vessels.⁵⁶¹ Trends suggested by Surham and others indicate the blockade weakened in efficiency during the second half of 1864. This view is supported by data from the Charleston blockading records and may partially account for the inactivity of the Charleston torpedo boats.

The blockade never had the anaconda-like squeeze that Winfield Scott envisioned, but it remained effective enough to limit the importation of needed supplies and the exportation of cotton

⁵⁵⁷ Rear Admiral Dahlgren to Commander Balch, 3 June 1864, ORN Vol. 15 (1902), 466-7.

⁵⁵⁸ Vessel distribution list 15 July 1864, ORN Vol. 15 (1902), 525.

⁵⁵⁹ Vessel distribution list 16 August 1864, ORN Vol. 15 (1902), 629.

⁵⁶⁰ The suggestion that Union vessels were merely shifted is evident by the distribution of Union vessels lists and is not novel. Historian William N. Still (1998, 137) proposed shifting was a “normal naval procedure.”

⁵⁶¹ Calculated from bi-monthly Union vessel distribution lists ORN Vol. 15 (1902), 69, 113, 144, 176, 217, 242, 258, 325-6, 346, 365, 390, 400, 433-4, 465, 524, 550, 570, 588, 628, 656, 703.

as currency. The blockade started out permeable but was strengthened from 1862 to 1863. When *David* was conceived and constructed, the Union blockade was at its most efficient stage in Charleston, mainly due to both the shift from wooden blockading vessels to ironclads and monitors, and to the increased numbers of blockading vessels, which is precisely what prompted *David's* necessity.

Over the last half-century, a stream of authors spurred by statistics presented by Frank Owsley⁵⁶² have posited that by 1864 the blockade had become “quite porous,” allowing for highly efficient Confederate blockade running.⁵⁶³ Perhaps the increased struggle to maintain the blockade, beginning about the same time that *David* and the other David-class vessels were jointly operating, may partially explain why the torpedo boats fell from active use in mid-1864, as it was the ultimate goal of local merchants, who were largely responsible for the creation and construction of the David-class vessels, to bypass the blockade.⁵⁶⁴

Additionally, there was a lull in the damage caused by stationary torpedoes from mid-1863 until early 1864. This was the time of the most successful sorties by both *David* and *H. L. Hunley*. Gabriel Rains was transferred to Charleston during that time and renewed the intensive use of stationary torpedoes. From this point until the end of the war Union vessels saw increased damage and destruction by defensive torpedoes. Although their deployment was well-known, their precise locations were not.⁵⁶⁵ The renewed efforts with stationary torpedoes may also partially explain the reduced torpedo boat activity at Charleston Harbor.

At the time *David* first sortied, a third Confederate ironclad was completed in Charleston. CSS *Charleston* was, in the words of Raimondo Luraghi, “the most powerful and swift Confederate ironclad in South Carolina waters.”⁵⁶⁶ With such a potentially great weapon at hand, and *David* having expended the element of surprise, the torpedo boats may have lost favor as Beauregard’s most valued weapons against the blockade, although, outwardly at least, Beauregard seems to have remained pro-*David*.

⁵⁶² Owsley 1931.

⁵⁶³ Still 1998, 133-4.

⁵⁶⁴ Economist David Surdam (2001, 92, 209) notes that Charleston’s role as an entrepôt was being revived by mid-1864 and the Union blockade effort was relaxed at that time.

⁵⁶⁵ Perry 1965, 118, 196.

⁵⁶⁶ Luraghi 1996, 279.

Finally, Beauregard, who had an affinity for the torpedo boat concept from its genesis, was transferred out of Charleston for a new command in upper North Carolina in mid-April 1864.⁵⁶⁷ He temporarily lost his right-hand man, Francis Lee, who was assisting in Savannah and elsewhere as needed. It is likely not coincidental that no more documented sorties were executed using “Davids” after Beauregard and Lee departed Charleston. Secretary of the Navy Mallory had expressed his opinion in December 1863 that the defense of Charleston should rest on the backs of the ironclads, not in the offensive use of torpedo boats. This idea finds support in that by July 1864, less than three months after Beauregard’s transfer, a fourth Confederate ironclad, *Columbia*, was nearing readiness. Whatever the reason, or combination of reasons, *David* and its sister boats saw no more documented action in Charleston after April 1864.

The problems experienced in operating *David*, and other David-class vessels, demonstrate that although it was a well-conceived idea for a spar-torpedo boat, the small craft were products of hurried construction, insufficient testing, and were prematurely pressed into service, problems shared with Ebaugh’s predecessors, David Bushnell and Robert Fulton.⁵⁶⁸ Maneuverability, reliability of the propulsion system, protection from small arms, and resistance to swamping were all aspects that could have been significantly improved with further development. The original *David* was the first and the acme of the class, the only one to engage Union vessels in combat, and the only one to have inflicted injury to the opposing fleet. However, it was the threatening presence of the small fleet of David-class torpedo boats that haunted the Union Navy on a nightly basis. That chimerical fleet, coupled with hundreds of stationary torpedoes and the heavily fortified batteries, helped keep the Union Navy at bay for the duration of the war in Charleston.⁵⁶⁹

⁵⁶⁷ Williams 1954, 207; General Beauregard officially took command of the Department of North Carolina and Cape Fear on 23 April 1864, ORA Vol. 33 (1891), 1307-8.

⁵⁶⁸ Roland 1978, 111.

⁵⁶⁹ Although self-propelled torpedoes gained popularity in the 1870s, defensive drifting torpedoes and offensive spar-mounted torpedoes remained a feared standard of the world’s navies into the 1880s. See *Scientific American* “Modern Torpedo Warfare” 9 February 1878, 82.

“Davids” Taken as Prizes of War

Secretary of the US Navy Gideon Welles registered 1151 prize vessels taken from Southern ports during the ACW. In his 1865 “Report of the Secretary of the Navy, XXIX,” he lists various types of vessels with a total count for each. He includes neither the exact number of torpedo boats nor distinguishing information about them that might allow one to differentiate the David-class vessels. Instead, Welles includes torpedo-boats with gunboats, schooners, and sloops, totaling only ten vessels and leaving unanswered questions.

The evidence presented in this manuscript demonstrates there were at least five fusiform vessels, David-class and otherwise, taken from Charleston after the evacuation of the city (*i.e.*, Catalog entries Nos. 6, 7, 12, 13, and 14 listed in Appendix C). This does not account for other non-David-class torpedo boat prizes taken from other port cities, or for torpedo boats of other designs taken from Charleston, *e.g.*, Lee’s ram, if any other types were encountered.⁵⁷⁰

Secretary Welles also tallied by type the number of enemy vessels that were burned or destroyed, without a specific number of torpedo boats, and again lumping them with other vessel types, totaling 11.⁵⁷¹ Welles’s numbers do not appear to reflect actual numbers of confiscated or destroyed torpedo boats. One reason for this discrepancy may be that at least some torpedo boats were taken without adjudication or value assessment, a common practice for other vessels taken as prizes of war. Of the five fusiform boats known to have been taken from Charleston, none were sent to Florida for assessment, a common adjudication point, and only one, *Preston*, was taken to Port Royal, the closest adjudication site to Charleston. The others were taken directly from Charleston to their Northern destinations. Consequently, records of these prizes have not been formally recorded, except in logs of Union ships used to transport the prizes, or in photographs.

⁵⁷⁰ Diary of Robert Knox Sneden, Vol. 6, 225, Virginia Historical Society, Richmond, Virginia. The Sneden sketch, believed to portray *Torch*, is noted by the artist to have been “used by the rebels at Charleston Harbor” and “Captured and now at the Navy Yards Brooklyn.”

⁵⁷¹ “The number of vessels captured and sent to the courts for adjudication from May 1, 1861, to the close of the rebellion, is one thousand one hundred and fifty-one, of which there were: steamers, 210; schooners, 569; sloops, 130; ships, 13; brigs and brigantines, 29; barks, 25; yachts, 2; small boats, 139; rebel rams and iron clads, 6; rebel gunboats, torpedo boats, and armed schooners and sloops, 10; class unknown, 7 — making a total of 1,149. The numbers of vessels burned, wrecked, sunk, and otherwise destroyed during the same time were: steamers, 85; schooners, 114; sloops, 32; ships, 2; brigs, 2; barks, 4; small boats, 96; rebel rams, 5; rebel ironclads, 4; rebel gunboats, torpedo boats, and armed schooners and sloops, 11; total, 355 — making the whole number of vessels captured and destroyed 1,504.” Welles 1865, 494. For the complete lists, see “Miscellaneous Captures” and “Prizes adjudicated from the commencement of the rebellion to November 1, 1865”, 457-519.

As of 1 June 1865, Dahlgren reported three operational “Davids” in the hands of Union forces. Two of them were scuttled boats raised by Union forces, reconditioned and taken into service. The recovery and use of the boats is described in a 1901 article published in the *National Tribune* by John H. Deane, US Navy, who wrote of an unusual pleasure cruise aboard a “David” in Charleston harbor: “When Charleston was occupied by our fleet and army, in February 1865, we found that three serviceable torpedo-boats of the “David” type had been sunk by the Confederates in different spots in the harbor. Two of these were raised and repaired and I had the strange pleasure of riding in one of them at its best speed—five knots an hour.”⁵⁷²

Rear Admiral Dahlgren ordered two of the operational David-class torpedo boats, sent to the Naval Academy (then at Newport, Rhode Island) at the end of May 1865. The first was taken from the wharves at the “Rebel Navy Yard” at the mouth of Town Creek on 27 May and loaded on the deck of USS *Pontiac*.⁵⁷³ Dahlgren wrote to George S. Blake, Superintendent Naval Academy, Newport, Rhode Island:

I have directed the *Pontiac* to deliver to you for the collection of the Academy, several memorials of rebel warfare at this place [Charleston], viz, a torpedo boat, being one of nine found here, and one of the two that were raised by the squadron divers from the bed of the Cooper River, where they sunk just before we entered. It was such a boat as this that exploded a torpedo under the *Ironsides* on the night of the 10th of October, 1863, and afterwards menaced our vessels constantly.⁵⁷⁴

In a separate letter, also written on 27 May 1865, Dahlgren issued instructions to Stephen B. Luce, Commander of *Pontiac*, to deliver the reconditioned torpedo boat to the Naval Academy, presumably for inspection and study by Commodore Blake and the naval cadets. Dahlgren refers to the torpedo boat by the name *Knat*. This is the only known instance in which this name is used to refer to the captured vessel. “You will first touch at Newport, and deliver to the Superintendent of

⁵⁷² “Torpedo-Boats of the Rebellion” *National Tribune* (Washington, D. C.), 31 October 1901.

⁵⁷³ Loading of the torpedo boat started on 25 May and it was stowed on *Pontiac*’s deck on 27 May, Logbook of USS *Pontiac*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, Pontiac, E118.

⁵⁷⁴ Rear Admiral Dahlgren to George Blake, 27 May 1865, ORN Vol. 16 (1903), 339.

the Naval School,- the Rebel Torpedo Boat (“Knat,”) with its torpedo, and the other articles from the Submarine defences [sic] of this place viz: — One Barrel Torpedo and fuze [sic]— One frame Torpedo, — and one Rocket.”⁵⁷⁵

Various syndicated newspapers and media mistakenly report that Luce was to take the torpedo boat to New York: “The Pontiac, Lieu. Commanding S. K. Luce [Stephen B. Luce], left this port [Charleston] yesterday for New York with a rebel torpedo boat in tow;”⁵⁷⁶ “Pontiac, paddle-wheel, 16, Lieutenant-Commander S. B. Luce left Charleston harbor May 31, for New York, with a Rebel torpedo boat in tow.”⁵⁷⁷ However, Luce was to proceed by Dahlgren’s orders to deliver *Knat* to Newport (Rhode Island) prior to going to New York. According to the log of *Pontiac*, Luce left Charleston on 28 May and arrived at Newport on 1 June where the David-class torpedo boat was delivered to the US Naval Academy.⁵⁷⁸ Newport, however, would not be the final destination for *Knat*.

The Naval Academy was founded at Annapolis, Maryland, but for wartime security moved to Newport in the early stages of the war. After the summer of 1865, the Academy moved back to Annapolis. *Knat* was consequently relocated to Annapolis, where it can be seen in a photograph of a “David”, moored at the foot of Old Fort Severn in the late 1860s (see Figure 37). It remained there, in the water, for several years before being hauled out and displayed on the grounds of the Naval Academy at Gun Park. A newspaper article from 1887 reported: “On the grounds of the United States Naval Academy at Annapolis, a superannuated Confederate torpedo boat is an object of much interest to visitors, for, although it will stand no comparison with modern boats of the kind, it was during the rebellion one of the most formidable craft of its type.”⁵⁷⁹ *Knat* fell into disrepair, and was broken up in 1890.⁵⁸⁰

⁵⁷⁵ Letter from Rear Admiral Dahlgren to Commander Stephen B. Luce 27 May 1865, Library of Congress Manuscript Collection, Civil War Manuscripts, 561 Luce, Stephen Bleecker Papers 1799-1938, reel 4.

⁵⁷⁶ *Daily Ohio Statesman* (Columbus, Ohio), 5 June 1865; *Daily Intelligencer* (Wheeling, Virginia), 5 June 1865. “Pontiac, paddle-wheel, 16, Lieutenant-Commander S. B. Luce left Charleston harbor May 31, for New York, with a Rebel torpedo boat in tow,” *Army and Navy Journal* (New York) Vol. 2 No. 42, 10 June 1865, 660. Although the newspapers reported the torpedo boats as towed, they were in fact loaded on deck.

⁵⁷⁷ *Army and Navy Journal* (New York) Vol. 2 No. 42, 10 June 1865, 660.

⁵⁷⁸ Logbook of the USS *Pontiac*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Pontiac*, E118.

⁵⁷⁹ “A Relic of the Confederacy” *Milwaukee Daily Journal* (Milwaukee, Wisconsin), 2 July 1887.

⁵⁸⁰ Office of the Superintendent/Correspondence: Letters Received by the Superintendent, 1845-1887, Record Group 405.2.1 Entry 25, US Naval Academy Archives. According to notes in the correspondence of the US Naval Academy’s superintendent, the vessel was brought to the Naval Academy by Admiral Porter.

A second scuttled David-class vessel was recovered and taken from the Northeastern Railroad wharf on 20 May.⁵⁸¹ Although several newspapers erroneously reported that *Knat* was to be delivered to New York, the *Army and Navy Journal* correctly reported that this second vessel was actually the first fusiform torpedo boat delivered to New York, a week prior to the departure of *Knat*, in May 1865: “Flambeau, screw, 6, Acting Volunteer Lieutenant Edward Cavendy, sailed from Charleston, May 22, for New York. She carries one of the Rebel cigar-shaped torpedo boats, the first ever seen in any harbor of the North.”⁵⁸²

In Dahlgren’s orders to Commander Luce of *Pontiac*, he also mentioned his plan to have *Flambeau* take another torpedo boat to Newport. These orders presumably contributed to the confused reports about the destination of *Knat*. “In case that the Torpedo Boat (“Midge”) sent by the “Flambeau” should have reached Newport,— then you will leave all the articles, except the Torpedo Boat— the latter you will deliver to the Navy Yard [Brooklyn, New York]”⁵⁸³ There are no further references to *Midge* in official records. However, five years after the war ended, *Harper’s New Monthly* published an article about the Brooklyn Navy Yard, describing the state of the yard at that time and some of the curiosities on display there. “Several torpedo-boats, among others the *Midge*, captured in Charleston Harbor, are scattered about the yard, and are objects of great interest.”⁵⁸⁴

Besides the 1870 article and several post-war photographs taken at the Brooklyn Navy Yard, the only other named reference to *Midge* is a sketch in a manuscript on torpedoes written by Confederate Brigadier General Gabriel Rains (Figure 43).⁵⁸⁵ In the sketch, the word ‘David’ is written across the hull and in the bottom-right corner is written the word “Midge.” Rains provides no further explanation or clues for his inclusion of the word. Rains had served in Charleston while *David* was active and likely encountered or heard of the vessel while there, yet the sketch in Rains’s

⁵⁸¹ Crews began preparation near the N. E. R. R. wharf “to take in Torpedo Boat” on 18 May. The Torpedo Boat was loaded on deck & secured by Friday 19 May and was ready for transport on 20 May, Logbook of USS *Flambeau*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, Flambeau, E118.

⁵⁸² *Army and Navy Journal* (New York) 3 June 1865, 653.

⁵⁸³ Letter from Rear Admiral Dahlgren to S. B. Luce, 27 May 1865, held at the Library of Congress, Papers of Stephen B. Luce, Reel 4. There are no contemporaneous Confederate references to the names *Midge* or *Knat* and it is therefore probable that the names were assigned by Union officials.

⁵⁸⁴ “The Brooklyn Navy Yard” *Harper’s New Monthly* 1870 Vol. 42 No. 247, 12. A sketch of the boat appears on page 9.

⁵⁸⁵ Schiller 2011, 85.

manuscript does not appear to be from personal observation (there are several inconsistencies between his sketch and known images of *Midge*).⁵⁸⁶

Herbert M. Schiller, the editor of Rains's manuscript, tells that Rains was still adding to the work as late as 1874. Thus, this sketch may have been based on the 1870 article in *Harper's New Monthly* on the Brooklyn Navy Yard and *Midge*.

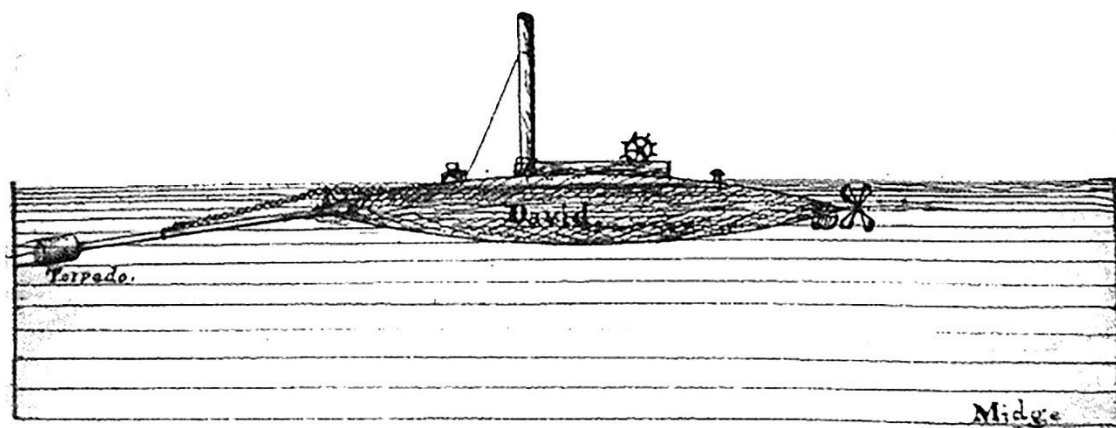


Figure 43. Illustration of *Midge* from Gabriel Rains's *Torpedo Book* manuscript. Reprinted with permission of the American Civil War Museum, Richmond, Virginia.

Midge was the most documented of the “Davids.” In addition to the *Harper's New Monthly* article and Rains's brief, inaccurate description, several photographs exist that allow for comparison to the Rains sketch. Both *Knat* and *Midge* shared a distinct coaming that extended up from the hull to deflect water from entering the hatch or cockpit. The similarities of the two boats, however, particularly that of the coaming around the hatch, suggest the two to be sister-vessels, as is also indicated by their entomologically themed names.⁵⁸⁷

⁵⁸⁶ Rains assignment in Charleston was from August 1863 until mid-February 1864. *Midge* would not have been constructed at this point, so *if* Rains saw this boat, it would have been on a later visit to Charleston during 1864.

⁵⁸⁷ ‘Knat’ is an alternative, archaic spelling of *Gnat*, a small flying insect. The flared coaming feature is missing from Rains's sketch, again supporting the idea that his drawing was made without observation of either *David* or *Midge*.

Midge arrived in Brooklyn in working order and was maintained in operational condition for several years after the war. “Steam was gotten up the other day on the Rebel torpedo boat, which is in the Park, near the Lyceum [of Brooklyn Navy Yard], but the attempts to make the propeller revolve were unsuccessful.”⁵⁸⁸ At this time, 1867, the vessel had begun to deteriorate from exposure to the elements. Eventually climate fluctuations took their toll on *Midge* and, after more than a decade being on display at the Brooklyn Yard, the vessel is believed to have been sold for scrap in May 1877.⁵⁸⁹

Three functional torpedo boats were mentioned by Dahlgren in his report to Welles on Confederate prizes. *Knat* and *Midge* were likely the two “Davids” raised from the Cooper River and “taken into service.” The third vessel, cataloged as entry No.12 in Appendix C, was lost at sea near Cape Hatteras, North Carolina on 7 June 1865 while under tow to Philadelphia by the Union vessel *Mingoe*.⁵⁹⁰ Entries from the logbook of *Mingoe*, commanded by S. P. Quackenbush, describe the last days and hours of the third boat:

June 4 1865-
Came to anchor near the Atlantic Wharf

June 5 1865-
At 6:30 sent the launch & crew to tow the Torpedo Boat
At 7:30 Launch returned with the Torpedo boat

June 6 1865-
At 6 left for Philadelphia

June 7 1865
From 4 to 8- 10 ins water in pumps Torpedo boat towing well but seems to be settling in the water
At 1:30 stopped & sounded in 28 ½ fathoms water grey sand and shell with black Sparks, the Torpedo boat going down by the stern first

⁵⁸⁸ *Army and Navy Journal* (New York) Vol. 5 No. 18, 21 December 1867, 280.

⁵⁸⁹ Uncited statement by R. Thomas Campbell (2000, 131). This information remains unverified.

⁵⁹⁰ On 6 June 1865 Rear Admiral Dahlgren reported to Secretary Welles that a torpedo-boat was taken in tow to Philadelphia by *Mingoe* (ORN Vol. 16 (1903), 342-3). However, on 9 June Lieutenant-Commander S. P. Quackenbush, of USS *Mingoe*, reported the loss of the torpedo-boat. Quackenbush had lost his previous vessel, *Patapsco*, to a statically placed torpedo in Charleston Harbor on 15 January 1865 (Barnes 1869, 108-11; Schafer 1996, 169; Scharf 1887, 705; Welles 1865, 313-9). See pp. 183, 189, this manuscript.

At 5 sounded in 17 fathoms water NSB shells, Discovered the Torpedo boat settling down by the stern first
From 6 to 8 Torpedo boat down by the stern
At 7:15 stopped the engine to relax the hawsers round the Torpedo boat- lowered the 2nd cutter & secured the hawsers
At 7:30 made Hatteras Light bearing N by E distant 15 miles
From 8 to midnight- At 9:25 torpedo boat sunk& was obliged to cut her away
At Cape Hatteras light bore by compass SW by W ½ W. Distant about 15 miles 10 ins water in the pumps lost 6 fathoms Hawser lg to the Torpedo Boat

Commander Quackenbush of *Mingoe* reported on the loss of the torpedo boat two days later, offering Dahlgren his estimation of the cause of the sinking:

“Sir: I regret to inform you that a torpedo boat which I took in tow at Charleston, S.C., sunk off Cape Hatteras at 6 p.m. on the 7th instant, in consequence of her ballast having shifted and her hatches not being caulked in a manner to prevent her becoming filled with water. Had she been perfectly tight I would have had no difficulty in bringing her into port, but under the circumstances it was impossible to preserve her.”⁵⁹¹

Unfortunately, log entries do not help further identify the torpedo boat and no records have been found to suggest that the lost craft was ever recovered. If it can be located, this vessel may represent the most promising potential for the archaeological study of a David-class boat.

⁵⁹¹ Lieutenant-Commander S. P. Quackenbush to Secretary Welles, 9 June 1865, ORN Vol. 16 (1903), 344.

CHAPTER IX

CONSTRUCTING *DAVID*

Although sometimes treated as such, Confederate torpedo boats were not a homogenous group, neither was each uniquely designed. Instead, they can be roughly divided into three groups; David-style fusiform vessels, covered steam-launches or Squib-style boats, and unique-design vessels. A brief summary of craft commonly conflated with “Davids” can be found in Appendix D. The steam launches were quickly copied by the Union Navy, but the *David* design proved elusive, although replicas were requested by Dahlgren.⁵⁹² Several events demonstrate the Union Navy’s interest in the David-class boats: 1) Engineer Chassaing’s documentation of the five accessible David-class torpedo boats found in Charleston; 2) at least two scuttled vessels were raised and put into service; 3) at least three “Davids” were ultimately taken as prizes, and 4) two of those prizes went, at least temporarily, to the Naval Academy for examination.

Unfortunately, those taken as prizes and displayed in Northern ports have not survived, nor have any formal descriptions or lines drawings been located.⁵⁹³ A single effort to find and recover the remains of a David-class vessel has likewise been fruitless. Ground penetrating radar was used in 1998 to locate and identify the remains of the two David-class torpedo boats (Catalog entries Nos. 3 and 4) abandoned at Chisolm’s Causeway on Tradd Street. As reported in a local newspaper, a “pattern of anomalies” was allegedly found under the now paved streets, but efforts to obtain copies of the survey report have been unsuccessful.⁵⁹⁴ The results of the survey thus remain unsubstantiated and no further action has been made by the researchers to verify them.

With no surviving Davids, no proper lines drawings, and no archaeological remains, the only information on the design and construction of the original *David* must be extracted from scattered communiques, business documents, diaries, photographs, sketches, and other less-than-complete sources.

⁵⁹² Report of Rear-Admiral Dahlgren, US Navy, regarding the operations of the Confederate torpedo “David”, ORN Vol. 15 (1902), 13-4.

⁵⁹³ Prize vessels are addressed in detail in Chapter VIII.

⁵⁹⁴ *Post and Courier* (Charleston, South Carolina), 21 January 1998; 10 March 2013; Pers. Comm. E. Lee Spence, 9 October 2007, 24 May 2008, 26 May 2008; Pers. Comm. Pete Petrone, 11 November 2014. The survey was reportedly funded by philanthropist Stanley M. Fulton and conducted by maritime explorer E. Lee Spence and former National Geographic photographer Claude E. “Pete” Petrone.

Scant details of *David*, particularly the vessel's construction, are often echoed from imperfect sources. As historian Milton Perry noted, "contemporary accounts were often written under stress and embellished at the writer's discretion."⁵⁹⁵ Furthermore, most accounts omit the crucial part played by David Ebaugh, the designer and builder of *David* and several similar vessels. In 1993, Charlestonian Willard Strong wrote to the *Berkeley Independent* to correct a few misconceptions about *David*, observing that "Ebaugh's statements about the David carry considerable weight, because unlike others involved in the financing of the vessel, Ebaugh was actually present during the construction" and according to Ebaugh, he was responsible for the design as well.⁵⁹⁶

As mentioned earlier, on 3 March 1865, Union troops arrived at Stony Landing. After Henry Orlando Marcy arrested David Ebaugh at his home, he recorded, "Found much of interest. All of his papers relating to the blockade runner which he built here now in Charleston and the torpedo boat &c. Correspondence with eminent men. Select[ed] those which we think important and after dinner Col. & myself re-crossed the river and left the papers we did not want at Miss V. H. [Van Haden] for Ebough [sic]."⁵⁹⁷ Unfortunately, none of the builder's documents relating to the blockade runner or the torpedo boats have been located, and likely have not survived.⁵⁹⁸

Instead it is the letters written by Ebaugh almost three decades after the construction of *David* that provide vital information about the original boat, information that simply does not exist in other sources or for other craft of the class. The collection of Ebaugh/Campbell correspondence (transcribed in Appendix A) remains the single greatest asset for gaining a better understanding of the vessel's construction.

The vessel documentation by Union Engineer Chassaing shows that among the David-class vessels, five of the known ten examples exhibited a high level of uniformity. Most vary only marginally from dimensions provided by Ebaugh, generally being slightly longer and having a slightly greater diameter. Of the five other vessels, little descriptive material is available. However, brief eye-witness accounts and a small assemblage of photographs demonstrate only slight variation in styles of construction and sizes within the group of David-style vessels. When Ebaugh's

⁵⁹⁵ Perry 1965, 23.

⁵⁹⁶ "Not a Submarine" Willard Strong, *Berkeley Independent* (Charleston, South Carolina) 24 November 1993.

⁵⁹⁷ 4 March 1865, Marcy 1865. See p. 91, 179-80 this volume.

⁵⁹⁸ A collection of Ebaugh papers is held at the National Archives. Unfortunately, the papers, many of which were referenced in this manuscript, are almost exclusively pay statements and invoices from the Confederate Navy and Engineering Division.

correspondence is collated with Chassaing's descriptions, various photographs, details from eye-witness accounts, and the Chapman painting, tentative lines drawings and a reconstruction on paper of the original vessel can be produced.

Construction

Gaining an understanding of the construction of *David* and similar craft of the period is essential for the study of the type. This chapter will collate and analyze the available evidence to build a better understanding of the vessel's features and develop a set of hypothetical lines and construction plans. As a procedure, each feature entry will start with any information provided by Ebaugh and build on that foundation with other source data, moving from bow to stern.

Form

EBAUGH: "I suggested to build a Segar [sic] shaped boat and put in it a Steam engine to drive it."⁵⁹⁹

In a 1915 volume reviewing the history of the United States Navy between the Civil War and the beginning of the First World War, author Franklin Matthews, included a chapter titled, "Queer Boats Used in the Civil War," wherein he described *David* as "the queerest of the queer."⁶⁰⁰ This opinion was certainly shared by many who saw the unconventionally designed vessel in 1863. Although *David* was experimental and innovative, its hull form was not novel, but more an expression of a rudimentary understanding of submarine hydrodynamics and of experimental maritime trends of the day. The basic fusiform hull shape had been proposed, although not implemented, at least by the mid-sixteenth century in France.⁶⁰¹ Further, as seen in several sources, the fusiform shape used by Ebaugh resembled that made famous in America by Ross Winans in the mid-1850s. Presumably, all parties involved in the conception and design debates would have been

⁵⁹⁹ Ebaugh 1953, 33.

⁶⁰⁰ Matthews 1915, 175.

⁶⁰¹ Sergescu 1948. For a brief survey of early submarine efforts, see Sueter 1907, 5-18.

exposed to the Winans vessels, as they were recognizable from the pages of *Scientific American*, *Harper's Weekly*, and other publications.⁶⁰² It should be recalled, however, Winans's 1850s vessel was radically different from *David* as it was much larger—initially 180 feet (55 m) in length, later amended to 235 feet (72 m)—made of iron, and used a unique mid-ships, dual-rotary steam propulsion system.⁶⁰³ The two vessels shared only two features: steam locomotion, and a general spindle or fusiform hull shape. In 1861, a new vessel was under construction by Winans's sons in Russia, which used six boilers, two engines, and large propellers at either end of the vessel.⁶⁰⁴ Like the previous Winans vessel, this one was also a fusiform vessel, but also remarkably different from *David*.

While speculating on the question of the origin of the design, Susan Middleton mentioned the Winans steamer as a model for *David*.⁶⁰⁵ This reference certainly originated with Francis Lee, “I would further state that the small torpedo steamer (Winans model), now building in Cooper River, is nearly completed, and we have good reason to expect will aid materially in the defense of this city.”⁶⁰⁶ In an uncited text, one historian erroneously places Winans in South Carolina and credits Winans with the design of *David*.⁶⁰⁷ In 1861, Winans, a staunch Southern supporter, had built an armored, self-propelled steam gun capable of firing a hundred balls per minute, a precursor of the modern tank, which was confiscated by Union officers. Winans was consequently imprisoned until late November 1862.⁶⁰⁸ He had previously been busy revamping his revolutionary boat design with three newer models. After his incarceration, his second boat was heavily guarded by Union officers to assure it was not used in Confederate war efforts. William Shugg states, “Although there is no

⁶⁰² Shugg, 1998, 442 note 41. Also see *Harper's Weekly* 23 October 1858 and *Scientific American* 23 October 1858.

⁶⁰³ Much of the material published in *Scientific American* was highly critical of the first Winans cigar ship, offering a limited amount of other data about Winans. No comprehensive volume about Winans four cigar ships has yet been published. Two sources were invaluable for this current effort; personal communication with John Lamb, whose in-preparation volume on Winans and his inventions I look forward to reading, and the frequently updated research website of Michael and Karne Crisafulli, <http://www.vernianera.com/CigarBoats.html>. Accessed 17 September 2016.

⁶⁰⁴ “An iron steamer built on the plan of Winans' cigar boat, has been made at St. Petersburg by Americans, who intend to offer it to the United States Government.” *Cincinnati Daily Press* (Cincinnati, Ohio), 23 November 1863.

⁶⁰⁵ Leland 1964, 42.

⁶⁰⁶ Letter from F. D. Lee to General Beauregard, 25 July 1863, ORA Vol. 28 pt. 2 (1890), 230. This passage was interpreted by Campbell (2000, 55) as suggesting a physical model was used in the design, “Ravenel reportedly produced a scale model of a craft which had been constructed by Ross Winan [sic], an ardent Southern sympathizer from Baltimore.” However, no evidence has been located to support this statement.

⁶⁰⁷ Schafer 1996, 95-7. Likewise, Raimondo Luraghi (1996, 260) wrote, “The work was supervised by Captain [F. D.] Lee, based on a plan drafted by Ross Winans from Baltimore, a Southern sympathizer.”

⁶⁰⁸ Shugg 1998, 439-40.

evidence that Winans was directly involved, the cigar shape was adopted by the Confederates for their David-type torpedo boat, equipped with a spar torpedo on the bow.”⁶⁰⁹ It is plausible that Ebaugh may have seen Winans’s first oceangoing vessel in its early stages of construction when Ebaugh still lived in Baltimore.⁶¹⁰ Nonetheless, Winans was not directly responsible for or involved in any way with the Ebaugh’s “segar” boat. As mentioned, in 1861 F. G. Smith had likewise proposed fusiform vessels for coastal defense. Regardless of the origin of the idea of a fusiform shape, Ebaugh adopted the form for *David*.

Materials

EBAUGH: The ends were made of large pine logs turned off with a grove [sic] to receive the ends of the planking, the timbers was made of 1 ½ inch oak doubled and riveted together.⁶¹¹

David-class vessels were built quickly using available resources, not necessarily out of desperation, as Lee’s torpedo ram had been, but out of the frugal use of materials that were at hand. The hull was constructed from local wood, oak and pine. These were readily found on Ebaugh’s lands, which he had already been farming for timber since before the outbreak of the war.

Upon inspecting the unfinished *David*, shipwright F. M. Jones boasted he could build a similar vessel in only 15 days if supplied with the machinery; machinery, as seen in the construction of Lee’s ram, was often difficult to obtain.⁶¹² Jones’s gasconade does speak to the simplicity of construction and to the vessel’s intended durability. *David* was apparently lightly constructed with a

⁶⁰⁹ Shugg 1998, 440.

⁶¹⁰ Ebaugh 1941, 35. Ebaugh arrived in South Carolina from Baltimore in late 1854 or early 1855.

⁶¹¹ Ebaugh 1953, 33.

⁶¹² Ebaugh 1953, 33-4; Jones had a shipyard at Haddrell’s Point (Shem Creek in Mount Pleasant, a community in Charleston, South Carolina) and built the Confederate ironclads, *Columbia* and *Palmetto State*, as well as *Planter*, made famous by runaway slave and future politician Robert Smalls. Francis Lee employed Jones to construct the “Torpedo Ram,” *Torch* (F. D. Lee to Brigadier-General Jordan, 8 November 1862, ORA Vol. 14 (1902), 670; Perry 1965, 67).

specific goal and thus not intended for a long service life. To quote an unnamed journalist describing the “Davids”, “They are not for all time, but for a day, and a short day at that.”⁶¹³

Dimensions

EBAUGH: I laid out the boat full size under a Nitre shed at Stoney landing. It was 5 feet in diameter and 48 ½ feet long, 18 feet of the middle of the boat was same size tapering to a point at each end.⁶¹⁴

David was of diminutive size (48.5 feet or 15 m in length, 5 feet or 1.5 m in diameter) when compared to the vessels it was to attack; and, unlike the Union seagoing blockade ships, *David* was designed to operate in the shallowest of waters. The vessel’s draft, less than 3.5 feet (1 m), and narrow breadth succeeded where the lightest draft monitors of the Union had failed, allowing for attack and evasion via shallow rivers and small tributaries. This flexibility was amply demonstrated in the mission to Saint Helena’s Sound in April 1864. As Confederate Brigadier General W. S. Walker observed, “The intermediate streams would be navigable from Charleston as far as the mouth of Mosquito Creek by one of the Davids. Whether that creek would be navigable for such a boat at high water I am not sure, but my impression is it would be.”⁶¹⁵

Ebaugh supplied the size and spacing of framing, which were essentially three-inch thick circular ribs, likely attached to a keel-plank, but without a true keel. Planking strakes were attached to the made-frames. No width for the planking is supplied, only the thickness, but planks were likely narrow and varied for optimal fit. Shaping the hollowed inner surface to accept the framing was likely the most labor-intensive part of the construction, but afforded greater strength and stability:

The ends was made of large pine logs turned off with a groove to receive the ends of the planking, the timbers was made of 1 ½ inch oak doubled and riveted together, they were placed about 15 inches apart, the planking was the whole length 1 ½ inches thick

⁶¹³ *Scientific American* 18 June 1864, 394.

⁶¹⁴ Ebaugh 1953, 33.

⁶¹⁵ Letter from Brigadier General W. S. Walker to Brigadier General Thomas Jordan, 15 March 1864, ORA Vol. 35 pt. 2 (1891), 359.

hollowed on the inside to fit the timbers and rounded on outside, the planking was riveted to the timbers, the whole was put together at Stoney Landing, corked [caulked] and launched.

Propeller

Ebaugh makes no mention of the propeller used on *David*. However, James Tomb wrote, “A two-bladed propeller drove the *David* about seven knots.”⁶¹⁶ Chassaing described the propeller on one of *David*’s sister-vessels abandoned in Charleston (catalog entry No. 3), noting the vessel had a propeller of “3 ft 6 in [1.07 m] diameter, 20 in [0.51 m] faces of blades, and about 15 ft [4.57 m] pitch.”⁶¹⁷ The pitch figure appears to be an error and was likely supposed to be “about 5 feet”.⁶¹⁸ *David* (Catalog entry No.4), had a two-blade propeller, but one blade was broken off prior to abandonment (see Figure 35). Given the clearance of the surviving propeller blade to the ground and the homogeneity of the vessels Chassaing described, it is safe to presume the propellers would be similar in size.

With a vessel diameter of five feet (60 in or 1.52 m), a 42-in (1.06 m) propeller would have forced at least 51 in (1.3 m) of the boat to be submerged in order to fully submerge the propeller, leaving a maximum of 9 in (0.23 m) of the hull exposed above the surface, excluding the added height of the coaming. This, in turn, would have left approximately 32 ft (9.75 m) of the length of the boat slightly exposed above the water’s surface. The vessel, however, had to be submerged to a

⁶¹⁶ Tomb 1914, 168.

⁶¹⁷ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

⁶¹⁸ Chassaing’s description of the pitch measurement is confusing. Pitch can also be described in degrees, that is, the degree of slant to the propeller blades. Chassaing could have measured the propeller pitch in degrees and there was an error in transcription to the ORN. However, 15 degrees would not have been the standard pitch of the time, which would have been closer to 45 degrees, nor efficient in moving the vessel. Pitch can also be the displacement a propeller makes in a complete rotation in a solid matrix (like a screw moving through wood), usually measured in inches. This appears to be the convention of the day (See Q. & A. for Steam Launch Engineers 1961, 34 for an explanation of how to measure pitch). If Chassaing meant inches and there was a typographical error, the pitch would be too small, even for the rudimentary propellers of the time. Farmer (1962,18) states, “early experience in steam use found that the best relation of pitch to diameter was [a ratio] greater than 1 to 1, being usually in the order of 1.5 times diameter to 1.8 or up to 2.” Another source states, “the best pitch ratios for low rpm propellers lie between 1.5 and 2” and offer an example of a propeller similar to *David*’s at 44-inch diameter and 59-inch pitch (~ 5 ft) (Steam Wheels, 1961, 17). This suggests that Chassaing could have meant a pitch of 5 feet. If the pitch of *David*’s propeller was in fact 15 feet, it would have had a pitch to diameter ratio of more than 4 to 1, much too large.

greater depth to avoid the turbulence of the propeller at the surface as shown below in the description of the coaming and hatch/cockpit. Engineer Tomb said, “When ready for action the boat was so well submerged that nothing was visible except her smokestack, the hatch coamings, and the frame holding the torpedo spar.”⁶¹⁹ Tomb’s comments suggest the boat’s full circular five-foot diameter hull was submerged, which certainly would have obviated the turbulence caused by a 42-in (1.06 m) diameter propeller, and left approximately 10 ft (3.05 m) exposed above the water’s surface, which is the estimated length of the boat’s coaming and hatch.

Rudder/Steering

Information on the rudder can only be obtained through analogy using photographic images of David-class vessels. In those images in which a rudder can be seen, most show the rudder fitted to a skeg beneath the hull slightly forward of the solid cone of pine that formed the stern (Figure 44). No photograph shows how the tiller might have been controlled from within the vessel, whether it was a tiller arm, or a rope and pulley system, but several sketches (e.g., see Figure 45) show a simple tiller positioned in such a manner that control would be physically impossible without the use of a rope and pulley system. There is a single reference to the steering apparatus by Major John Barnwell, Confederate Assistant Chief of Ordnance in Charleston. He refers to the “starboard tiller ropes,” which hints at the steering mechanism controlled by a wheel.⁶²⁰ Commander Glassell added that he could sit on the coaming and “work the wheel with my feet,” supporting the inclusion of a conventional steering configuration for the period.⁶²¹ However, the internal arrangement of the steering components can only be presumed. Was the wheel on the forward or after end of the cockpit? Given the tight quarters for the crew of four to operate, the position of the boiler forward of the cockpit (see below), and presumably the forward location of the coal bunker(s), the most logical place to position the wheel would have been the aft section of the hatch.⁶²²

⁶¹⁹ Tomb 1914, 168. A similarly worded description appears in Scharf 1887, 758.

⁶²⁰ Barnwell 1872, 537.

⁶²¹ Glassell 1877, 331.

⁶²² The Smith drawing (Figure 45) shows the wheel suspended at the center of the coaming, which appears an unlikely arrangement.

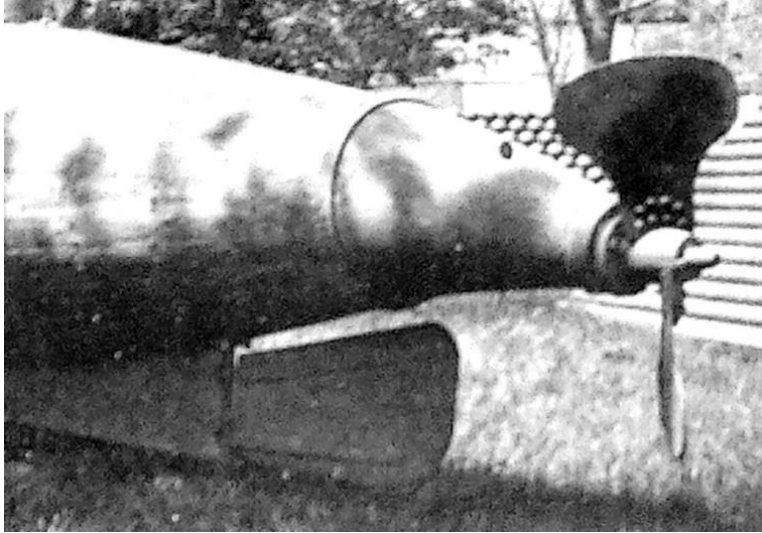


Figure 44. Detail of rudder assembly of *Midge*. Reprinted with permission of Cowan's Auctions.

Engine and Boiler

EBAUGH: I new [sic] there was a little double engine that was used to drive the Machinery in the N[orth] E[astern] R[ail] Road Shop and was taken out and replaced by a larger one and if I could get it and have it changed so as to suit the boat, That Mr. John Chalk, Master of Machinery at the N.E.R.R. could tell him where the Engine was, and if it could be got I would build the boat. The Engine had been removed and carried up the road, Mr. Chalk had it brought back and altered it to suit the boat that I gave him the dimentions [sic] of.

The Boiler was taken from Fort Sumter in the night brought to the R. Road shop and put in the boat.

Ebaugh described the engine as a little double engine, meaning it was a twin cylinder model. This is confirmed and expounded upon by an eye-witness, a deserter named Belton, who offered a surprisingly detailed description. "She has two cylinders, diameter about 5 inches, stroke 8 inches." Presuming Belton's description to be accurate, one can infer the engine was a twin-cylinder double-acting version.⁶²³ Confederate Major Barnwell added that it generated about six horsepower.⁶²⁴ Still,

⁶²³ Compound engines would have cylinders of increasing bore sizes.

⁶²⁴ Barnwell 1872, 536.

the exact design of the engine remains unclear, but it would have been a high-pressure engine operating at about 300-500 rpm to generate that level of power from its diminutive size.⁶²⁵ The large propeller (42-in diameter) would have obviated the need for a large engine flywheel, if one was used at all.⁶²⁶

If little is known about the engine of *David*, even less is known of the boiler. The type and size remain matters of pure conjecture. Likewise, nothing is written about the transmission system. An image from the ORN (Figure 45) shows a multiplying worm gear, with a smaller shaft gear than engine gear, that would have increased the revolutions of the engine crank to obtain the reported speeds of 7-10 knots.

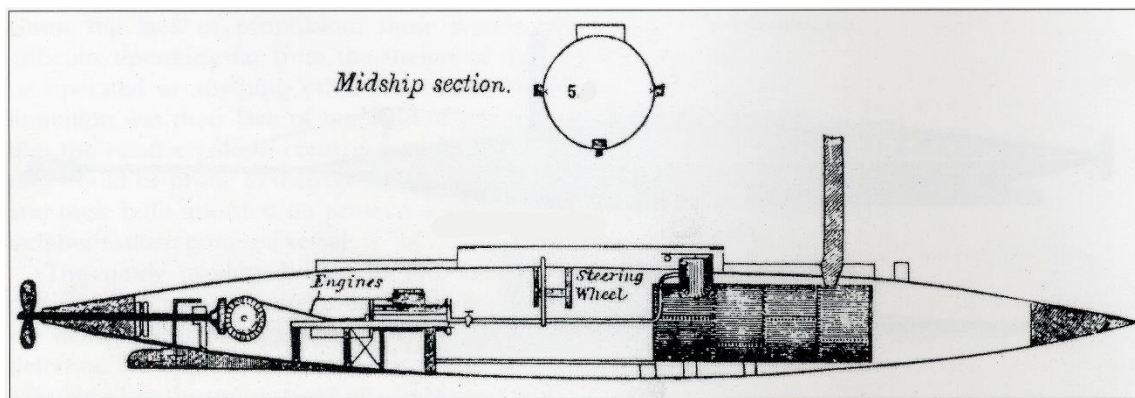


Figure 45. Detail of sketch by Union Engineer W.S. Smith. ORN Vol. 16, 399.

Coaming and Hatch (Cockpit)

The coaming, the raised border around the open cockpit, was positioned amidships and extended four to five feet (1.5 m) fore and aft of center. This is readily seen in depictions of the vessel such as

⁶²⁵ Demonstrated by multiple examples documented in several years of *Steamboats and Modern Steam Launches*. Engines of similar sizes and horsepower ratings operated with steam pressures between 100 and 125 psi (6.9-8.6 bar).

⁶²⁶ “The marine steam engine, which like a steam locomotive, can lug any load it can start, wants a large propeller. So large, in fact, that the propeller often serves as a flywheel and none is needed on the engine save for a vestigial one to bar the engine over dead center” (Farmer 1962, 18).

the Chapman painting (Figure 25), the Carleton sketch (Figure 26), and the Smith sketch (Figure 45). The exact size of the opening is not known, but clues can be found in several statements of eyewitnesses. John Barnwell stated, “When afloat, about fifteen feet only of the boat’s length was some fourteen inches above water.” This supports Tomb’s comment that little more of the hull other than the coaming was exposed above the waterline.⁶²⁷ Another eye-witness recalled that he, “Doesn’t think that there were more than 1½ feet [18 inches or 0.45 m] out of the water, and 10 feet [3.05 m] of her length.”⁶²⁸

There is no mention of a deck at the bottom of the cockpit. Likely, there were just a few thin boards placed longitudinally along the centerline of the vessel’s interior to facilitate limited, unencumbered movement of the crew within the boat.

Ballast

EBAUGH: it would require from 15 to 18000 lbs of iron as balast [sic] to put the boat in the water [at] the depth I wanted

We put about 4000 lbs of iron in it as balast [sic] which was not enough to submerge the wheel [propeller] but was all we could get in the R. Road yard. We fired up on the boiler, run the boat to Southern wharf where an Iron Clad gun boat [CSS *Charleston*] was being built, there we got enough iron to put the boat down to where I wanted it, taking about 14000 lbs more, making about 18000 lbs of balast [sic] besides Boiler, machinery and fuel.

Several sources suggest *David* used water ballast tanks.⁶²⁹ This is a conflation with one or more other vessels such as the Fish Boat submarine, *H. L. Hunley*. Iron ballast was left loose in the bottom of the vessel and could be moved to trim the boat as needed. Various accounts state that it

⁶²⁷ Barnwell 1872, 536.

⁶²⁸ Information obtained from the examination of deserters of the enemy, 7 January 1864, ORN Vol.15 (1902), 228-9.

⁶²⁹ For example, see; Campbell 2000, 56; Konstam 2004, 45; Luraghi 1996, 260; Perry 1965, 81; Ragan 2015, fig. 21; Schafer 1996, 97; Tucker 2002, 107. Campbell (2000, 56) notes that it is a popular misconception, but offers an incorrect alternative, suggesting the vessel stayed mostly submerged through the use of diving planes similar to those used on the submersible *H. L. Hunley*.

was the iron ballast that lodged in the machinery and temporarily prevented the engine from being restarted during the attack on *New Ironsides*.⁶³⁰ It is unclear if the ballast was made of rail track, pig iron squares of a standard size, or if the iron was scrap pieces of random shapes and sizes.

John Barnwell estimated the burden of *David* at “seven or eight tons.”⁶³¹ It is unclear if the machinery was included in Barnwell’s estimate. If not, his estimate tallies relatively well with Ebaugh’s description of adding 18,000 pounds (nine tons) of ballast to lower the freeboard of the vessel.

Coal Bunker(s)

Anthracite coal was used to reduce the amount of smoke expelled from *David*, but nothing is written of the coal bunker(s). Since the central portion of the hull had to accommodate four individuals and they needed room to stoke the boiler, to operate the wheel, and to attend the engine, the coal bunker(s) had to have been positioned out of the working space of the crew. As not much coal would have been needed for a sortie lasting only a maximum of a few hours, there were likely two small bunkers, located on opposite sides of the hull, just aft of the boiler opening, for balance of the vessel, but this is a matter of conjecture.

Smokestack

Several images place the smokestack within the cockpit. These were likely based on vague descriptions or conjecture rather than observation and are erroneous as confirmed by the Chapman and Carleton images, as well as by James Tomb who wrote, “The boiler was forward and the engine aft. Between them was a cubbyhole for the crew of the boat, which was entered by a hatchway.”⁶³²

Visual examination of various images suggests the smokestack was between 12 and 18 inches in diameter (0.30-0.46 m). The height of the stack can also be estimated using Chapman’s painting in

⁶³⁰ Report of Acting First Assistant Engineer Tomb, 6 October 1863, ORN Vol. 15 (1902), 20-1. Also see Leland 1964, 43.

⁶³¹ Barnwell 1872, 536.

⁶³² Tomb, 1914, 168.

which he placed a man beside the pipe, suggesting the height of the pipe to be approximately 7 feet (2.13 m). These estimated dimensions are supported by eye-witness George L. Shipp, who saw *David* while the vessel was being covered with iron plate in late October 1863, and described the smokestack as modular (made of at least four replaceable segments- see Figure 49), 8 ft (2.44 m) in height and 1 ft (0.30 m) in diameter.⁶³³ Tomb had the smokestack capped before the second sortie due to the geyser of water that nearly extinguished the fire during the attack on *New Ironsides*.

Vents

Nothing is written of the ventilation pipes. These were needed forward to supply the boiler fires with air and aft to vent the exhausted steam from the engine. The earliest sketches show uncapped direct air vents, but later versions show pipes capped with 90-degree, flanged bends, with the mouth facing the direction of the stern to avoid water entry while under power. A colleague has suggested the vents might be versions of Flettner rotors, designed to rotate in the wind to produce a Magnus effect for increased ventilation.⁶³⁴ This seems unlikely given the depth to which the vessel was submerged and the high risk of water intake. However, the caps were presumably able to rotate to avoid water intake when running against the tide.

Spar

EBAUGH: I had it aranged [sic] on bars of iron extending on both sides of the boat hung on trunions [sic] so as to raise it out of the water when the boat was in motion and let it down when near the object.

After that the Confederate States navy took charge of the boat and made some alterations in the carrying of the Torpedo. They put it on the end of an iron pipe about 2 inches in diameter extending some 15 to 20 feet in front of the bow of the boat, it was made stationary on the end of the iron pipe the torpedo being some 6 feet under water.

⁶³³ Information obtained from the examination of deserters from the enemy, ORN Vol. 15 (1902), 228-9.

⁶³⁴ Direct communication, John Wallis, 27 January 2017.

Ebaugh described the original spar arrangement as “bars of iron extending on both sides of the boat hung on trunnions so as to raise it out of the water.”⁶³⁵ Ebaugh’s description is vague, but describes a pin acting as a pivot point, likely through the solid conical cap at the bow, with an iron frame extending forward to support the torpedo.

Campbell misinterpreted Ebaugh’s description to be “what amounted to diving planes in the same manner as the submarine *Hunley*,” yet, diving planes were unnecessary for a vessel that was not intended to be fully submersible.⁶³⁶ As already shown, *David* used loose iron weight as ballast and rode at a constant, mostly-submerged level. The mistake can be understood within the context of the Ebaugh letters, but it can also be clarified by James Tomb, who wrote of the “frame holding the torpedo.”⁶³⁷

What can be said is that the arrangement allowed for raising and lowering the spar from inside the vessel, and that Ebaugh’s system was quickly replaced with a stationary spar shortly after being turned over to the navy. Ebaugh provides some information about the static navy version of the spar. It was made of iron, with a length of 15 to 20 ft (4.57-6.07 m) submerged to 6 ft (1.83 m) below the water line.⁶³⁸ Glassell estimated the navy’s mounted torpedo spar to have been about 14 ft (4.3 m) in length and about 6 to 7 feet (1.83-2.13 m) submerged below the water’s surface, presumably confirming the static nature of the spar,⁶³⁹ and Tomb described this spar as, “made of three-inch boiler tube and fixed in position before leaving the dock in Charleston, and it could be neither raised nor lowered after starting the expedition.”⁶⁴⁰

After *David*’s attack on *New Ironsides*, the fixed spar was again swapped with another movable version as Ebaugh says he suggested from the beginning.⁶⁴¹ Tomb ordered modifications to the spar “so that we could lower it to any depth from inside or keep the torpedo above the surface.”⁶⁴² The system was described in more detail by a crew-member of the Union ironclad *Nabant*, “A line from the torpedo passed over a pulley at the top of a short mast set upon the bow and thence to the

⁶³⁵ Ebaugh 1953, 34.

⁶³⁶ Campbell 2000, 56.

⁶³⁷ Tomb 1914, 168.

⁶³⁸ Ebaugh 1953, 34.

⁶³⁹ Glassell 1877, 230.

⁶⁴⁰ Tomb 1914, 168.

⁶⁴¹ Extract from the notebook of First Assistant Engineer Tomb, ONR Vol. 15 1902, 358; Tomb 1914, 168.

⁶⁴² Tomb 1914, 168.

captain who sat at the wheel just within the hatchway and gave to that officer control of the elevation of the torpedo.”⁶⁴³

One should recall that catalog entry No. 4 has been identified as the original *David*. A photograph of that vessel (Figure 46) shows a portion of the spar-mount still attached. The spar-mount is designed as a yoke, attached to each side of the solid conical end with extended trunnions, with each piece of the yoke merging just forward of the hull, and a length of iron pipe attached as the spar. This was the final spar configuration and is likely a refined version of the original Ebaugh design.

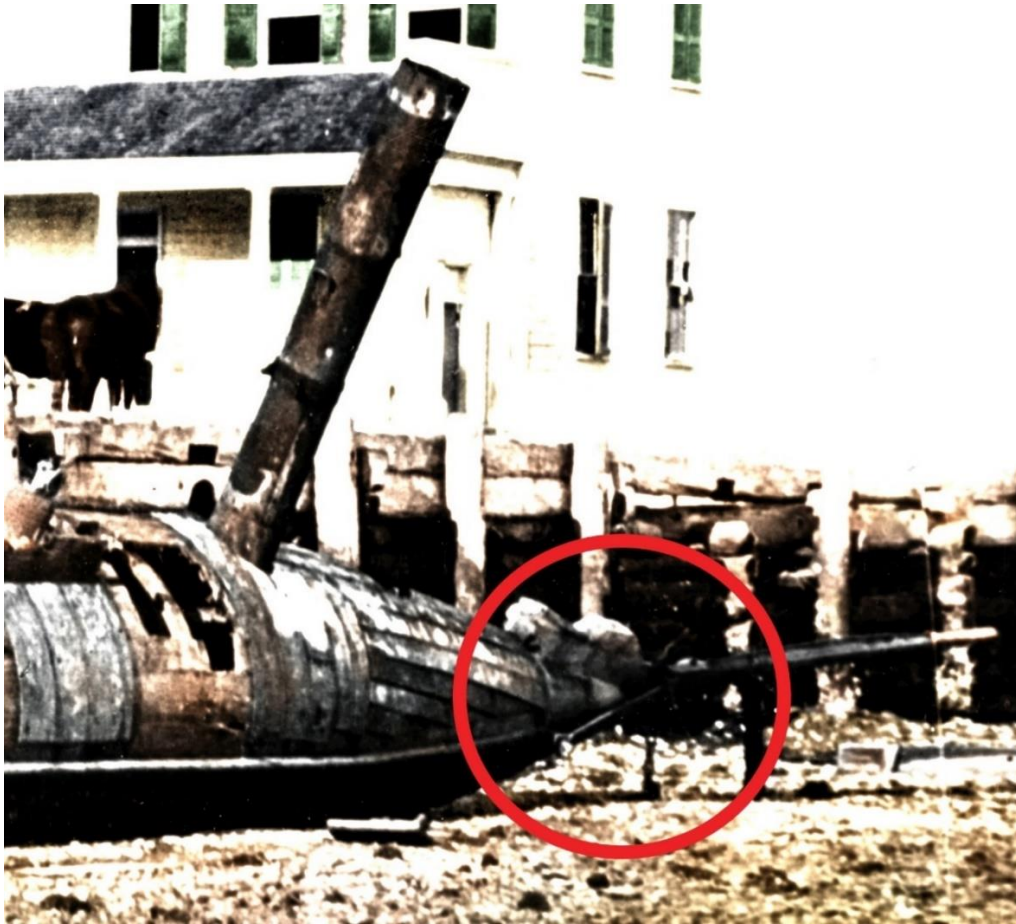


Figure 46. Detail of spar mount of *David*. Naval History and Heritage Command, Washington, D. C., Photo 165-C-751. Colorized by Martin Jacob Wenzel - Colorized Past.

⁶⁴³ Symonds 1987, 140.

Iron Plate

EBAUGH: plow steel about ¼ inch [0.6 cm] thick and 5 or 6 inches [13-15 cm] wide that run below the water line.

An invoice from Eason Brothers shipyard, dated 12 October 1863, details “3000 lbs [1364 kg] Steel plates” for “Torpedo Steamer David.”⁶⁴⁴ Wrought iron has a density of about 493 lbs/ft³ (7.9 grams/cm³). This translates, roughly, to a square foot of ¼” iron plate weighing ten pounds.⁶⁴⁵ Since 3000 lbs (1361 kg) of iron plate were purchased, the iron would cover an area of about 300 ft² (28 m²). Ebaugh wrote that the mid-section was 18 feet (5.5 m) in length and had a constant diameter of five feet. If the entire 18-foot mid-section of *David* was covered in iron plate, as seen in the Carleton drawing, this would equate to approximately 360 ft² (33.5 m²), roughly corroborating the purchase of iron for a single vessel and demonstrating the accuracy of the Carleton sketch in its depiction of the plate iron.⁶⁴⁶ The difference in the figures is because the iron did not cover all the way to the midline of the hull, but stopped just past the waterline. This was suggested by Ebaugh (see above), and by Tomb who wrote, “I was put in comand [sic] of the David and had one-quarter inch of steel placed over the hull above the water line.”⁶⁴⁷

Discussion

With precedence given to the data supplied by Ebaugh, coupled with other written and iconographic sources, *i.e.*, the Chapman painting (Figure 25), the Carleton sketch (Figure 26), and the photograph of *David* beached on shore (Figure 35), the stage is set for a plausible reconstruction of the vessel. Using these compiled data, preliminary basic ship’s lines and waterline drawings were produced herein by the author (Figures 47 and 48).

⁶⁴⁴ National Archives Record Group 45, Confederate Navy Subject Files, M1091, roll 7.

⁶⁴⁵ Wrought iron = 7.874 g/cm³; 1 ft³ = 28316.8 cm³; 222966.5 g (223 kg)/ft³ or 490 lbs/ft³; 10.2 lbs/ft² of ¼’ plate. A section of modern ¼” iron plate was cut and weighed for comparison. It weighed 10.1 lbs.

⁶⁴⁶ Roughly estimated using Ebaugh dimensions of 18 ft constant diameter mid-section with a diameter of 5 ft. If the iron was extended to the midline of the hull, then the following formula can be used to roughly calculate the area covered by iron plate: $(2\pi r^2 + 2\pi rh)/2$.

⁶⁴⁷ Tomb 1914, 168.

Assumptions have necessarily been made to compensate for the lack of hard evidence or recorded data about certain aspects of the vessel. For example, although the frame spacing has been determined, it has been assumed to have been measured center-to-center, rather than edge-to-edge, which allows for more frames and greater hull strength. Spaced center-to-center, 15 frames would occupy the 18 feet (5.5 m) of central hull, while a 15-inch (0.38 m) spacing measured edge-to-adjacent edge would yield only 13 frames in the same area. Some conjecture was unavoidable, particularly with the machinery and internal positioning of features, but every effort was made to keep speculation to a minimum. No attempt was made to hypothesize the positioning of tiller ropes, and presumptions regarding the boiler, and steam engine plumbing are also minimal.

Using the reconstruction and lines drawing, along with information regarding the amount of ballast and dimensions provided by Ebaugh, estimated displacements calculations were made (Table 2). Using a dimension of 2 feet, 3 inches (0.7 m) from the upper edge of the coaming (drawn 12 in or 0.31 m above the peak of the hull diameter) to the water surface, a displacement of 13.4 tons (12.2 metric tonnes) was calculated. In Ebaugh's letters, he recounts having estimated the needed ballast at 15-18,000 lbs (6.8-8.2 tonnes) after fitting the engine, boiler, and other machinery to submerge the vessel to the desired waterline.⁶⁴⁸ The total weight of the ballast, machinery, and crew would, therefore, be estimated at 10 – 11 tons (9.1-10 tonnes). The calculated figure of 13.4 tons (12.2 tonnes) appears to be in agreement with the estimated weight of ballast, machinery, and crew to get the vessel submerged to the desired depth.

Many questions about the construction of *David* remain unanswered. For example, exactly what style and make of engine was used? What size and type of boiler was fitted to supply steam for the small engine? How was the steering system internally arranged? What was the configuration of the vessel's interior? What of the gear system used to drive the propeller? Pending the discovery of archaeological remains, it is unlikely we will ever know the answers to these questions. The tentative drawings presented here are intended to serve as a foundation for further discussion. If nothing else, it is hoped the reconstruction drawings and the analysis provided in this manuscript, will clarify much of the current confusion in historical sources and achieve Herbert Ravenel Sass's goal of raising *David* and similar vessels from obscurity.

⁶⁴⁸ Ebaugh 1953, 34.

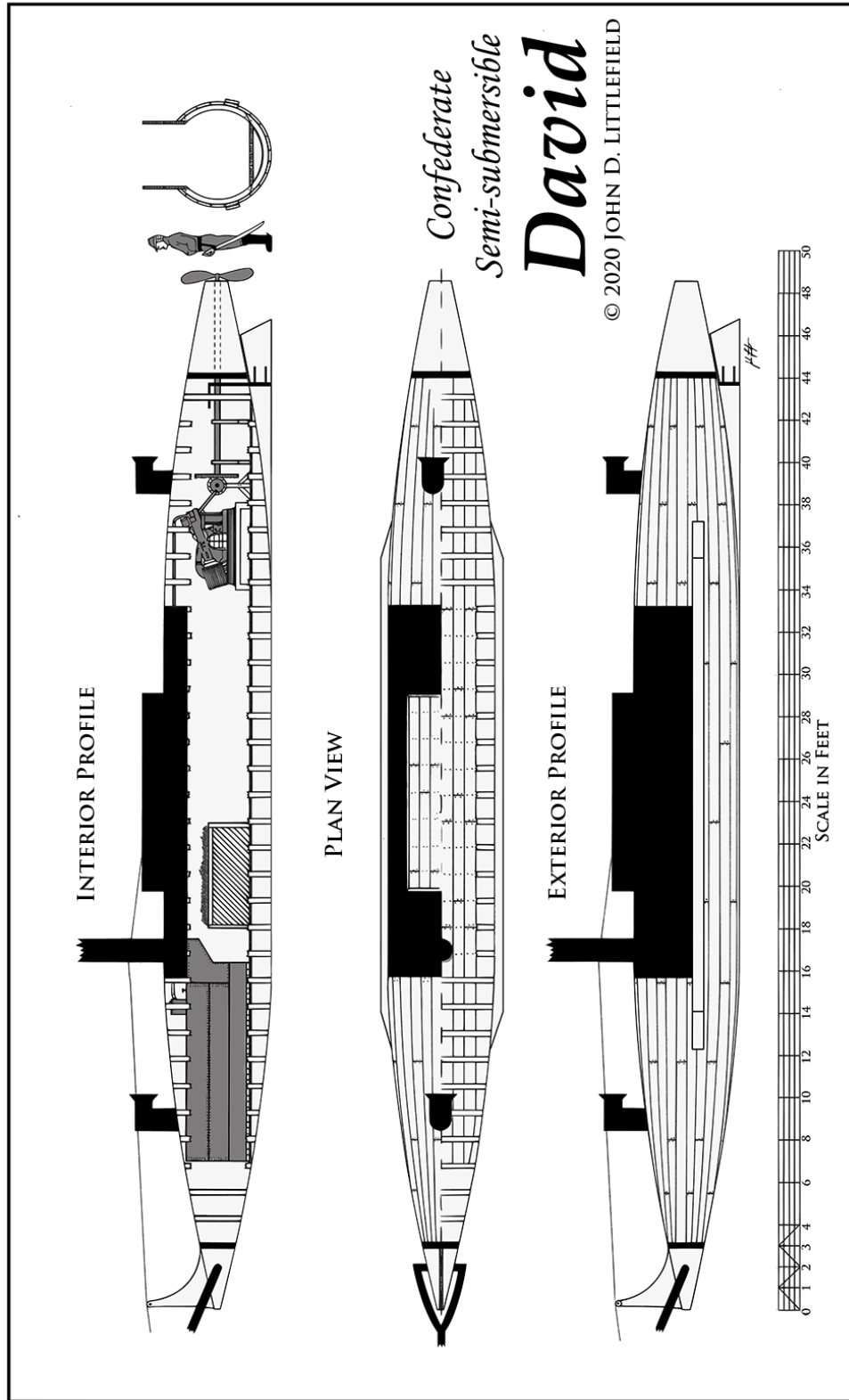


Figure 47. Reconstruction drawing of *David* by John D. Littlefield.

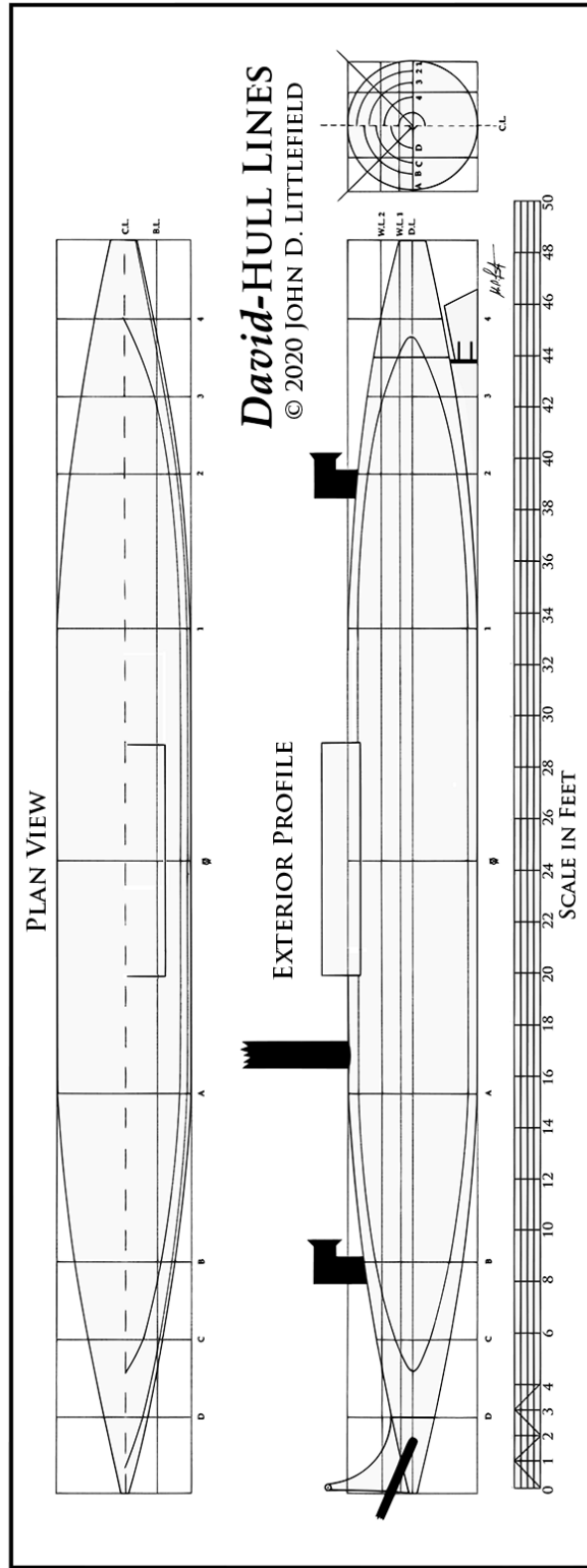


Figure 48. Hull lines drawing of *David* by John D. Littlefield.

Length	48.5 ft	14.78 m
Beam (diameter)	5 ft	1.52 m
Length-to-breadth ratio	9.7:1	
Length of central cylindrical section	18 ft	5.49 m
Coaming length	9 ft	2.74 m
Volume	1037.05 ft ³	12.98 m ³
Displacement (includes rudder and fin as drawn)	13.4 tons	12.2 tonnes
Waterline area	70.75 ft ²	6.57 m ²
Waterline length	535.5 in	1.36 m
Waterline beam Propeller Diameter	27.0 in	0.69 m
Propeller Diameter	3.5 ft	1.07 m

Table 2- Principal dimensions used in the reconstruction drawings.

Conclusion

Victor Ernest Rudolph von Scheliha wrote in his 1868 treatise on experiences of Confederate coastal defense and underwater warfare, ACW-era inventors often made their designs overly complicated:

The great error which most of these inventors fell into was, that they aimed at accomplishing, all at once, too much in a field which to all of them was still an unexplored *terra incognita*. Complicatedness of the apparatus was the next consequence, out of which resulted its utter failure on being tried. Certain it is that those torpedoes by which the heaviest losses were caused to the Federal fleet during the American war excelled in simplicity of construction and in cheapness.⁶⁴⁹

⁶⁴⁹ von Scheliha 1868, 220.

David and the David-class vessels were a product of innovation, experimentation, and technological development that was a hallmark of the entire nineteenth century. *David* saw relative success that can largely be attributed to a simple, resourceful, and inexpensive design. As seen, David Ebaugh used local lumber, civilian labor--possibly provided by hired, local slaves, and bypassed the bureaucracy of the Confederate government that had plagued other efforts, such as Francis Lee's *Torch*, as well as the rest of the David-class vessels.

Much of the technology used up to and during the ACW faded before the end of the century. Some technologies evolved further and some spurred development of different ones, resulting in rapidly changing "state-of-the-art" vessels and weapons, many of which were quickly outdated. Such was the case of the David-class boats. Although the fusiform semi-submersibles faded from use after the ACW, their basics more fully developed over the ensuing years. As new fuels were developed that could be used in confined spaces, the basic vessel form was refined through early submarine development. Furthermore, as self-propelled torpedoes, most prominently exemplified by the early designs of Robert Whitehead (Englishman) and John A. Howell (American), became increasingly more advanced and more accurate, the modern marine torpedo boat evolved. These small, fast vessels came into play in the 1890s to deliver weapons to the enemy, the same mission *David* was designed to carry out.⁶⁵⁰

David and the David-class vessels were a product of necessity. They were designed for short-term use, to accomplish a specific goal of breaking the blockade. In this sense, they failed, as the blockade of Charleston Harbor was never actually broken. Yet, the torpedo boats of Charleston did manage to impose a form of psychological warfare upon the Union forces seeking to capture Charleston by sea. As noted by one Confederate signaler, "More effective than the actual damage to the fleet, in keeping the gun-boats at a distance during those long years, was the moral effect produced by the torpedoes."⁶⁵¹ In this sense, the Charleston torpedo boats were a great success.

⁶⁵⁰ "...consequently the development and introduction of the 16-in. Whitehead torpedo into the British Navy was watched by Japan with the closest interest. These new weapons led to the construction of special fast vessels to fire them from, and in 1877 the first British torpedo boat was ordered. She was defined as a small light-draught vessel, whose main armament is a torpedo and whose function was to attack and destroy larger vessels in harbour or the open sea." (Sueter 1907, 175). Whitehead torpedoes were adopted by the world's navies in the 1870s, except in the US where Howell torpedoes reigned supreme until 1891. Early Whitehead torpedoes were not as accurate as Howell's.

⁶⁵¹ Smythe 1907, 61.

The David-class vessels were the product of a small, tight-knit group of mostly wealthy merchants, with support from the desperate Confederate military. Profit was always a motive for development of the vessels, with rich rewards offered for the destruction of specific Union vessels and great profit to be gained from opening up the import of foreign goods and military supplies. Although the class of vessels was propagated by merchants and military men, the original *David* was largely the product of one man's vision, David Chenoweth Ebaugh. His ingenuity, mechanical aptitude, and resourcefulness resulted in one of the most influential, yet still little-known vessels to stem from the American Civil War.

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United States Naval Academy Special Collections, Nimitz Library, Annapolis, Maryland
 Record Group 405.2.1 Correspondence
 Letters Received by the Superintendent, 1845-1887

Valentine Museum, Richmond, Virginia
 Conrad Wise Chapman and John Gadsby Chapman Papers, 1859-1920
 George and Huestis Cook Collection, MS. C 28

Virginia Historic Society, Richmond, Virginia*

Robert Know Sneden Diary, 1861-1865, Mss5:1 Sn 237:1

* Collections have since merged with the Virginia Museum of History and Culture

Newspapers

Baltimore American (Baltimore, Maryland)
Berkeley Independent (Charleston, South Carolina)
Boston Daily Advertiser (Boston, Massachusetts)
Charleston Courier (Charleston, South Carolina)
Charleston Daily News (Charleston, South Carolina)
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Nashville Union (Nashville, Tennessee)
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APPENDIX A

TRANSCRIPTION OF LETTERS FROM DAVID EBAUGH TO WILLIAM H. CAMPBELL

The letters of David Chenoweth Ebaugh have been transcribed here in their entirety. Grammatical errors of the original author have been left intact as none disturb the understanding of individual sentences or the overall material. The letters were originally published in *South Carolina Historical Magazine* Vol. 54, No. 1 (Jan., 1953), pp. 32-36.

CHEROKEE SPRINGS HOTEL
G. W. EBAUGH, PROPRIETOR
Cherokee, S. C., Oct 4th 1892

Rev. W. H. Campbell
Charleston, S. C.

Dear Sir

Enclosed please find a statement of the origin and building of the Torpedo Boat David as requested by you when at this place.

I think it would be a good show from Charleston if they would build a Duplicate of the David and send it to Chicago for the Columbus Exposition it being the first Torpedo boat ever to run by Steam.

Very Truly Yours
DAVID C. EBAUGH
Cherokee Springs Hotel
Oct. 4th 1892

Dear Sir

According to promise I send you the history (as near as I can remember) of the building of the Torpedo Boat David, in 1864, the dates I cannot recollect, they must be obtained from other sources.

Dr St. J. Ravenel came up to Stoney landing on the Cooper river near Moncks Corner where Ravenel & Stevens had lime works. I was Supt. of nitre works at same place for the Confederate Government.

Dr. Ravenel told me that a Torpedo had been made, that if a boat could be built to carry it and explode it under the Iron Sides we could clear Charleston harbour of Blockcadors.

He asked me if a boat could be built with a long pole in front to carry the Torpedo on and suggested to build a boat to be driven by man power. I told him it would be too slow and that too many men would be required and the danger too great. I suggested to build a Segar shaped boat and put in it a steam Engine to drive it. He remarked that a steam Engine was too big and it would make a noise. I replied saying that a steam Engine could be put in his *bat* and that I could deaden the exhaust by mechanical means.

He told me that \$100,000 was offered to any person that would destroy the Iron Sides which was the terror of the Charleston Harbour. That several Gentlemen had offered \$1000 each to build a boat to accomplish it.

The Gentlemen was Mr. Theodore Stoney, Cap Chevis, Theodore Wagner, Dr. Ravenel and Others. I told Dr. R that I would build a boat on my own plans that I thought would accomplish the Object if I could get the Engine. I new there was a little double Engine that was used to drive the Machinery in the N. E. R. Road Shop [North Eastern Railroad] and was taken out and replaced by a larger one and if I could get it and have it changed so as to suit the boat, That Mr. John Chalk Master of Machinery at the N. E. R. R. could tell him where the Engine was, and if it could be got I would build the boat. The Engine had been removed and carried up the road, Mr. Chalk had it brought back and altered it to suit the boat that I gave him the dimentions of.

I laid out the boat full size under a nitre shed at Stoney landing. It was 5 feet in diameter and 48 ½ feet long, 18 feet of the middle of the boat was same size tapering to a point at each end. The ends was made of large pine logs turned off with a grove to receive the ends of the planking, the timbers was made of 1½ inch oak doubled and riveted together, they were placed about 15 inches apart, the planking was the whole length 1½ inches thick hollowed on the inside to fit the timbers and rounded on outside, the planking was riveted to the timbers, the whole was put together at Stoney Landing, corked and launched. It was sent to Charleston to have the machinery put in. It was there hoisted out of the water by a crane on the N.E.R.R. wharf, put on a car and carried to the R. Road shop.

There it was inspected by several gentlemen among whom was Capt. Carlin, Capt Furguson, Marrion Jones (Ship builder), Theodore Wagner, Theodore Stoney, and others. Mr. Stoney wrote me that the gentlemen above mentioned condemned the boat saying it would turn over in the water and that it would not be able to carry the weight of machinery that I was putting in it and if I would let Mr. Jones have the machinery he would build a boat in 15 days.

I replied to Mr. Stoney refusing to let Mr. Jones have the machinery and stated that it would require from 15 to 18000 lbs of iron as balast to put the boat in the water the depth I wanted it, and if Mr. Jones want to build a boat I had no objections but he could not get my machinery.

I went to Charleston the next day and employed several more hands on the boat and finished it as soon as I could. The Boiler was taken from Fort Sumter in the night brought to the R. Road shop and put in the boat. Shells was being thrown in the city while working on the boat. We moved the boat to the wharf and launched it. We put about 4000 lbs of iron in it as balast which was not enough to submerge the wheel but was all we could get in the R. Road yard. We fired up on the boiler, run the boat to Southern wharf where an Iron Clad gun boat was being built, there we got enough iron to put the boat down to where I wanted it, taking about 14000 lbs more, making about 18000 lbs of balast besides Boiler, machinery and fuel. A few days after the boat was run over to Fort Johnson and back making a speed of 10 nots per hour. After that the Confederate States navy took charge of the boat and made some alterations in the carrying of the Torpedo. They put it on the end of an iron pipe about 2 ½ inches in diameter extending some 15 to 20 feet in front of the bow of the boat, it was made stationary on the end of the iron pipe the torpedo being some 6 feet under water.

I had it aranged on bars of iron extending on both sides of the boat hung on trunions so as to raise it out of the water when the boat was in motion and let it down when near the object. The Navy Dept. covered the top of the boat with plow steel about ¼ inch thick and 5 or 6 inches wide that run below the water line.

(Had they left my plan of carrying the torpedo I have no doubt but they would have blown up the Iron Sides as the Torpedo would have been much deeper in the water, the water would not have been back on the boat).

Lut. Glassell and two of the crew jumped overboard I suppose thinking the David would sink as a large body of water was thrown back on the boat, one of them swam to the boat and got aboard, the others were taken aboard the Iron Side.

The fire in the David was put out by the water thrown on it, the man fired up and brought the David safe into the harbour the Guard boats giving them a wide berth on their return.

Some time after this an attempt was made on some of the Gun Boats in Stono River without success as the Torpedo failed to go off.

Mess Ferguson & Jones built several torpedo boats after the plan of the David but I never heard of them doing any execution.

I was employed by the Torpedo Co to build two more boats of about same dimentions of the David, also a Ram, the Ram was to be 100 feet long 8 feet diameter, twenty five feet of her bow was to be of live oak, solid caped with heavy Iron, the Engines and boiler was brought from Scotland, run the blockade, these were being built at Stoney landing when Charleston was evacuated and burnt by Gen. Potter's troops or bummers.

Very Truly Yours
D. C. EBAUGH

P. S. The David was named after me.

I built two more boats at Stoney landing, one was intended to run the blockade, it was 163 feet long 12 feet in diameter, made in shape of a Segar, it was captured in Charleston after the evacuation and carried to Brookland Navy Yard, it cost \$90,000. The other was a flat bottom steam boat, was confiscated and sold by a man that was afterwards sent to the Penitentiary in N. Y. or Boston for fraud.

Any further information about anything I may have knowledge of would be very glad to write you.

Yours etc.
D.C.E.

CHEROKEE SPRINGS HOTEL
G. W. EBAUGH, PROPRIETOR
Cherokee, S. C. Dec 19th 1892

Rev. W. H. Campbell
Charleston, S. C.
Dear Sir

Your favour of 14th inst. came duly to hand and noted. The David I think was destroyed at the evacuation of Charleston a portion of her reck I think drifted on Chisolms Causeway, what became of the machinery I do not know.

The David did make an attack on the Enemy's Ships in N. Edisto or Stono Rivers but the torpedo failed to explode. There was one or more Torpedo boats captured when Charleston was evacuated but not the David. The large boat I built, intended to run the blockade, was captured. She was 163 feet long 12 feet diameter. She was not complete-all the machinery was not in her She was on the Ashley river near West Point Mill at the time of evacuation was taken to Brooklyn Navy Yard, N. Y. I expect to be in Charleston in the course of next week would be glad to see you. Mrs. E. is in Summerville.

Hopeing this may find your Family and self well as it leaves me

Yours very truly
DAVID C. EBAUGH

P. S. Please do not publish anything about the David until you see me.

D.C.E.

#1213 East Preston Street Baltimore Jan. 31st, 1893

Rev. W. H. Campbell

Charleston, S. C.

Dear Sir

Your favour of 17th reached me a few days ago I having been spending some time in Philadelphia caused the delay in writeing you.

I was in Charleston at Christmas and intended to call on you but left hurriedly.

Since I had the conversation with you at Cherokee Springs and since writeing you a statement of the Torpedo boat David I have had an inquiry from an Attorney in Washington about a claim I had in Washington, sent there 20 years ago for property taken from me at the evacuation of Charleston, the Attorney has offered to take up the claim on a percentage. So I think it would be best for me if my name did not appear in any way at present with the Torpedo boat-at least not until there is something definite about the claim which is for \$25,000.

I furnished the plans of the boat, built it, and spent my own money to the amount of \$1500.00 not counting the lumber or my own time. Mr. Theodore Stoney I think payed some bills in Charleston. When the Confederate Navy took Charge of the boat they asked me how much the boat cost me. I told them I had spent \$1500-they gave me the amount back. Dr. Ravenels suggestions about a boat was to build one to be propelled by manual labour. The engine was a suggestion of mine and the plans was originated by me and built by me with considerable opposition by several of the most influential men of Charleston.

Please do not publish anything with my name at present.

Very truly yours,
D. C. EBAUGH

APPENDIX B

PAPERS IN REFERENCE TO IRON CLADS AND TORPEDO BEARING VESSELS
PROPOSED TO BE PURCHASED BY GENL G T BEAUREGARD

The following report is unpublished and archived at the National Archives in Washington, D. C. The transcription is true to the hand-written text, with minimal editing. Misspellings, grammatical errors, etc. have been faithfully copied to assure no interpretation on the part of the transcriber or loss of meaning from the original text. Further, the text has been replicated line-by-line as it was hand-written to assure ease of location of specific passages in the original text, beginning with the archive box information.

Beauregard Papers Entry 116 8 Feb 1864 Report of Engineer Francis D. Lee

-Box Label
RG 109 War Department Collection
of Confederate Records
Papers of Various Confederate Notables
General P G T
Beauregard's Papers
1864-1865
Box 2 Entry 116, PI 101

- Archives Information
Charleston S.C.

Febry 8th 1864

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Francis D Lee Cap Eng

=====

Papers in reference to
Iron Clads and Torpedo
bearing vessels proposed
to be purchased by
Gene G T Beauregard
(Rebel Archives Stamp)
Recd ___ Dept SC Ga Fla
13 Febry 1864

p. 1

A reply

to

The Hon: S R Mallory's letter to the Hon:
Wm Porcher Miles, defending our Iron Clads
from the charges brought _____ them by
Genl G T Beauregard Febry 8th 1864_ page 5

=====

With the following Appendix

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- A. Notes relative to Iron Clad Gun Boats, prepared by Gen Beauregard for the information of the Hon Wm Porcher Miles – M. C.- Nov 14th 1863 page 15
- B. Letter to the Hon S R Mallory to the Hon W P Miles in reply to Genl Beauregrads notes relative to Iron Clad Gun boats_ Dec 19th 1863_ page 19
- C. Memoir on the subject of Torpedo Bearing Steamers presented to Dept Head Quarters_ May 9th 1863 page 35
- D. Report of a visit to Richmond _ May 22nd 1863 page 41
- E. Memoir on the subject of Torpedo Bearing Steamers continued Febry 8th 1864 page 53
- F. Extract from a communication addressed to the subscribers to the proposed Marine Torpedo Ram intended to have been constructed in Europe_ July 1863_ p69
- G. letter to the Hon S R Mallory to Commander John R Tucker CSN in reference to plating the “Torpedo Ram” in Charleston April 24th 1863_ page 71
- H. Remarks in reply May 1st 1863_ page 73

=====

prepared by
Francis D Lee Capt Eng

p. 3

Charleston Febry 8th 1864
Brig Genl Thomas Jordan
Chief of Staff
General,

On Jany 6th 1864 I received from Dept
Head Quarters the following papers- ___ -
Noted relative to the Iron Clad Gun Boats by

Genl Beauregard for the information of the Hon W
P Miles M.C. dated Charleston Nov. 14th 1863 (See Appendix 'A')
Letter of Honl S R Mallory to the Honl W. P. Miles
in reply to Notes of Genl. Beauregard dated Richmond
Dec. 19th 1863 (See Appendix 'B')
These papers have the following endorsement

Charleston Jany 6th 1864
Respectfully referred to Capt F. D. Lee for ample
documentary Notes (and remarks or views of his
own) as will enable me at a proper time to answer
in a most complete manner the remarks contained
in the enclosed letter of Mr Mallory to the Honl.
W. P. Miles. Capt Lee need not be in any undue
hurry on the subject
(signed) G. T. Beauregard
Genl. Comdg

Having retained copies of the above papers I retur-
-ned the originals to Dept Head Quarters Jany 7th 1864.
I would now respectfully present the following
paper which I hope will be found to embody all
the information required by the Condg Genl.
I have the honor to be General
Very respectfully, Yr Obt Svt

p. 4 (blank)

p. 5

The communication of the Secy of the Navy
to Mr. Miles in reply to the Notes of Gnrl Beauregard
has been carefully examined by me and in obedience
to the instructions of the Commanding Genl. I now
forward such documentary Notes and remarks or
views of my own as may assist the Commanding
Genl. to answer ~~that~~ Mr Mallory's communication in the most complete manner.
Genl. Beauregard states that "our gun boats
are defective in six respects-

First defect-

"They have no speed- going only from

three to five miles an hour on smooth water and no current”

This charge Mr. Mallory does not answer And it is consequently presumed that he admits it.

It is proper however to state That Genl. Beauregard has allowed too great speed to these Vessels, particularly to the “Chicora” and “Palmetto State”. In proof of the assertion I would State that the “Chicora” while on duty some months since in the channel between Sumter + Moultrie was compelled to cast anchor on account of her utter inability to stem the Ebb tide which as that point of the harbor has for its greatest velocity 2.2 nautical miles an hour and although her Engine was Kept at work to relieve the strain on her cable she Yet continued to drag. It should be further remarked here that there was as the time nothing approximating to a gale of wind.

I have this information on the evidence of one of our most efficient Naval Officers. On making inquiry of the same Officer as to the speed of the “Palmetto State” he replied that she was in this respect but

p. 6

little better than the “Chicora” This officer further stated that in his opinion it would be far better to moor these vessels to the wharves as stationary batteries or to place their Guns in land works. I have no doubt that the opinion above stated would be on enquiry be confirmed by nearly every Naval Officer in the port of Charleston.

Second defect

“They are of too great draft to navigate our inland waters”.

This charge Mr Mallory does not answer and it is consequently presumed that he admits it indeed the fact is undeniable.

Third defect

“They are unseaworthy by their shape and construction as represented by Naval Officers. Even in the harbor they are at times considered unsafe in a storm”

Mr Mallory acknowledges the validity of this charge but stated “that to have made them seaworthy would have decreased their defensive power” He further states that “such of the Enemys Monitors as are seaworthy do not expose themselves at Close quarters to his (Genl Beauregards) heavy guns”

In reply to this response I would state that the Yankee Naval Officers appear to have far greater confidence in the seaworthiness of their Iron-clads than our Naval Officers have in ours. They frequently carry these vessels to sea and constantly expose them to the open and dangerous channel off Morris Island. It is true more than one has been lost but notwithstanding this these vessels are still kept in active service in exposed positions. Now the only attempt

p. 7

across the bar of Charleston made by the “Chicora” and “Palmetto State” was on the unfortunate occasion of the attempt against the “Mercedeta” [Mercedita] when the Commodore of the fleet after remaining out a few hours signaled the vessels to return fearing that a blow might come on. Since that time our Iron Clads have almost constantly been kept under the shore of James Isld “grounding themselves on beef bones”

Indeed the Officers of the vessels have not the slightest confidence in their sea going qualities and would deem it little better than madness to venture with them out of sight of land

Mr Mallory says “such of the Enemys Monitors as are seaworthy do not expose themselves at “close quarters” to his (Genl Beauregards) heavy guns” The natural inference drawn from this remark is that the Enemys Monitors as are seaworthy expose themselves at ‘Close Quarters’ to Genl Beauregards heavy guns which is more than our Iron Clads have ever

attempted with reference to the Guns of the Enemy.

Fourth defect

“They are incapable of resisting the Enemys
15 inch shot at ‘Close quarters’

In reply Mr Mallory questions the capability of any iron clad yet built to resist these missels, thus indirectly admitting the charge at the same time he insists on the superiority of our iron clads in this particular to those of the Enemy.

Now presuming the smashing effect of a fifteen inch shot to be greater than that of any missel now in use in this contest and the Enemy being in possession of them and we not then to be on anything of an equality our defensive armor should possess greater power of resistance than that of the Enemy. It appears

p. 8

singular however that with this superiority claimed by Mr Mallory our vessels have never shown the daring at ‘Close quarters’ that the unseaworthy Monitors have done.

In this connection I would respectfully call attention to the communication marked ‘F’ in the appendix

Fifth defect

“They cannot fight at long range their
Guns not admitting an elevation greater than from
5° to 7° corresponding to 1¼ to 1½ miles range; even
the long range Naval Officers are of opinion that
the oblique sides and flat decks of our Gun Boats
would not resist the plunging shots of the Enemys
200 and 300 pounders”

Mr Mallory indirectly replies to the first clause of this charge i.e. to so much as has reference to the elevation that may be given to the Guns of our iron clads to the reminder which is the gravest part of the charge Mr Mallory is silent and consequently it is presumed he admits “that the oblique sides and flat decks of our Gun Boats would

not resist the plunging shots of the Enemys 200 and 300 pounders”

As an apology for the Guns having only an elevation of from 5° to 7°” or “even the elevation usually given to the port guns of cruising ships” which is but little more than 7° Mr Mallory states that our Iron Clads “were designed and armed to fight the Enemys iron clads which can only be successfully assailed at Close quarters.”

With respect to the latter clause of Mr Mallorys apology I would respectfully refer to Mr Mallorys indirect admission of the fourth defect charged by Genl Beauregard viz. “They (our iron clads) are

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incapable of resisting the Enemys 15 inch Shot at Close quarters”

With respect to the first clause of Mr Mallorys apology the inquiry may properly be made if our Gun Boats are intended to operate against the enemys iron clads and if they may not be used against the wooden vessels of the Enemy or his land forces

In fact all the evidence before us establishes the fact that any of the Enemys wooden steamers armed with a single 15 inch Gun or any other of nearly equal power; and using the same at long range and high elevation so as to give a plunging fire on “the flat decks and oblique sides” of our iron clads would prove more than a match for any one of them.

Sixth defect

“They are very costly, warm uncomfortable and badly ventilated- consequently sickly”

This charge is also admitted by Mr Mallory with the remark that the Enemys iron clads are more defective in these respects than Ours.

To sum up the whole in the briefest manner Mr Mallory admits every charge brought by Genl

Beauregard against the Iron Clads and it is scarcely necessary to ask any explanation why commander Tucker did not use these vessels in the defense of Fort Sumter during the Naval attack of the 7th April last (1863) nor why they have not fired a shot in the defense of Morris Island and Sumter during the present siege (which has lasted over four months) (now seven months) except on one occasion—the assault on Sumter during the night of Sept 8th last when the Chicora fired a few shots on the Enemys

p. 10

boats and barges”

I say it is scarcely necessary to ask an explanation when it is acknowledged on all hands that the vessels composing Commander Tuckers fleet were without speed, of too great draught, unseaworthy, incapable of resisting the Enemys 15 inch shot, could not fight at long range and were warm, uncomfortable, badly ventilated and sickly.

Mr Mallorys communication to Mr Miles seems to have been written more for the purpose of drawing a comparison between our iron clads and those of the Enemy than as an answer to the charges brought by Genl Beauregard. Indeed no one who has witnessed the performances of the Enemys Iron Clads (with the exception of the new Ironsides) would make them a criterion by which to establish the efficiency of ours. They both abound in defects which the Enemy have discovered as well as ourselves. But if theirs are ‘bad’ ours are ‘worse’.

In consideration of this condition of things General Beauregard proposes the construction “of swift Sea going steamers capable of going 10 or 12 miles an hour, shot proof above water and armed with Captn. F. D. Lees submarine spar torpedos”

Mr Mallory opens the subject by stating that “the effect of submarine torpedos exploded in contact with the bottom of vessels is generally understood” and cites particularly “the results of the attempt

upon the 'Ironsides' at Charleston and upon a Gun Boat on the James River" as "instructive and satisfactory" Mr Mallory has not drawn the distinction between the devices by which the two satisfactory results were obtained. To supply this omission I would state that the latter was a defensive device

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It offered an offensive movement of the Enemy. The first was offensive. It sought and attacked the Enemy. The former was a new method and was I believe for the first time presented to the War + Navy Department through Genl. Beauregard in the month of August 1862.

To use the latter method Mr Mallory says "no practicable plan that I am aware of has been divided for the construction of such a vessel as this made of warfare demands and as Genl Beauregard evidently refers to"

As applicable to this remark I would respectfully refer to the accompanying "Report of a visit to Richmond in relation to Marine Torpedo Ram" Marked 'D' in the appendix.

In this report may be found the following note

Confederate States of America

Navy Department

Richmond May 21 1863

Col. J. Chesnut Jr A D C

Dear Sir

Maj (Captain) Lees plan for repeating torpedoes has been carefully examined by experts and upon their report I feel authorized to order the machinery from abroad at once

The plan of the vessel he suggests is pronounced impracticable by the Chief Engineer and constructor of the Navy- I will therefore build a vessel in the Confederacy for such machinery at the earliest practicable moment

I am respectfully

Yr Obt Svt
(signed)
Sec of Navy

S R Mallory

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Nearly nine months have elapsed since this note was written and as Mr Mallory calculates the 'moments' as they pass it might be presumed that the machinery and boat are now complete and ready for service, had he stated in his communication to Mr Miles dated Decr. 19th 1863 that "such vessels could only be built within any reasonable time abroad and whether the Government of England or France where they might be most readily built would permit the construction of Iron Clad torpedo boats within their jurisdiction may well be doubted"

I reply I would state that it is a question if the Government alluded to would permit the construction of Iron Clad torpedo boats as such but there can scarcely exist a doubt about their permitting the construction of 'Iron Clad blockade runners' Mr Mallory states that he "will build a vessel in the Confederacy for such (torpedo) machinery at the earliest practical moment" The deduction may be fairly drawn from this remark that if my plan of vessel is impracticable Mr Mallory has in view another adapted to the purpose which rather contradicts his remarks on this point in his letter to Mr Miles.

Mr Mallory states that a vessel built in Europe for service in America must cross the Ocean, and should consequently possess the necessary appliances to making the voyage. This must be very candidly acknowledged by every one as an unquestionable axiom.

Mr Mallory states that to construct a "steamer of 400 or 500 tons, built like a blockade runner but made shot 'proof' would be impracticable." He further says that "no adequate defensive armor applicable to such vessels against the heavy Naval Ordnance now in use has yet been devised" and suggests

a reference of “the question through Commander Bullock

p. 13

to some of the best builders and machinists of France and England and after determining the plan to contract if possible for their construction and delivery as Sea or at some neutral port”

I would here state that if it is proposed to kill the whole project by delay Mr Mallory has hit on the precise plan especially if the report of the European Savans has to be returned to Richmond for his approval before the work is ordered.

If Mr Mallory thinks his Naval constructors incompetent to solve this problem, the deduction should not be drawn that there is no one in the country capable of elucidating it should Mr Mallory give encouragement to such effort. But the simple fact is that Mr Mallory is disposed to strangle the whole subject as the following will show “It is proper to say however that it will always be in the power of the Enemy to anchor his ship and protect her against torpedo boats by means familiar to Seamen and readily attainable and similar to those now employed to protect the Ironsides”

The only answer I can make to this remark is that if the Enemy kept their iron clads like ours at anchor in harbor to be used only at ‘Close quarters’ such defensive arrangement could be used at sea or blockading our harbors ‘this means familiar to seamen is simply impracticable. Even in harbors it is yet to be demonstrated if these means will be proof against counter means that may be devised

Francis Lee

Captn

p. 14 (BLANK)

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[appendix] A

Notes relative to the Iron Clad

Gun Boats

Charleston, S.C Novr. 14 1863.

1st Our gunboats are defective in 6 respects

1st They have no speed- going only from 3 to 5 miles an hour, in smooth water and no current.

2^d They are of too great draught to navigate our inland waters.

3^d They are unseaworthy by their shape and construction as represented by Naval Officers. Even in the harbor, they are at times considered unsafe in a storm.

4th They are incapable of resisting the enemys 15 inch shots at Close quarters as shown by the Atlanta in Warsaw Sound last spring.

5th They cannot fight at long range, their guns not admitting an elevation greater than from 5 to 7°- corresponding to 1¼ to 1½ miles range. Even at long range, Naval Officers are of opinion that the oblique sides and flat decks of our Gun boats would not resist the plunging shots of the enemys 200 and 300 pounders.

6th They are very costly, warm, uncomfortable, and badly ventilated, consequently sickly. The best proof of the total failure of the three Ironclad gunboats, Chicora, Palmetto State, and Charleston, constructed at such cost and labor, is that, altho commanded by our most gallant officers they did not fire one shot in the defense of Fort Sumter during the naval attack of the 7th of April last nor have they fired a shot in the defense of Morris

p. 16

Island and Sumter during the present siege (which lasted over 4 months) except on one occasion, the assault on Sumter during the night of September 8 last, when the Chicora fired a few shots on the enemys boats and barges.

2^d

The enemys iron-clads being invulnerable to shots above water beyond 800 yards, they should be attacked below water. The best way to accomplish this is by

means of swift sea-going steamers, capable of travelling 10 or 12 miles an hour, Shot-proof above water and armed with Capt. F. D. Lee's submarine repeating spar torpedo, which is both simple and certain in its operation. Not one of his sub-marine torpedos has yet failed to explode on striking a resisting object.

The experiment of the "David" a small cigar torpedo-boat against the New-Ironsides shows the effect of a 70lb torpedo, only six feet below water on the thick sides (over five feet) of that sea monster. Since the attack (about one month ago) the "New-Ironsides" has not fired one shot, notwithstanding the renewed bombardment of Sumter has been going on 20 days and nights- showing evidently that she has been seriously injured.

Moreover, she has left her anchorage only once for about half an hour, when she returned to her former position abreast of Morris Island.

It is stated that a proper sized Steamer (400 or 500 tons) built like a blockade runner but made shot-proof and armed with one of Lees repeating Submarine torpedo apparatus could be built in about 3 months working time in England for the sum of about \$250,000.

I venture to say that with one of those vessels here, the blockade of Charleston could be raised in less than one week, and the army of Gilmore captured very shortly afterward. Half a dozen of these Steamers would raise the blockade of our Atlantic and Gulf coasts,

p. 17

+ enable us to recover the navigation of the Mississippi River. Indeed, a few years hence, we will ask ourselves in Astonishment, how it was that with such a great discovery, offering such magnificent results, we never applied it to any useful purpose in this contest for our homes and independence.

It is evident according to Lord John Russells own views, that these steamers can be constructed in England, as shot-proof, unarmed blockade runners, without incurring the risk of being seized by the English Government.

(signed) G. T. BEAUREGARD,
General, C. S. A.

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Charleston S.C
Novm 14th 1863

Genl G T Beauregard

Notes on Iron Clads
sent to Mr Miles
M.C. [?]

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[appendix] B
Confederate States of America
Navy Department
Richmond December 19th 1863

Hon W. Porcher Miles M.C
Richmond Va
Sir

Your letter of the 11th inst upon
the subject of torpedo vessels, and enclosing notes
of Genl Beauregard, has been received.

The effect of the submarine torpedo exploded in
contact with the bottoms of vessels is generally understood
for though experiments have been very limited, their
results and particularly the results of the attempt
upon the "Ironsides" at Charleston and upon a Gunboat
on the James River have been instructive and satis-
-factory.

As to the best means of thus using submarine Torpedos
in offensive War much speculation and many interes-
-ting devices have been called forth. But as yet no
practicable plan that I am aware of has been devised
for the construction of such a vessel as this mode of
warfare demands, and as General Beauregard eviden-
-tly refers to. That they may be carried beneath the
water at the end of a Spar attached to the stem of
a Vessel and exploded by impact against an op-

-posing ship with terrible effect upon it and without serious injury to the torpedo Vessel is well understood. The chief characteristics of such a vessel, as General Beauregard indicates, should be a "speed of ten or twelve miles an hour and shot proof above the water" (and recent tests show that they should be so below water to a certain extent) against the enemys 15 inch

p. 20

guns at close quarters. But the means by which these requirements apparently inconsistent, are to be obtained and combined; the size, form, and details of the vessel and machinery does not indicate nor have they ever to my knowledge been determined or suggested. Such vessels could only be built, within any reasonable time abroad: and whether the Government of England or France, where they might be more readily built, would permit the construction of iron clad torpedo boats within their Jurisdiction, may well be doubted. But if built abroad, they must necessarily be sea going vessels and large enough to cross the Ocean and to force an entrance to our ports, and large enough to carry the coal requires for the voyage, aided perhaps by temporary sails. I mention these points not in opposition to their construction, if practicable, but to show some of the difficulties in the way and to have the benefit of your aid in overcoming them if possible.

To construct a "Steamer of 400 or 500 tons built like a blockade runner but made shot proof "would be impracticable. No vessels of this character possessing the requisite mobility, speed, invulnerability and draft of water, have ever been built or to my knowledge planned.

Upon the subject of invulnerability it may be proper to remark that no adequate defensive Armour, applicable to such vessels, against the heavy Naval Ordnance now in use, has yet been devised.

Unless some satisfactory plan of such vessels can be devised here, the best course will perhaps be to submit the question through Commander Bulloch

to some of the best builders + machinists of France and England, and after determining the plan, to contract if possible for their construction and delivery at Sea or at some neutral port.

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It is proper to say however, that it will always be in the power of an enemy to Anchor his Ship and protect her against torpedo boats by means familiar to Seamen and readily attainable, and similar to those now employed to protect the Ironsides; and it is believed that the Federal iron clads anchored in Charleston harbor can protect themselves against such attacks with more certainty than against those made by heavy guns or heavy rams.

In reference to your remark relative to asking an appropriation from Congress for the purpose I will be happy to confer with you, and also to obtain the benefit of any suggestion you may make to facilitate the object in view.

General Beauregard notes on the iron clads in Charleston having been thus presented it is proper to advert to them.

After stating that they are defective in six respects he says “they are unseaworthy”

Certainly they are unseaworthy, as vessels usually are that are built as these were for harbor defence chiefly. They are not expected to go to sea in the ordinary acceptation of the term. To have made them seaworthy would have decreased their defensive power. Such of the enemys Monitors as are seaworthy do not expose themselves at “Close quarters” to his heavy Guns.

He says further “They are incapable of resisting the enemys 15 inch shots at Close quarters”.

Their power of resistance to such shots are probably greater than those of the enemys Ships; but it may well be doubted whether any iron clad yet built is capable of resisting them. If the inclined shields of these iron clads are incapable of such resistance the shields of the enemy, nearly vertical, are less so. He further says “they cannot fight at long

p. 22

range, their guns not admitting an elevation greater than 5° to 7° corresponding to 1 ¼ to 1 ½ miles range. Even at long range, Naval Officers are of Opinion that the oblique sides and flat decks of our gun boats would not resist the plunging shot of the enemys 200 and 300 Pounders”

These vessels were designed and armed to fight the enemys iron clads which can only be successfully assailed at “Close quarters”- and the range of their guns is ample [sic] for the purpose. But in point of fact their guns have the elevation usually given to the port guns of cruising Ships. If as General Beauregard says “the enemys iron clads are invulnerable to shots above the water beyond 800 yards” a greater range than from 1 ¼ to 1 ½ miles, which he says our vessels possess would seem not only to be uncalled for but a defect, demanding as it would, a larger opening for the gun.

He further says “the best proof of the total failure of the three Iron Clad Gunboats Chicora, Palmetto State and Charleston, constructed at such cost and labor is, that altho’ commanded by our most gallant Officers they did not fire one shot in the defence of Fort Sumter during the Naval attack of the 7th of April last, nor have they fired a shot in the defence of Morris Island and Sumter during the present siege (which has lasted over 4 months) except on one occasion, the assault on Sumter during the night of September 8th last when the Chicora fired a few shots on the enemys boats and barges”

The fact that the iron clads did not fire a shot in defence of Fort Sumter and Morris Island as stated can hardly I think be regarded as the best proof of their “total failure”. I supposed that Flag Officer Tuckers reason for not firing on these occasions

p. 23

was understood by General Beauregard; but as the omission to do so is regarded by him as the best

evidence of the total failure of the vessels it is proper to say that the failure to fire on the occasions indicated resulted from the Judgement of the Commander, and not from the total failure of the vessels. His ships were designed to fight the enemys iron clads, which they could only do with a fair chance of success at the close range already indicated. In view of the destruction of Navy Ordnance employed at long range the determination of Flag Officer Tucker not thus to his guns but to reserve them for the enemys advance at close quarters and for the work for which they were designed may be regarded as Judicious.

“They are very costly, warm, uncomfortable, and badly ventilated and consequently sickly”

These objections are objections certainly, but they are objections applicable to all iron clads, and to those of the enemy in a far greater degree than to ours

General Beauregards notes are here with returned

I am respectfully

Yr Obt Svt

(signed)

S. R. Mallory

Secretary of the Navy

p. 24 (BLANK)

p. 25 Appendix -C-
Memoir Presented to Department Head
Quarters May 9th 1863

The London Post says that the Blockade is the Only effective measure that the North retains for carrying on the War

How is the blockade to be raised and the Confederate Ports opened to commerce is then the question which demands the consideration of every thinking man and good citizen. To Officers charged with the control of military works of a purely scientific character, whose rank and remuneration demand the full and constant exercise of their

mental powers, this question comes with peculiar force. The country looks to them for a remedy.

Apart from considerations of enormous cash and others of equal importance to it I very certain that the Confederate Government cannot except after a period of several years build and equip a Navy after the present fashion of vessels, to compete with the Navy of the Enemy. During the period should the War continue (and it is wise and proper that the Government should make its calculations for such period) the blockade will continue with unabated vigor, bringing as it does all the suffering consequent on a scanty supply of articles of prime necessity. The emergency therefore demands some active remedy to be at once applied.

As an humble Officer of the service I have since the War commenced devoted to this subject my most earnest consideration and would present a method which endorsed as it has been by some of the most distinguished men in the Confederacy will I earnestly

p. 26

hope meet with the consideration and approval of the Government.

Before however presenting this plan I would respectfully call attention to the means now at hand or in anticipation for operating against the Enemy.

A number of vessels have been or are being constructed at various ports in the Confederacy after the fashion of the Iron Clad "Virginia." All of these vessels must necessarily be of great draft in consequence of the enormous weight of their spou-
-sings* and shield. This draft not only materially affects their speed but renders them useless except in deep water while their enormous weight above the water line and their inability to ride in a heavy sea renders them totally unfit for sea operations except in the calmest weather.

*- Spousings are similar to sponsons or wing-wales to offer resistance to wave action when at open sea

The "Chicora" and "Palmetto State" in the port of Charleston are for these reasons incapable of doing but little service except as movable batteries within the harbor.

The other class of vessels building by the Government abroad are as far as I am informed not superior to the War Vessels of the Enemy and are proposed to be mainly used against the commerce of the North.

The Number of vessels afloat belonging to the Navy of the United States already exceeds that of Great Britain. The Ship Yards are busy building larger and more powerful Craft and the foundries are casting the heaviest and most terrible Ordnance. It is evident that with such disparity of force the Enemy must continue to lord it on the Seas unless some new and more formidable Engine of Warfare can be devised and brought against them.

I am aware of the existing prejudice against Torpedos either as a weapon of Attack or defence

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and I further know that this prejudice is based on their heretofore almost total inefficiency. All fixed mines whose explosions are dependent on the movement of the Enemy must be uncertain and unreliable. Such has been the arrangement of most submarine torpedos and for this reason they have failed and consequently fallen into disrepute.

To certainly and securely carry the mine to the Enemy is the true problem. This has been attempted on Water by various methods all of which depend on so accurately depositing the torpedo in the current as to float down and strike the Enemy. This very general statement is yet sufficient to indicate the great uncertainty of this mode of operating.

But I believe the problem has been solved and that the enormous power of gun powder in the

almost incompressible medium of water can be used with reasonable security to the operator and with deadly and almost instantaneous certainty to the Enemy, can be used in every condition of weather and place, In the narrow and shoal creeks and inlets on the coast on our Western rivers in Our bays and harbors or on Mid-Ocean.

Early in the year 1862 I presented the plans of a torpedo bearing vessel to a commission appointed by the state of So Ca to examine into various plans proposed for the defence of the harbor of Charleston.

(The plans presented exhibited a Cigar formed propeller Steamer carrying the torpedo at the extremity of a spar).

The commission while approving of my plan were unable for want of proper material to carry it into effect. The matter was therefore dropped until the appointment of Genl Beauregard to the command of the Department of So Ca + Geo when

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it was presented to his consideration.

The following Copy of a communication from Genl. Beauregard and to Genl. Cooper expresses Genl. Beauregard's opinion of the design.⁶⁵²

Head Quarters

Dept So.Ca +Geo
Charleston S.C 13th Oct 1862

General! [sic]

The bearer Capt'n F. D. Lee Provisional Engineers has submitted to me a plan of a Torpedo Ram for the defence of this harbor which meets my hearty approbation, as offering altogether the most practicable means of a successful encounter

⁶⁵² Reprinted in the ORA Vol. 14, 636-7; ORN Vol. 13, 812-3.

with the formidable Iron Clad gunboats of the Enemy I have yet seen. This plan having been brought to the Notice of the Authorities of the State of South Carolina they with their characteristic promptness, have placed at my disposal the sum of \$50,000 for the immediate construction of such a Ram as Captn Lee proposed.

Practical builders express the belief that they can build it for the sum appropriated, but as I am aware of the difficulty of estimating with the least accuracy the cost of such work at this Juncture, I have concluded to send Captn Lee to submit the details of his plan to the War Department or if necessary to the Navy Department with the hope that the cooperation of the Confederate Government may be secured if necessary in the construction of the one about to be begun by the State and also that the plan will meet with such favor as to lead to the construction of similar rams for

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other scenes of operation.

I cannot doubt that rams, properly built, according to the plan of Captn Lee would be far more effective [sic] than Gun Boats of the present construction three times as large and costly, with the other important advantage of being built in one third the time required for Rams of the present models.

Time, indeed, is now of vital importance in preparing for the safety of this city and port and should the plans which Captn Lee will submit be approved by the Department and authority be given to use the material already collected here I feel assured I can have the work done with such vigor as to have a Ram ready for service in time to render signal aid in holding this port for the Confederate States.

Were some of these rams built at the same time in the Yazoo River they could dash into and clear the Mississippi River and aid materially in the recapture of New Orleans. If effective here they would be

equally efficient at Port Royal, Savannah, and in James River. Let me bespeak for Captn Lee the consideration due to his zeal intelligence and capacity as a practical Engineer.

Respectfully Yr Obt Sv't

(signed) G. T. BEAUREGARD.

General, Commanding

In obedience to an order from Genl Beauregard I delivered in person the above communication to Genl Cooper and had the honor of submitting my plans to the Secy of War and the Sect of the Navy.

Steps were immediately taken to carry the project into effect and the unfinished frame of a Gun boat commenced in Charleston was placed at my disposal.

I was induced to believe that a boiler and two Engines

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suited to the vessel would be furnished me, but receiving only one Engine of very little power and no boiler I was forced to seek in another direction for proper machinery ^see Appendices G and H^. This was partly accomplished by the purchase of the Steam tug "Barton" of Savannah and the removal of the boiler and Engine of that vessel to the Torpedo Ram.

The size and construction of this machinery made it necessary for me to modify my plans by raising the deck of the vessel two feet above the original plan and building a shield on deck.

The torpedo proposed to be used by this vessel was a cylindrical iron shell armed at the forward end with barbed spikes and fired by means of a lanyard coil in the base of the shell attached to friction tubes. It was proposed to attach the shell to the Enemy's vessel by driving it by steam power through a hollow prow. By retiring the lanyard was to be uncoiled and the friction tubes fired.

Further consideration of this plan of operating the torpedo convinced me of its unnecessary complica-

-tion and unreliability. I therefore prepared several shells to be fired by percussion using the Chlorate of Potash and Sugar with sulphuric acid as the means of ignition and thereupon addressed the following communication to Dept Head Quarters.

Charleston Feby 27th 1863

Brig Genl Thos Jordan

Chief of Staff

General

I am desirous of making some experiments with torpedos for the purpose of ascertaining the direction of the force consequent on explosion, when accomplished against a vessel's hull and seven feet below the surface of the water. I am led to believe that the whole force will be expended through the side of

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the vessel for the reason that this is the only compressible substance in contact with the torpedo, the water surrounding it being nearly incompressible and not yielding except by actual displacement which required a certain lapse of time to overcome inertia of rest a period ~~not~~ probably greater than will be required for the burning of the charge.

I have nearly completed all the necessary arrangements for making the experiment and only need a hulk to operate upon.

Should this hypothesis be established by actual experiment the torpedos to be fired by percussion borne at the extremities of spars and suspended below small boats, may be used under cover of night against iron clads and other vessels.

I have prepared several torpedos to make the test and their design being novel and perhaps interesting I would be glad to submit them to the examination of the Commanding General at any time that may be named.

Arrangements have been made to attach one of these torpedos to the iron clad Chicora

I have the honor to be General
Very Respectfully Yr Obt Svt
(signed) Francis D. Lee
Capt Engrs

My proposal being approved and ordered by the
Genl. Commanding and the hulk of a strongly built
Gun boat having been provided me by Captn
D. N. Ingraham Flag Officer at this station
preparations were immediately made for carrying
the expedition into effect.
The following is the reported result.

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Charleston Mch 6th 1863

Brig Genl Thos Jordan
Chief of Staff
General! [sic]

In obedience to instructions from
Dept Head Quarters I made an experiment
with my boat torpedo on Yesterday [sic].

One of the abandoned Gun boats was pla-
-ced at my disposal some days since which after
loading with rubbish from the Burnt District got
a draft of 6 ½ feet at her bow. I was anxious
to obtain a vessel with a draft of 7 ½ to 8 feet but
was unable to procure one. The Torpedo bearing
boat for attacking this hulk was a light built canoe
about twenty feet long with a spar suspended six
feet from her keel and projecting beyond her bow
twenty feet on which I placed the torpedo with
a Charge of nearly thirty pounds of powder.

It was my purpose to make the experiment at
1 ½ OClock P.M. that being the hour of high water
but the delays consequent on the want of dispatch
on the part of the Steamer engaged to tow the hulk
in place prevented the completion of all necessary
preparations until 2 ½ OClock P.M. At that hour
a strong North west wind amounting nearly to a

gale was blowing which with the Ebb tide rendered it impossible for me to moor the hulk in such position as to attach the lines for striking her side.

Every previous preparation having been however made I deemed it proper to make a trial even at the risk of failure and gave orders to strike the vessel in the stern. After great difficulty owing

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to the roughness of the Sea I secured a line to the bow of the torpedo boat and weaving it through a block secured to the hulk returned it through a block in the stern of the torpedo boat and thence to a rowboat. I then ordered the rowboat to pull away.

The torpedo boat moved with good speed to the hulk and apparently struck but without the expected discharge. The position of the torpedo boat seemed to indicate that the torpedo had passed under the hulk. Leaving the boats in this position I returned to the City and after giving the hands a recess of an hour returned to the hulk to examine into the condition of things. I then found that the torpedo in place of striking directly on the stern had passed diagonally under the counter of the hulk.

On with drawing it I found that the torpedo had not come in contact and that the lead plugs containing the sensitive tubes and charges of chlorate of Potash + Sugar were entirely uninjured.

Night fast coming on I secured the torpedo boat to the side of the hulk so as to be safe from accident determining to make a new trial the following morning. On this morning at 8 A.M. I returned to the hulk accompanied by Capt. Chisolm of the Generals staff and Mr W. S. Henry Machinist and after anchoring the hulk across the stream put on the lines and struck her amidships.

The torpedo instantly exploded with little or no displacement of water. In about twenty seconds the hulk went down.

On moving up to the torpedo boat we discovered that

she was entirely uninjured with a very small quantity of water in her. More than half of which was there before the explosion. From all appearances the spar is uninjured.

I have the honor to be General
Very respectfully Yr Obt Svt
(signed) Francis D. Lee
Capt Engrs

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Copies of the above report were immediately forwarded to the Sec of War and the Sec of the Navy and by Orders from the Commanding General drawings of the torpedo and mode of using it were forwarded to Commanding Officers in various parts of the Confederacy.

A number of torpedos were prepared in obedience to orders for various districts in this Department and nearly thirty boats were got ready in time, to take part in the action of the seventh of April in the event of the Enemys passing the gorge of the harbor. The iron Clad and other steamers were likewise provided with the same weapon.

The forts having however succeeded in discom-fiting the Enemy the torpedos were not brought into use. It having been demonstrated that the Automatic percussion torpedo was far more reliable and efficacious than any arrangement requiring the use of the lanyard I at once took steps towards so modifying the shells proposed to be used by the ram.

I had hoped that the experiment as above reported would have so established the importance of the torpedo Ram for the defence of Charleston as to insure its completion by having transferred to me the necessary iron for sheathing. But in this I have been disappointed although the Departments have been addressed on the subject by Genl Beauregard by Genl Ripley and Commander J. R. Tucker comdg Naval forces afloat in Charleston Harbor.

The Naval Dept have stated its inability to

fill the requisition not having more than enough iron to supply one of the iron clad Gun boats now being built in this city. There being no other source of supply at hand all hopes of the immediate completion

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of the Torpedo Ram in this country have thus been dissipated. I would now respectfully suggest the importance of carrying the work into effect abroad and I would at the same time present a plan of torpedo + machinery for using it embracing all the perfected improvements.

In Drawing No.1.* A represents the torpedo one half full size. The shell of 1/16 inch sheet copper capable of holding thirty pounds of rifle powder

This shell is closed in every part except the charge opening which is secured by a screw plug made water tight. At the head of the shell are arranged one or more brass sockets to receive the percussion tubes.

In the rear of the torpedo is a shank or handle for securing it to the spar or rod. The percussion tubes B are of lead thinned off at their hemispherical heads and made of such dimensions as accurately to fit the brass sockets. A thin coating of wax around the tubes secures them sufficiently in the sockets to prevent their falling out, while at the same time they may be withdrawn at pleasure

The charge in the tubes consists of a double glass tube C nearly filled with sulphuric acid and closed at both ends surrounded with a composition compounded of equal parts of chlorate of potash and fine sugar. A perforated metal wad D secures this portion of the charge in place. E represents a charge of strong rifle powder and F a wad securing it in turn. The remaining portion of the tube is filled with wax poured in while in a melted state and allowed to harden, The tube thus arranged after being tested against leakage is put away for use. This arrangement allows of the shell

* No drawings were included in Lee's report, nor were these drawings located elsewhere.

being kept charged without fear of accident
as the tubes will not be attached until about to

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be used. Should by any unforeseen accident a tube explode while attached to the torpedo it will expend itself through the thin lead head into the surrounding air without breaking the shell. Only when immersed and under a pressure of several feet of water will the explosion break through the shell and fire the charge.

Figure No 2 shows the repeating torpedo machinery in the position for loading. A represents a Cylinder of Copper passing through the bow of a vessel closed at its outer end with a valve 'b' hinged at 'C' and opening outward. 'd' represents another Copper cylinder fitting water tight the Cylinder 'A' and made to slide through it. This cylinder is open at its forward end and an aperture 'x' on its upper side to receive the torpedo. At its base is a smaller Cylinder "E" with a screw cut on its exterior surface This screw is operated upon by a female screw "F" worked by a lever 'g' with pawl and ratchet.

By working this rod laterally the Cylinder 'd' is pressed forward or withdrawn from the Cylinder 'A'

The machinery being in position as shown in figure 2 The torpedo is adjusted to the head of the rod 'h' and secured by the pin 'i'. The percussion tubes are then placed in the sockets. The inner Cylinder is then pressed forward and opens the valve 'b' at the same time the aperture 'x' is closed as shown in figure '3'. The rod 'h' which slides through the Cylinder 'E' is then pushed forward carrying the torpedo 'K' to its position for firing. 'L' represents a metal head arranged to retard the recoil of the rod. By the arrangement the rod may be reloaded as often as required. It is but due to a very intelligent Officer to state that this arrangement is in the main due to Mr Jordan one of the Engineers

of the Palmetto State and is an improvement on the

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repeating torpedo machinery devised by me and now nearly executed for the Ram.

Although the torpedo and the machinery for using it may be used by all classes of vessels afloat or in the course of construction Yet as rapidity of movement and invulnerability are the great desiderata I would respectfully suggest a sketch which I believe may be found to contain many improvements not found in iron Clads as at present constructed

In the sketch No 1 represents a torpedo Ram afloat, the external model of which is precisely identical with any other ocean steamer. The vessel is arranged with two propellers one on either side of her stern post and worked by two independent Engines. By reversing the movements of the propellers the vessel may be turned on its centre. This arrangement (which has been thoroughly + practically demonstrated) offers the best means for rapid manou-
-vering which in the plan of attack proposed is of the utmost importance.

No 2- Represents a transverse section of the vessel showing the arrangement of the shield within the same immersed five feet below the water line. The armour for the shield is of three thicknesses of three inch plates backed by over two feet of oak. The sides of the vessel above the foot of the shield is of ordinary sheet iron after the manner of merchant vessels but divided transversely into compartments each ten feet in length. In fighting order these compartments each filled with water by means of external apertures. An Enemys shot may readily penetrate this side but can do no damage that may not be readily repaired.

The advantage that a vessel after this mode presents

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are first a form that makes it available as a sea-
-boat and secures to it good speed.

Second- a disposition of weight low down in the vessel which must insure great stiffness- and third a security against recorded [?] shot not found in our present form of iron clads.

A vessel after this form furnished with enormous motive power and armed with the percussion torpedo as above described may pursue and overtake the Enemy on the Ocean with certainty and security, while for night operations among the blockaders off our harbors She must prove terrible Engine of attack and may accomplish what is now our most earnest aim The raising of the blockade and the opening of the Confederate Ports. If this can be accomplished “The only efficient measure that the North retains for carrying on the war [?] will be removed.

It has been proposed to undertake this vessel as a private enterprise and offers have been already made for carrying it into effect. As an Officer of the service I have declined this proposal until the matter should first be fairly presented for the action of the Government.

(Signed) Francis D Lee
Captn Eng

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Appendix -D-

Richmond May 22d 1863

Brig Genl Thos Jordan

Chief of Staff

General! [sic]

In obedience to the Order of the Comdg General instructing me to proceed to Richmond to submit to the War Department my memorial and proposal for constructing abroad one or more vessels designed to be armed with torpedos. I left Charleston on the 11th inst and after stopping at Columbia one day with the hope of seeing the Governor of So Carolina in order to ascertain what

assistance could be procured from the State, I reached Richmond on Friday the 15th Inst.

On the following day I carried my papers to the War Office but failing to meet the Sec of War who was absent at a meeting of the Cabinet I called on Col Gilmer Chf of Bureau of Engineers and after explaining to him the purpose of my visit submitted for his inspection my plans and papers. Col Gilmer after carefully inspecting them expressed the warmest approval of my designs for torpedos and machinery for useing them and assured me of every assistance in his power to obtain the purpose of my visit. He at the same time stated that so far as the design of the proposed vessel was concerned he deemed it proper that that should be left to the Naval Constructors to decide as that was peculiarly their business.

On Monday Morning the 18th inst I had the honor of an interview with the Secy of War who after carefully perusing the memorial with its

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endorsement and examining the accompanying drawings appointed another interview with me in the afternoon.

At the hour appointed I met the Secretary and explained minutely all the details of the designs. At the same time I handed him a communication of which the following is a copy

Richmond May 18th 1863

Genl S. Cooper

Adjt + Ins Genl.

General!

In submitting the accompanying memoir and proposal to the Secretary of War I would respectfully suggest what in my humble Judgement seems the most effective and expeditious mode of obtaining the accomplishment of the wishes of

Genl. Beauregard as expressed in his endorsement.

Having large practical experience in the conduct of public works in the Department of So Carolina, Georgia + Florida I can with great confidence state that our machine Shops are so limited in extent and at the same time so pressed with important works as to make it unadvisable to attempt to carry out the proposed undertaking in this country.

I would therefore respectfully propose that the torpedo and machinery for using them be constructed in England or elsewhere. Not having the torpedo charged and their purpose being unknown their exportation would most probably arouse no suspicion.

The machinery proposed would occupy but little space and may be readily adapted to the vessels already belonging to the Confederate Navy as well as those in course of construction. Its adaptation

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to the vessels will not effect their original purposes or capabilities and will add to their effectiveness by giving them a more terrible weapon than any they now possess.

In submitting the sketch of a torpedo bearing vessel, I would respectfully state that it is not my purpose to present anything original in the exterior form of the vessel. The forms best adapted for great speed are best known to the Naval Architect and in the matter the direction of the work should properly be controlled by his superior Judgment. What I have endeavored to accomplish however is the arrangement of a shield to a vessel solely adapted to carrying torpedos.

That, safety speed and comparative invulnerability may be obtained for a Torpedo bearing vessel there can be no doubt. Whether the mode suggested by me is the very best mode of obtaining these requisites is yet to be determined as none other has yet been proposed with the solitary exception of the

vessel built in Charleston, the form of which was controlled by unavoidable circumstances.

Having first proposed this mode of attack and having devoted to it a large amount of study and established its entire practicability by careful experiment I would (should the Government approve and Order) respectfully request to be further assigned to the service of superintending the execution of my designs. Should I be so charged the profound interest I must necessarily feel in the enterprise will stimulate me to its accomplishment as faithfully and rapidly as possible

I have the honor to be General
Very Respectfully Yr Obt Svt
(signed) Francis D. Lee Capt Engr

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The Secy of War while promising every aid in his power for the accomplishment of an undertaking which he said seemed to insure such important results stated that inasmuch as the work from its nature legitimately belonged to the Navy Dept he would be pleased to present in person the matter to Mr Mallory and directed me to accompany him on the following day.

The Secy of War in further conversation on the subject said that while the experiment made by me appeared complete and satisfactory yet regretted that they had not been more frequently repeated and particularly against the enemy. In reply I stated that the purpose of my mission to Richmond was to obtain the means of making the very experiments he so much desired.

On Tuesday the 19th Inst the Secretary of War introduced the subject to the Secty of the Navy calling particular attention to the Endorsement of Genl. Beauregard

Mr Mallory stated that the subject had been more than once under his consideration and that he was ready to carry out the proposal to its fullest extent as he was well informed of the importance of the

proposed undertaking. He further stated that the whole matter should be at once submitted to a commission to consist of the Naval Constructor, the Chief Engineer of the Navy and Commander Brook. In my conversation with Mr Mallory I informed him that what I desired particularly to present to his notice was the torpedo as Modified and the repeating machinery for using it. That the Sketch of the proposed vessel was only a suggestion and that professing no claim as a Naval Architect I would so far as the vessel was concerned yield to the better Judgement and greater experience of others.

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On Wednesday the 20th inst (the Commission having my plans under consideration) I called on Col Chesnut of the Presidents Staff and solicited his aid in bringing the matter to the attention of the Executive in Case of necessity.

On Thursday the 21st Inst I received the first notice of the decision of the Commission from Col Chesnut by a note from the Secy of the Navy of which the following is a copy.

Confederate States of America
Navy Department
Richmond May 21st 1863

Col J Chesnut Jr A.D.C +c

Dear Sir

Major Lees plans for repeating torpedos have been carefully examined by experts and upon their report I feel authorized to order the machinery from abroad as once.

The plan of the vessel he suggests is pronounced impracticable by the Chief Engineer and Constructor of the Navy. I will therefore build a vessel in the Confederacy for such machinery at the earliest practicable moment.

I am respectfully Yr Obt Svt

(signed) S. R. Mallory
Secy of the Navy

After reading the above communication I at once called on Mr Mallory who informed me of the report of the Commission and stated that as soon as the boats now being built as Richmond should be completed he would commence the Torpedo boat. He further stated that inasmuch as certain Naval

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Officers were about to be sent abroad he would entrust to them the procuring of the necessary torpedos and machinery. He further stated that it was his earnest desire to complete the Ram in Charleston and requested me on my return to ascertain if the Gun boat now under construction by Mr Jones (ship builder) could be adapted to the use of the torpedo. He further desired me to prepare the detailed drawings of the torpedo and repeating machinery to be placed in the hands of the workmen.

I immediately upon ascertaining the intentions of the Secy of the Navy which distinctly indicated a determination to remove the control of the matter from my charge to place it in the hands of Officers of the Navy. I called on Col Gilmer and after stating the case, desired his opinion and advice. Col Gilmer fully coincided with me in the views I had taken and desired me to submit them to him in writing. When he would present them to the Secy of War. The following to Col Gilmer will need no further explanation.

Richmond May 21st 1863

Col Gilmer

Chf Bureau of Engrs C.S.A

Colonel!

I have been informed by the Secy of the Navy that the plans submitted by me of Torpedos and made of using them have been examined by

experts and that upon their report he feels authorized to order the construction of the proper machinery abroad at once. The Secy of the Navy further informs me that my drawings will be put in the hands of Officers of the Navy who are about to be

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sent abroad and will be charged with the execution of the Work.

For the last two years I have labored assiduously in perfecting this new Engine of attack and have in the face of doubt and opposition fully demonstrated by absolute experiment its security and entire practicability.

Having thus obtained the confidence of every scientific man to whom it has been presented I would now respectfully claim for myself the privilege of superintending its execution. In this I am actuated not only by a proper professional pride but also by a desire to promote the good of the service. It is neither my wish nor purpose to encroach in the slightest degree on the prerogatives of others. All that I desire is to complete and transfer to the Navy a weapon that I believe may be used with terrible effect against the Enemy. My duties in this matter would then cease and the application and use of this Weapon would devolve to the Navy. The credit of success or the responsibility of failure should properly belong to the author of a design. I would respectfully submit whether where so much is at stake my professional reputation should be entrusted to another.

I have the honor to be Colonel
Very Respy Yr Obt Svt
Francis D. Lee
Capt Engrs

N.B.- Colonel

Since writing the above I have seen the Secy of War who informs me that if the Secy of the Navy approves I will be detached for the

Special service of superintending the proposed Work. Or that he will send me to cooperate in

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its execution or for the purpose of superintending the construction of torpedos for the use of the Army.

I sincerely hope that the Secy of the Navy will see fit to have me assigned to my proper position. I would respectfully state that any other would be anomalous. In further [sic] reference to the matter the Secy of the Navy informs me that it is his intention to construct a sea going torpedo bearing vessel at Richmond as soon as the vessels now being constructed are completed. This will necessarily involve a loss of time now almost invaluable + which must in a great degree defeat the object of the enterprise.

I am deeply mortified to think how imperfectly I have accomplished the mission assigned me by Genl. Beauregard. Seeing no possible opportunity however for accomplishing anything further by remaining in Richmond I propose leaving for Charleston on this evening. I had hoped that if sent abroad where abundant means would be found at hand I would have been enabled with Dr Cheves consent to perfect his beautiful design of Automatic Electric torpedos (Note- In a conversation with Col Gilmer I had before alluded to this matter) I have no doubt whatsoever that this system of torpedos properly executed would be found invaluable on our rivers to guard against the approach of the Gun boats of the Enemy while at the same time they may be readily transported from place to place as circumstances may require. The Secy of War has informed me that he will see you in reference to the subject matter of the above letter.

Should any orders be issued relative to the same would you be pleased Colonel to have them sent to the Spotswood Hotel up to 4 O'clock P.M.- After that hour to Charleston.

With many thanks Sir for your kind

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attentions.

I have the honor to remain

Very Respy Yrs

(signed)

Francis D. Lee

Capt Engrs

On receipt of the above Col Gilmer again saw the Secy of War who informed him that he had already fully expressed his views to me, that he could not undertake a vessel himself that being the province of the Navy Dept but that he could use every exertion towards completing the ram in Charleston.

Before leaving, Col Gilmer again assured me of his warm interest and stated his determination to bring the matter again forward at the very first opportunity.

On returning to my lodgings I conceived that there would be no impropriety in making one more appeal and directing it directly to Mr Mallory.

I therefore addressed the following letter.

Richmond May 22^d 1863

To the Hon

Secretary of the Navy

Sir

I cannot believe that I would have accomplished the whole duty on which on which I have been sent. should I leave Richmond before addressing you directly on the subject of the proposed Marine Torpedo Ram. I would therefore crave your pardon Mr Secretary for this Official irregularity.

In your note to Col Chesnut you have been pleased to state that it is your purpose to commence the construction of a Marine Ram in Richmond as early as possible. As time is now a matter of the most vital importance I would very respectfully suggest whether with the aid of able Naval

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Architects and under the supervision of your own Officers abroad this important undertaking may not be there consummated more rapidly and satisfactorily than in this country. My somewhat extended experience in matters of construction of various kinds had demonstrated to me the fact that for the want of skilled labor adequate machinery and appropriate material all undertakings of any extent must at this time require a long period for their accomplishment. Perhaps in the vessel proposed it may be desirable to make arrangements for mounting one or more heavy Guns. This can in no way interfere with the application of the torpedo machinery which will occupy but little space and must necessarily be placed below the Gun deck.

Such a vessel may operate with or without the torpedo as circumstances may render most desirable. The requisites for a vessel using the torpedo are speed strength and facility in maneuvering. How best to obtain these requisites is best known to your own Naval Constructors.

Should the construction of such a vessel be ordered I would respectfully desire the supervision of the construction of the torpedos and machinery for using them. This whole subject is almost entirely original with myself and what has been presented to your consideration through the War Department is the fruit of nearly two years study and experiment. For these reasons it may not appear presumptuous in me to claim a more minute and intimate knowledge of the subject than can possibly be possessed by any other person.

I would therefore respectfully request that this portion of the work being peculiarly mine should

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not be entrusted to another and that it will not be required of me to surrender the ground on which I had hoped to establish something of a reputation.

The drawings of the torpedo and machinery for using it as presented by me have been only prepared to illustrate the description that accompanied them. They are not working drawings. In preparing these and afterwards in directing their execution it may be necessary to make modifications which a more minute examination of the subject may suggest.

The accomplishment of the design in the present form has been the result of frequent modifications suggested by continued thought and larger experience as well as by valuable contributions of others among whom I would especially designate Mr Jordan one of the Naval Engineers.

A proper professional pride and an anxious desire to promote the good of the service induces me respectfully to present these views to your consideration.

In conclusion I would beg permission to state that the Secy of War has expressed his entire willingness to detach me for this special service should it meet your sanction.

I have the honor to be Sir
Very Respy Yr Obt Svt
Francis D. Lee
Capt Engrs

On tomorrow morning I propose sending the above letter with the following note to Col Gilmer

Richmond May 22^d 1863

Colonel

Before bidding adieu to the Torpedo Ram I have ventured one more effort for its accomplishment

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I have addressed the accompanying communication to the Secy of the Navy which I have left unsealed and particularly desire you to peruse. I would further respectfully request you to forward it to its destinations.

The Petersburg Cars having been appropriated by the

Government for the transportation of troops I have been refused a passport and am therefore detained for a few days longer in the City. Should anything transpire in the matter of my business would you be kind enough Colonel to let me know of it at the Spotswood Hotel.

I do not feel that I am further authorized to encroach upon your valuable time by calling at your office

Very Respy Yr Obt Svt

(signed)

Francis D. Lee

Capt Engrs

I have thus gone minutely into all the details of my operations in this matter in order to indicate to Genl. Beauregard that I have left no stone unturned in Endeavoring to obtain he accomplishment of the important mission on which I have been sent.

I have the honor to be General

Very Respectfully Yr Obt Svt

(signed)

Francis D. Lee

Capt Engrs

Note- (It is proper here to state that the Secretary of the Navy never favored me with a reply to my communication of May 22d 1863 and further that my drawings were never returned)

Appendix -E-

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Appendix E.

The following is the closing sentence of the memoir presented by me to Dept Head Quarters dated May 9th1863 (Appendix C)

“It has been proposed to undertake this vessel as a private enterprise and offers have been already made for carrying it into effect. As an Officer of the service I have declined this proposal un-

-til the matter should first be fairly presented for the action of the Government?"

As seen by my report dated May 22^d 1863 the Government took no action in the matter. I thereupon approached some of the most influential merchants in this City (Charleston) on the subject. The following letter will show their action in the matter.

Charleston, June 6, 1863.

Capt. Francis D. Lee,
C.S. Engineer
Captain

The undersigned, in connection with other merchants in this City propose the construction of a Marine torpedo Steamer abroad and desire your services for carrying the work into effect.

Arrangements have been made for placing the necessary funds at your disposal in Europe.

Very respectfully, yours,

(signed) John Fraser + Co

Accompanying the above communication was the following.

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[Charleston, June 8, 1863]*

Brig Genl Thomas Jordan
Chief of Staff:

General!

Would the commanding Genl be pleased to approve of my detachment for the purpose above named? As time is a matter of vital importance I would respectfully suggest that all my arrangements should be made to enable me to leave during the present dark nights otherwise I shall be necessarily detained one month.

Very respy Yr Obt Svt
(signed) Francis D Lee

Capt Engrs

* Date not written in the report- taken from ORA Vol. 14 (1902), 965-6.

Note (The design furnished by me and proposed to be carried into execution abroad exhibited a Marine Steamer two hundred feet long and with ten feet draft. Her water line and above and below it for four feet was protected by a powerful spousing plated with three thicknesses of three inch plates. A shot proof deck was shown four feet above the water line. Above this the vessel was built as an ordinary iron vessel with this exception. That instead of the plates being riveted they were secured together by bolts and nuts so that they could in the event of being damaged by the Enemy's shot be easily removed and replaced.

The Engines Boilers and other machinery of the vessel was all arranged below the shot proof deck. Two pair of powerful Engines worked two propellers. The bow was armed with a repeating torpedo apparatus. The vessel was modelled for

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great speed and carried no armament except the torpedo. The Smoke Stack was telescopic.

It was proposed with this vessel to pursue the Enemy at Sea and to destroy him on the instant of Contact)

The following are the endorsements on the communication of Messrs John Fraser + Co.

Head Qsr Dept S.C Geo + Fla
Charleston S.C June 13th 1863.

Respectfully referred to Col. J. H. Gilmer requesting that he should have Capt'n F. D. Lee detached for the purpose of having the Marine Torpedo Ram of Messrs Fraser + Co constructed in Europe, as desired by these gentlemen meanwhile Major Echols with the assistance of Mr Chisolm will attend to the completion of the State Marine Torpedo Ram now under the charge of Capt'n Lee.

(signed) G. T. Beauregard
Genl Comdg.

Engr Bureau June 19th 1863

Respectfully returned to Capt. F. D. Lee, favor-
-able action having been taken upon his appli-
-cation.

(signed) A. L. RIVES,
Lt Col + Asst to Chief Bureau

A leave of absence for six months having thus been
granted me with the priviledge of visiting Europe
I at once took steps to make all the necessary prep-

p. 56

-arations for the undertaking.

Over Two Hundred Bales of Cotton were immediately
shipped in order to place funds on the other side and
I was on the point of taking my departure when the
Enemy effected a landing on Morris Island and
immediately after the siege of Fort Wagner began.

Being in the main responsible for this work
as its Engineer and having been so recently connected
with the defences of Charleston I felt it my duty to
forfeit the leave of absence granted me by the Secy
of War and immediately reported back to General
Beauregard for duty. Genl Beauregard at once
accepted my offer of service and directed me to
take immediate steps to secure the earliest completion
of the Torpedo Ram.

The following is a communication received by me in
reply to an application for funds to proceed with
the work

Head Quarters
Dept S.C. Geo + Fla
Charleston S.C June 24th 1863

Captain

I am instructed by the commanding Genl

to say that in consequence of a telegram received from Col Gilmer Chief of Engineers Bureau to the effect that Engineer Funds cannot be applied to Torpedo Ram You will immediately stop all work on said Ram and report to these Head Quarters how said work has been progressing up to this time.

(signed)

Very Respy
Your Obt Servant
Clifton H Smith
Act Genl

Capt F.D. Lee
Prov Engineers +c

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Consequent on the receipt of this letter the subscribers to Marine Torpedo Steamer at once proposed to Genl Beauregard to furnish the funds necessary to the completion of the Ram.

Although fearful that the encroachment on the funds appropriate for the special purpose of carrying out my device in the most perfect manner might frustrate that undertaking + well knowing the many defects of the Torpedo Ram (the causes of which I have already stated) Yet the emergency of the case seemed to demand a sacrifice, and upon the matter being left to my decision I freely acquiesced. Steps were thereupon immediately taken to place the necessary funds to the credit of the Torpedo Ram. The following letter will more fully explain the matter.

Charleston July 11th 1863

Brig Genl Thos Jordan
Chief of Staff

General!

I am just informed by Captn Carlin that the funds appropriated to the construction of a torpedo Steamer abroad are ready to be diverted to ac-

-com-
-pletion of the torpedo Boat in this city provided
such course meets the approval of the commanding
General. Captn Carlin furthur undertakes to
furnish a crew for the vessel and proposes to command
it in person provided it be indipendent of the Navy

I am not aware if the Navy Dept will establish

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any claims based on the fact of having furnished the
unfinished frame of a Gun boat, or what difficulties
may arise from using the iron plating delivered to me
by the order of the commanding General. If these object-
-tions to the proposal of Captn Carlin can be overcome
and the vessel accomplished as a private undertaking
I believe that something may be accomplished.

I have the honor to be General

Very Respectfully Yr Obt Sv't

(signed)

Francis. D. Lee

Capt Engrs

The matter of the ownership of the Ram having been
to a certain extent satisfactorily arranged the work
was recommenced on the vessel.

Captn Carlin fearing however that too much time
would be lost if we attempted to plate her determin-
-ed to use the vessel without any defensive armor
and after rapidly preparing her for service made too
attempts against the Enemy. The first enterprise failed
in consequence of the night being of pitchy darkness
accompanied with a storm. On the second occasion
owing to an error on the part of the Steersman the Ram
struck the "Ironsides" quarter on so that the torpedo did
not come in contact. Although no one was injured
in either of these enterprises it became apparent that
the Ram (modified as it was from my design by cir-
-cumstance over which I had no control and which
have been previously stated) was not the vessel for
the purpose proposed. Upon Commander Tuckers as-
-suming the control of the future operations of the Ram

I at once made application to Dept Head Quarters
for service in the field.

The following is Genl Jordans reply.

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Head Quarters
Dept S.C. Geo + Fla
Charleston S.C Sept 3d 1863

Captain

You may report as soon as practicable
for duty to Lieut Col Harris who is in
immediate want of an energetic skilful
Engineer Officer

Very Respectfully
Yr Obt Svt
(signed) Thomas Jordan
Chief of Staff

To

Captn F. D. Lee
Engineer PA CS
Charleston SC

On the following day I reported to Morris Island as
the Engineer Officer at Baty Wagner and after the
evacuation of Morris Island was assigned to the
Charge of the Military Works in the City of Charleston

About a month previous to the evacuation of Morris
Island I addressed the following letter to Dept
Head Quarters

Charleston Oct 1st 1863

Captn A.N.T. Beauregard
A.D.C.

Captain

I venture once more to address through
you a communication to the Commanding General
on the subject of 'torpedos'

I am induced to do so by the very perfect success
of an experiment recently made in this harbor by which

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it was shown that a small propeller adapted for carrying the 'Spar torpedo' and of peculiar model could be made to obtain enormous speed.

The Commanding General may remember my exhibiting a drawing of a Cigar shaped boat some months since with which I proposed using the torpedo.

Surgeon St Julien Ravenel undertook its construction and was detached for that purpose. Before its completion however Dr. Ravenel was compelled by his more legitimate duties to transfer the prosecution of the work to Capt'n Theodore Stoney under whose energetic direction the boat was finished.

The speed that this boat has obtained far exceeds the expectations of every one. Some of her crew report to me a speed of twenty miles an hour with the tide.

From what I have myself observed I believe her speed exceeds that of any boat of her size afloat and is not less than fourteen miles per hour.

This little Steamer presents advantages over the now [sic] boats at first used, which must at once recommend it. These advantages may be thus stated- viz

1st Propelled by Steam power it requires fewer men to work it

2nd The determination of one man controls the working of the vessel, which on the now boats the faint heartedness of one is disastrous to the expedition

3rd The great speed it possesses enables it to perform its work with dispatch and to outstride the Enemy in case of an attack by barges

4th Its movement is nearly noiseless

5th It presents but little to view above the waterline My own experiments together with the several accidental experiments made by the Iron Clads in the harbor leaves no room to doubt either the efficiency of the

p. 61

torpedo to destroy the Enemy or its safety to the vessel using it. With these data to start from I am convinced that a fleet of these boats under cover of night and Officered by resolute men such as may easily be found in our service must prove more than a match for an equal number of iron clads or monitors.

I would therefore respectfully suggest that such a fleet be constructed at various points of the state or Department near such water courses as will allow of a draft of not less than three feet which will be sufficient for these boats to descend to the Coast at such points as may be determined.

The cost of these vessels including machinery + Boilers cannot even at the enormous price of labor and material exceed each (\$20,000) Twenty thousand Dollars. The Engines and boilers suited to the purpose may be found scattered all over the country.

But little skill is called for in the construction of the boats and in a few weeks from the time the work is commenced they may be ready for service.

Lt Glassell in command of the finished boat will attack the Enemy as soon as the nights become dark. He goes out with a single vessel in the midst of the Enemys enormous fleet. Against such unfair odds a failure on his part should not I conceive prove disastrous to the enterprise just proposed.

With the means at our disposal it is impossible for us to compete with the Enemy in size or strength of vessels and armament. This disparity may only be corrected by ingenious devices by which small means may accomplish great results.

I have the honor to be Captain

Very Respectfully Yr Obt Svt

(signed) Francis. D. Lee

Capt Engrs

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The above letter bore the following endorsement

Hd Qrs Dept So. Ca Ga +Fla
Charleston Oct 2d 1863

Approved and respectfully referred to the War Department for authority to have 3 of these Cigar torpedo boats built for use on the waters of So. Ca 3 for those of Geo and 3 for those of Florida.

My faith in the success of torpedo boats having great speed is unbounded and if we cannot have built such boats large enough to be shot proof we must be satisfied to have them sufficiently small and low in the water to be invisible to the Enemy at night

(signed)

G.T. Beauregard
Genl Comdg

On the night of the 5th of October 1863 Lt Glassell attacked the "Ironsides". The result of this expedition at once aroused every one to the importance of torpedo bearing steamers and the subscribers to the "Marine torpedo Steamer" formed themselves into a company to build and equip steamers for harbor + coasting operations.

The following is a letter from the President of the Company to Genl Beauregard.

Charleston Nov. 21st 1863

Genl. G. T. Beauregard

Commanding Dept S.C. Ga. & Fla

General

The undersigned ^in behalf of the^ directors of the "Southern Torpedo Company" has the honor to inform you that we have organized an association for the purpose of constructing

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and putting into active service a fleet of torpedo bearing vessels. We have now to our credit abroad not

less than forty thousand dollars which with the funds in hand here gives us a capital amply sufficient to construct from fifteen to twenty vessels of superior speed and efficiency.

We propose to construct from three to four steel clad torpedo bearing vessels of a class large enough for coast operations, besides a number of smaller vessels for service in the harbors of the States in your Department. Steps have been taken for immediately obtaining all the necessary material and machinery and with our funds abroad we will be enabled readily to obtain a full and constant supply of necessary articles that may not be purchased in this country. The Confidence we feel in the efficiency of the mode of attack proposed induces us to believe that our torpedo fleet will sweep the Enemy from our coast and open our ports to the commerce of the World.

The constant and devoted interest you have shown in every effort in this direction induces us to report to you our proceedings and to respectfully request your official aid in pressing the undertaking to rapid completion.

(signed) I have the honor to be General
Very respectfully Yr. Obt. Svt.
T. D. Wagner
Pres S Torpedo Co

On November 26th 1863 I received the following letter from Col D.B. Harris Chief Engr Department

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Office Chief Engineer
Charleston Novr. 26th 1863

Captain

I desire that you will make a detailed report of your mode of applying a torpedos to boats of the class of the "David" of the best manner of constructing and propelling such boats, with plans, specifications +c for the same- in short

furnish all the necessary information of the Engineer Bureau at Richmond, to which the Secretary of War has intrusted the construction of such boats for the use of the Government.

Yours Very Respectfully
(signed) D.B. Harris
Colonel + Chief Engineer

Captn F.D.Lee
Corps of Engineers

On receipt of this communication I immediately prepared the necessary drawings + specifications and forwarded copies of them (as afterwards directed) to various ports of the Confederacy.

On the completion of the drawings and specifications ordered I received the following order to proceed to Richmond to confer with the Engineer Bureau on the subject of the construction of a number of torpedo bearing steamers for the use of the Army

Head Quarters
Dept S.C. Geo + Fla
Charleston S.C Dec 7th 1863

Special Orders IV
No 264

Capt F.D. Lee of Engineers will

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proceed to Richmond Va for the purpose of conferring with the Chief of Engr Bureau. He will be absent fifteen (15) days and at the expiration of that time will return to his duties in this Department.

(signed) By Command of Genl Beauregard
Jno.M.Otey A.A. Genl

Col D.B. Harris
Chief Engr Dept

Colonel!

In obedience to the Order of the Commanding General instructing me to proceed to Richmond to confer with the War Dept in reference to the construction of torpedo steamers for harbor defence I left Charleston on Tuesday Decr 8th

By the failure of the train I was detained in Wilmington five hours which gave me an opportunity of visiting the Engr Bureau at that place and of more perfectly explaining all the details of my plans exhibited in the drawings previously sent by me to Genl Whiting.

Genl Whiting's absence from the City prevented my seeing him in person. Pursuing my journey I reached Richmond on Thursday evening Dec 10th and on the following morning reported to Lt Col Rives Acting Chief of Bureau of Engrs After discussing the plan Col Rives informed me that it was the purpose of the War Dept to construct a number of torpedo steamers for the most important points on our coasts and that it was proposed to order me to Wilmington to the charge of the construction of such vessels at that place. In reply I informed

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Col Rives of my connection with the "Southern Torpedo Company" and requested him not to remove me at this time from Charleston as it perhaps may embarrass the Company's operations already successfully commenced I further exhibited to him a communication from the Pres. of the Company to the Secy of War which fully explained the Organization and purposes of this Company. On the following day Lt Col Rives and myself visited the Secy of War. I presented to the Secretary the Communication above alluded to and stated the substance of my conversation with Colonel Rives. The Secretary coincided fully in my views and stated that it was his desire to assist in every way in his power the operations of the Company.

That the vessels built by the War Dept for the port

of Wilmington may be constructed under my direction at Charleston and that those at Mobile should engage such of my attention as my work at Charleston permitted. The Secy expressed the warmest interest and confidence in the device the success of which he conceived demonstrated by the attack against the New Ironsides. After leaving the Secretary I asked for my orders from Lt Col Rives. Upon his informing me that they would be transmitted to Charleston I left Richmond by the evening train and reached Charleston last night

I have the honor to be Colonel
Very Respectfully Yr Obt Svt
(signed) Francis D Lee
Capt Engrs

On my return to Charleston Genl Beauregard issued the following order

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Head Quarters
Dept S.C. Geo + Fla
Charleston S.C. Dec 18th 1863

Special Orders

No 277 VI Capt F.D. Lee Engr is relieved from duty as Engr in Charge of the City defences in order that his whole time may be devoted to the construction of Torpedo Boats

(signed) By Command of Gen Beauregard
Jno M. Otey A.A.Genl

The following communication was received by me
Dec. 20th 1863

Office Chief Engr Dept
Charleston Dec 20th 1863

Captain

In compliance with telegraphic instructions from Lt Col Rives Actg Chief of the Engineer Bureau Richmond, I hereby direct you to make prompt arrangements to construct Engines and procure timber for torpedo boats

Yrs very Respectfully
D.B. Harris
Col + Chf Engr Dept

Capt Francis D Lee
Corps Engineer
Charleston
S.C

Preparations were then immediately made to procure the material necessary for the construction of twenty cigar torpedo steamers (that number having been approved) The following order from the A + I Genls Office at Richmond places me in

p. 68
charge of this work.

Adjutant and Inspector Genls Office
Richmond Hany 28th 1864

(Extract)
Special Orders
No 23

X X X

XIII

Captain Francis D. Lee Corps of Engineers is assigned to the duty of Superintending the construction of Torpedo bearing Steam boats in accordance with the recent orders of the Secy of War under the direction and from the hands of the Engineer Bureau. He will take his station at Charleston S.C with permission to visit other ports of the Confederacy wherever his presence is required by the

nature of his duties

(signed) By Command of the Secretary of War
 Jno Withers
 Ass + Adjutant Genl
Captain Francis D Lee
 Thru Chf of Engr Bureau

Note (In conclusion I would state that the Navy Dept has ordered and commenced the Construction of Torpedo Steamers in every material respect after my device without referring the matter to me in any way whatsoever)

Francis D Lee
Captn Engr

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Appendix "G"[erased] "F"

Extract from a communication addressed July 1863 to the subscribers to the proposed Marine Torpedo Ram intended to ^have^ been constructed in Europe.

"The Charleston papers of the 26th of June announce that letters have been received by Flag of Truce from Port Royal, reporting the capture of the "Atlanta" and informing us that the Armour of that vessel proved altogether inadequate to resist the 15 inch shot of the Enemy. I am not aware that we have any reason to mistrust these letters. If they be true however, the all vessels built after the fashion of the "Atlanta" are expensive failures and the work on those in course of construction should be stopped or such modifications of their design made as to render them when completed fit for the service for which they are intended.

In the construction of the Atlanta and other vessels of like design impenetrability to the missels of the Enemy was the great object sought. Speed, Lightness of draft, Sea worthiness, comfort and Health

were all sacrificed to obtain this one desideratum- and here they have miserably failed. It has now been practically demonstrated that four inches of wrought iron backed by twenty inches of pine and Oak and laid at an angle of 30° will not resist the enormous momentum of a 15 inch Shot. Now a shield composed of such material and capable of accommodating an effective armament gives to any vessel that bears it a draft too great for our coast operations. Such a vessel must be unseaworthy for the reason that her centre of gravity is far above the water

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line. She must be slow because of her enormous displacement and the lack of leanness necessary to speed. She must be uncomfortable and unhealthy from the almost total absence of light and ventilation.

It appears then that in the design of such vessels nothing has been gained and everything lost. Nor can the blunder be rectified. Any increase in armor so as to obtain invulnerability must necessarily result in increasing to an alarming degree the objections above enumerated. If two inches more of plating be added to the present shields and spousings of any of our Gun Boats no officer of sober Judgement would attempt to unmoor her from the dock.

If then with the present form of our Gun Boats the strength of the sheathing is inadequate and any increase impracticable then it becomes evident that some radical change must be made in the design and construction of vessels of this sort to render them safe to ourselves and dangerous to the Enemy.

With all the evidence before us I believe that every Naval Officer in the port will coincide in the opinion of one of their number in reference to our iron clads when he declared that he would rather fight on them than in them. A weak parapet or bulwork of wood or iron or any other solid material is always worse than no parapet or bulwork, for behind it the garrison or crew have not only to contend with the missels of the Enemy

but also with the splinters and fragments of their own works. If then the shields of our Iron Clads are not and may not be made shot-proof then common sense dictates that they should be at once removed.”

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Appendix ‘G’

Confederate States of America
Navy Department
Richmond April 24th 1863

Commander

John R Tucker CSN
Comdg afloat- Charleston So Ca

Sir

Your letter of the 17th instant in relation to the Army Torpedo Boat and the enclosed copy of Capt Lee’s letter in which you ‘urge upon this Department the necessity of assisting the Army in procuring the iron required for the plating’ has been received.

The Department turned over to the Army not only the boat, but the Engine built for her and would now supply the iron if it had it.

We can supply the iron, least for one of the boats under construction at Charleston and it has been sent there. As the defence of Charleston is the immediate object in view, it is important to consider whether this will be aided most by using the iron for the Gun boat or the torpedo vessel. With all the information before me I think its applicable to the former most advisable. I am bound to say however that as to some of the important traits of the torpedo vessel her speed for example I know nothing, and

your letter gives me neither information nor opinion upon it

Now what I know of her model displacement, motive power, diameter of screw, and the weight of iron proposed for her shield, I measure

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her speed cannot exceed five miles per hour. The opinion of your reliable Engineer, however will afford you more definite information upon the subject.

We are buying all the old rail and scrap iron to be found, but still want plates for several of our hulls. If the Army can furnish old iron we can roll it into plates for the vessel as Atlanta.

If upon careful consideration and in view of the fact that one cannot supply its plates you shall think it best for the defence of Charleston to divert the iron from the Gun boat for the use of the torpedo vessel you will advise me at once by telegram.

I am respectfully

Your obt svt

(signed)

SR Mallory

Secretary of the Navy

The above communication was "Respectfully forwarded to Genl G T Beauregard" by the Hon Wm Porcher Miles.

Genl Beauregard placed upon it the following Endorsement

Head Quarters

Dept So Ca Ga + Fla

Charleston S.C May 1st 1863

Respectfully referred to Capt F D Lee for his remarks

(signed)

G T Beauregard
Genl Comg

(see Appendix 'H')

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Appendix 'H'

Charleston May 1st 1863

Comg Genl Thomas Jordan

Chief of Staff

General!

I am just in receipt of the accompanying copy of a communication from the Hon Sec of the Navy to Commander John R Tucker C.S. Naval Forces afloat at Charleston

The Hon Sec of the Navy says that he "turned over to the Army not only the boat, but the Engine built for her"

Naval Constructor Porter who was sent to Charleston to fulfill any requirements for the construction of the Torpedo Ram, instructed me to make use of the unfinished frame of a Gun boat commenced over one year before by Mr Jones (Ship builder) and afterwards abandoned. Constructor Porter at the same time stated that two Engines with one boiler suitable to the boat would be delivered to me.

To render the frames of the boat of any use whatsoever it was necessary to alter and strengthen it at a cost nearly equivalent to building a new one. This was paid for by funds appropriated by the state of So Ca

In place of sending two Engines and a boiler the Navy Department delivered to a special agent sent by me to Richmond Only one Engine and no boiler. The Engine is now ready for redelivery to the Navy Dept whenever required, it having proved only an

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Expense and Encumbrance. An Engine of more than double the power of the one sent by the Navy Dept was purchased by me in Savannah at the Expense of the State and is now in the vessel

The deductions arrived at by the Hon Secretary of the Navy as to the speed of the boat are therefore incorrect, having been drawn from incorrect premises.

I have the honor to be Genl
Very Rspy Yr Obt Svt
Francis D Lee
Capt Engrs

NB_ With the exception of a few tons of coal
I have received nothing from the Navy
Dept for the Construction of the Torpedo Ram

APPENDIX C
CATALOG OF FUSIFORM VESSELS FROM CHARLESTON

In cataloging the vessels, every attempt has been made to assert differences between distinct and non-distinct craft. When defining characteristics can be clearly or likely shown, they are noted. Each vessel is listed with pertinent documentary material, along with images, where such are available. If a vessel can be assigned an identity, within reason, it is noted, even if the identity may be one of several possible choices.

The first five entries (Nos. 1-5) were described by Union Chief Engineer B. E. Chassaing after the evacuation of Charleston.⁶⁵³ These descriptions provide the single greatest source of information and details of the condition of vessels abandoned by the Confederates. Chassaing's descriptions also allow for identification of *David*.

Entry Nos. 6-8 were scuttled prior to evacuation of the city and were therefore not described by Chassaing. Why these three were scuttled while the others were not is unknown but may be due to the newly completed or nearly completed status of the vessels. Although several references state that the three scuttled vessels had been in service prior to the evacuation, it is clear from other references that they had not yet been in service.

Entries Nos. 9 and 10 are also missing from those described by Chassaing. These are known from the letters of David C. Ebaugh and were under construction at Stony Plantation when Potter's troops marched through South Carolina. US Surgeon Henry Orlando Marcy recorded their presence in his diary, along with rudimentary sketches, and notes before burning them in March 1865. These ten entries contain all the known distinct David-class vessels. However, there are four more entries.

Entry No. 11 is a vessel known only from a photograph by famed Charleston photographer George S. Cook. Entry No. 12 was taken from Charleston's Atlantic Wharf as a prize but lost at sea. As it is possibly, but not likely, the same as entry No. 8.

Entry Nos. 13 and 14 are not David-class vessels but are included here to avoid further confusion for future researchers or interested parties. These constitute a distinct form of fusiform vessel; they were long, about three times longer than David-class vessels. These were cigar-shaped steamers designed for blockade running, as noted by David Ebaugh, the builder of one of them, and

⁶⁵³ Report of Chief Engineer Chassaing, ORN Vol. 16 (1903), 378-9.

separately by Rear Admiral Dahlgren after the evacuation of Charleston. Vessel No. 13 was never finished, while vessel No. 14 appears to have had a lucrative career as a blockade runner before being taken into service by the Union Navy for a brief tenure. Both were taken North as spoils of war. These vessels are often assumed to simply have been enlarged David-class torpedo boats. They were not. There is no evidence that torpedoes were ever attached to these vessels or that they were used in offensive operations of any sort.

No. 1. Chassaing's No. 1

No.1. Situated at the foot of Northeastern Railroad wharf. Hull in perfect condition; not entirely decked over on top, and no steering apparatus or rudder; she lies dry at low tide and floats at high water. The boiler is complete in the boat; most parts of the engine are on hand and in good condition; she needs a smokestack and line shafting.⁶⁵⁴

Little more is known about this vessel, but it does appear to be one of two torpedo boats sold at auction in January 1866 by Gray and McDaniel Company, known through newspaper posts in the *Charleston Daily News*. "2 TORPEDO BOATS, one with Boiler and part of Engine, at Northeastern Railroad Wharf."⁶⁵⁵

Identity- unknown

Provenience- Charleston, SC

Last known location- Northeastern Railroad Wharf, Charleston, SC

Fate- Sold at public auction 6 January 1866, no further information has been found.

NO VESSEL IMAGE

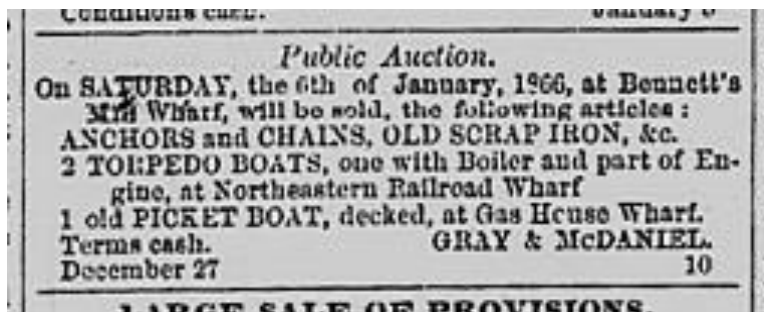


IMAGE- Auction announcement of 1 January 1866 in the *Charleston Daily News*.

⁶⁵⁴ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

⁶⁵⁵ *The Charleston Daily News* (Charleston, South Carolina) 1 January 1866.

No. 2. Chassaing's No. 2

No.2. Situated at Northeastern Railroad wharf. Length outside, 50 feet; breadth of beam, 5 ½ feet (same as above). Hull in perfect condition and nearly complete, with exception of hatches. No machinery in this boat, but we have an engine without boiler which will answer the purpose.⁶⁵⁶

Little more is known about this vessel, but it does appear to be one of two torpedo boats sold at auction in January 1866 by Gray and McDaniel Company, known through newspaper posts in the *Charleston Daily News*. "2 TORPEDO BOATS, one with Boiler and part of Engine, at Northeastern Railroad Wharf."⁶⁵⁷

Identity- This vessel is very possibly the vessel photographed by George S. Cook in 1864-65 (see No.11 below). It was certainly one of two torpedo boats sold at public auction 6 Jan. 1866

Provenience- Charleston, SC

Last known location- Northeastern Railroad Wharf, Charleston, SC

Fate- Sold at public auction 6 January 1866, no further information has been found.

NO VESSEL IMAGE

⁶⁵⁶ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

⁶⁵⁷ *The Charleston Daily News* (Charleston, South Carolina) 1 January 1866.

No. 3. Chassaing's No. 3

As described by Engineer Chassaing;

No. 3. Situated near Chisolm's Mills. Fifty feet long; 5 ½ feet beam. Is sunk, but dry at low tide. Hull very imperfect, much worm-eaten, and unsound; has a large hole cut in port side and on top, aft. Is plated with one-fourth inch iron, and has a portion of torpedo apparatus attached. Boiler in bad condition; parts of engine removed and stack gone. Engine greatly corroded and worn; propeller attached; 3 feet 6 inches diameter, 20 inches face of blades, and about 15 feet pitch.⁶⁵⁸

Identity- unknown

Provenience- Charleston, SC

Last known location- Chisolm's Causeway- Tradd Street, Charleston, SC

Fate- abandoned

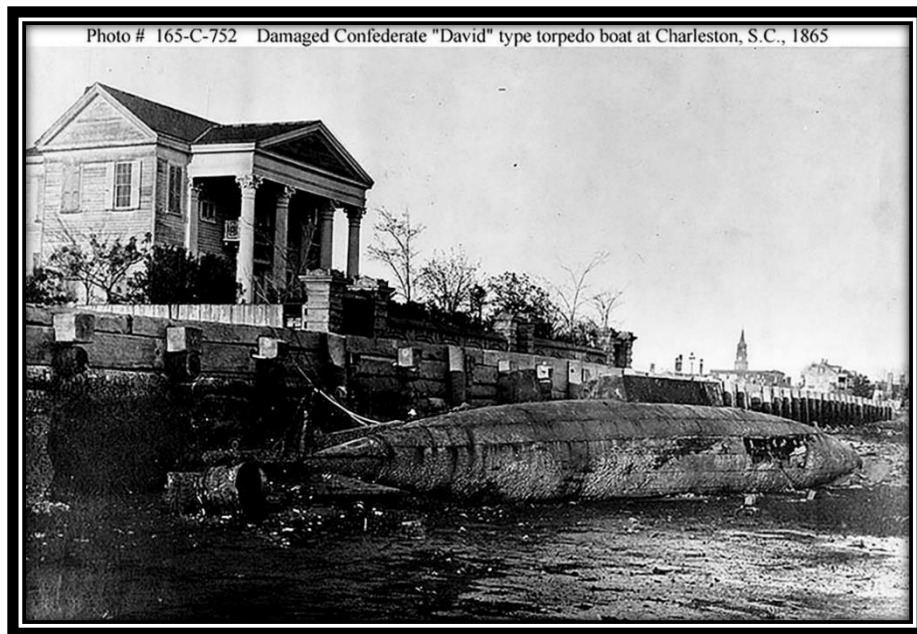


IMAGE- shown at 180 Tradd Street (Chisolm's Causeway, Charleston), post-war, 1865.

⁶⁵⁸ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

No. 4. Chassaing's No. 4 (*David*)

As described by Engineer Chassaing;

No. 4. Situated near Chisolm's Mills. Fifty feet long; 5 ½ feet beam. Is sunk, but dry at low tide. Hull much worm-eaten and cut up on top in vicinity of engine and boiler; a part of torpedo apparatus attached. Engine pulled to pieces and much corroded. One fan of propeller gone; smokestack in place, but in bad condition. Boilers in bad condition and many pieces of machinery missing.⁶⁵⁹

Identity- unknown

Provenience- Charleston, SC

Last known location- Chisolm's Causeway- Tradd Street, Charleston, SC

Fate- abandoned



IMAGE- *David* at 200 Tradd Street (Chisolm's Causeway, Charleston).

⁶⁵⁹ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.



IMAGE- Painting by Conrad Wise Chapman, 28 October 1863.

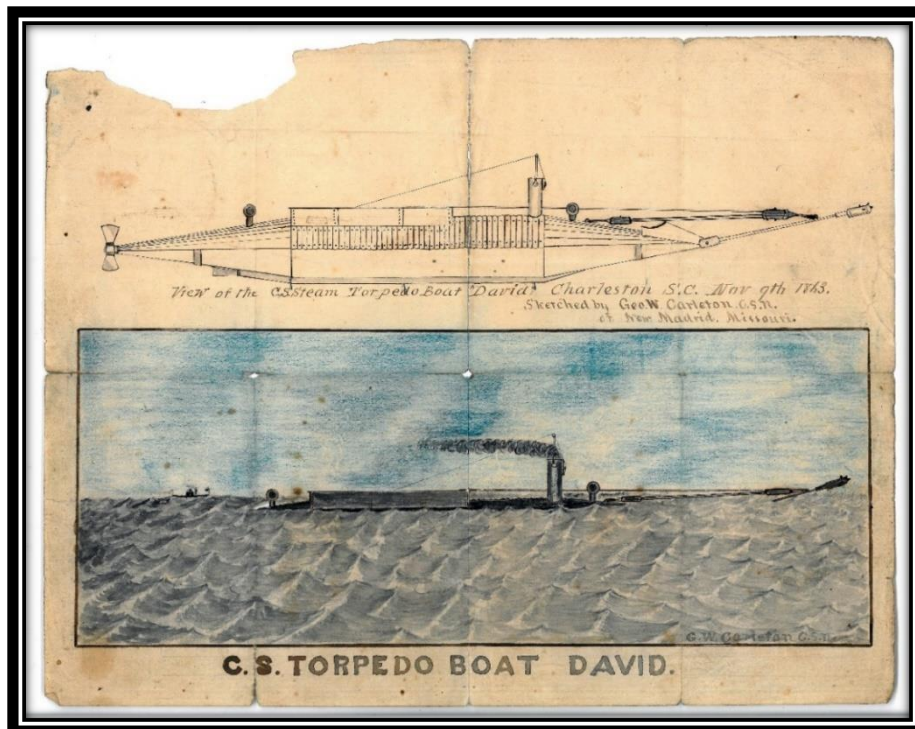


IMAGE- Sketch of *David* by George W. Carleton 9 November 1863.

No. 5. Chassaing's No. 5

“No. 5. Situated near Chisolm's Mills. Length, 50 feet; 6 feet beam. Hull complete; lower part much worm-eaten and unsound; is cased with one-fourth inch iron. Engine and boiler passably good and nearly complete. Smokestack gone; propeller attached.”⁶⁶⁰

Identity- Likely the vessel taken in tow by USS *Mingoe* (see entry 12 below).

Provenience- Charleston, SC

Last known location- Tradd Street, Charleston, SC

Fate- If this is the same vessel as entry No. 12, then lost at sea. If not, the fate is unknown.

NO VESSEL IMAGE

⁶⁶⁰ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

Three Scuttled Vessels (Nos. 6-8)

No. 6. *Midge*

This vessel is certainly one of three torpedo boats scuttled by Confederates before evacuation of the city, later raised by Union soldiers, not described by Chassaing as they were submerged at the time. Two of these were repaired enough to steam around the harbor.

The three torpedo boats in service had been sunk in the Cooper River, off the city wharves. Two have been raised and one put in good order, so as to steam about the harbor. In length about 64 feet, and 5 ½ feet in diameter, capable of steaming about 5 knots. There were six others [described by Chassaing and listed above] that were under repairs, or being completed, of which two are now ready for service.⁶⁶¹

The following entries come from the Logbook of USS *Flambean*:

May 18, 1865- Thursday

At 1 PM, Capt., Mr. Harris, Griffith, & Peterson with 20 men left the ship for the wharf to preparatory to take in the Torpedo Boat. All hands employed getting tackle preparatory to taking in Torpedo Boat.

At 3:20 PM The Launch with all officers & men returned onboard, hoisted all boats.

May 19 1865- Friday

At 5 AM Mr. Garner with a working party went to the N.E.R.R. Wharf to get Torpedo Boat ready to take on board.

At 7:30 was taken in tow by the tug Jonquil & went to the N.E.R.R. Wharf. Mr. Griffith & men returned cats off the tug & made fast to the wharf.

At 3:30 PM got the Boat on the Wharf

At 8:00 PM Torpedo Boat on deck & secured temporarily

⁶⁶¹ Rear Admiral John Dahlgren to Secretary Welles, 1 June 1865, ORN Vol. 16 (1903) 380-9.

May 20 1865- Saturday

The Torpedo Boat on deck, sent down all tackles.⁶⁶²

According to the logbook, *Flambeau*, under command of Edward Cavendy, departed Charleston on 21 May. No other mention is made of the torpedo boat in the ship's log, but other sources provide clues of the boat's use and ultimate fate: "*Flambeau*, screw, 6, Acting Volunteer Lieutenant Edward Cavendy, sailed from Charleston, May 22 [1865], for New York. She carries one of the Rebel cigar-shaped torpedo boats, the first ever seen in any harbor of the North."⁶⁶³ "In case that the Torpedo Boat ("Midge") sent by the "*Flambeau*" should have reached Newport,— then you will leave all the articles, except the Torpedo Boat— the latter you will deliver to the Navy Yard [New York] and report to the Navy Department for orders."⁶⁶⁴ This is the earliest known use of the name *Midge*.

Cavendy arrived with *Flambeau* at the Brooklyn Navy Yard on 31 May 1865 and the torpedo boat was offloaded and displayed as a prize of war.⁶⁶⁵ Sometime after its arrival in New York, the vessel was sketched by *Harpers' New Monthly* contributor Alfred Waud. The sketch is held by the Library of Congress and is dated 1865 (see Figure 24). It is the earliest known representation of the boat. A newspaper post from 16 June 1865 also names the vessel, "The rebel torpedo boat Midge, now lying at the Brooklyn Navy Yard, is described as 'a sight for all the inquiring land lubbers'." She resembles an immense cigar, thirty feet long and six feet thick, with the exception that both extremities are sharpened to a point."⁶⁶⁶ Another newspaper post, from 1867, reports the length of the vessel to be "about 40 feet long."⁶⁶⁷

⁶⁶² Logbook of USS *Flambeau*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Flambeau*, E118.

⁶⁶³ *Army and Navy Journal* (New York) Vol. 2, New York, 3 June 1865, 653.

⁶⁶⁴ Letter from Rear Admiral Dahlgren to S. B. Luce, 27 May 1865, Library of Congress, Papers of Stephen B. Luce, Reel 4.

⁶⁶⁵ *Army and Navy Journal* (New York) Vol. 2 No. 42, 10 June 1865, 660. The arrival date is confirmed in the logbook of *Flambeau* (Logbook of USS *Flambeau*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Flambeau*, E118.).

⁶⁶⁶ "In General" *Boston Daily Advertiser* (Boston, Massachusetts), 16 June 1865.

⁶⁶⁷ "Noticeable Among the Curiosities of the Brooklyn Navy Yard" *Lowell Daily Citizen and News* (Lowell, Massachusetts), 23 September 1867.

Occasionally the engines were run, as noted in 1867, “Steam was gotten up the other day on the Rebel torpedo boat, which in the Park, near the Lyceum [of Brooklyn Navy Yard], but the attempts to make the propeller revolve were unsuccessful.”⁶⁶⁸

An 1870 article published in *Harper’s New Monthly* names the vessel at the Brooklyn Navy Yard as *CSS Midge*, and included a sketch.⁶⁶⁹ Six years later, the boat was extensively photographed. Captions on several of the images identify the location as the Boxer Monument at the Brooklyn Navy Yard.

The only reference to this boat by a Confederate is a single sketch in a recently published manuscript on torpedoes written by Confederate Brigadier General Gabriel J. Rains.⁶⁷⁰ Rains had served two assignments in Charleston and may have either encountered or heard of the vessel there. Written across the hull of the boat in the sketch is the word ‘David’ and in the bottom-right corner is the word ‘Midge.’ Since Rains’s sketch is undated, the artist is unknown, and Rains was still working on his manuscript as late as 1874, the inclusion of the name *Midge* for the vessel cannot be confirmed or denied as having Confederate origins. In May 1877 *Midge* was reportedly sold for scrap.

Identity- *Midge* (name likely assigned by Union officers), one of three scuttled torpedo boats

Provenience- Charleston, SC

Last known location- Brooklyn Navy Yard, NY. Sold for scrap, May 1877.

⁶⁶⁸ *Army and Navy Journal* (New York) Vol. 5 No. 18, 21 December 1867, 280.

⁶⁶⁹ “The Brooklyn Navy Yard” *Harper’s New Monthly* 1870 Vol. 42 No. 247, 9, 12. Konstam (2004), without citation and mistakenly, states that *Midge* was constructed at Stony Landing in 1864, where D. C. Ebaugh built *David* and several other vessels. No evidence has been found to support Konstam’s claim. He further records the vessel as having the awkward dimensions of 30 ft length with a 12 ft diameter. Konstam includes a photograph of *Midge* showing a vessel that cannot be of the aforementioned dimensions.

⁶⁷⁰ Schiller 2011, 85.

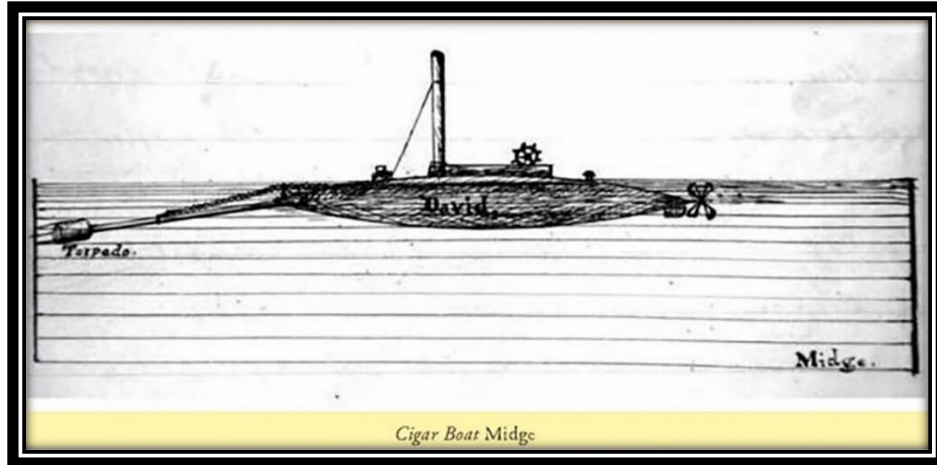


IMAGE- Sketch from *Torpedoe Book* by Gabriel J. Rains.

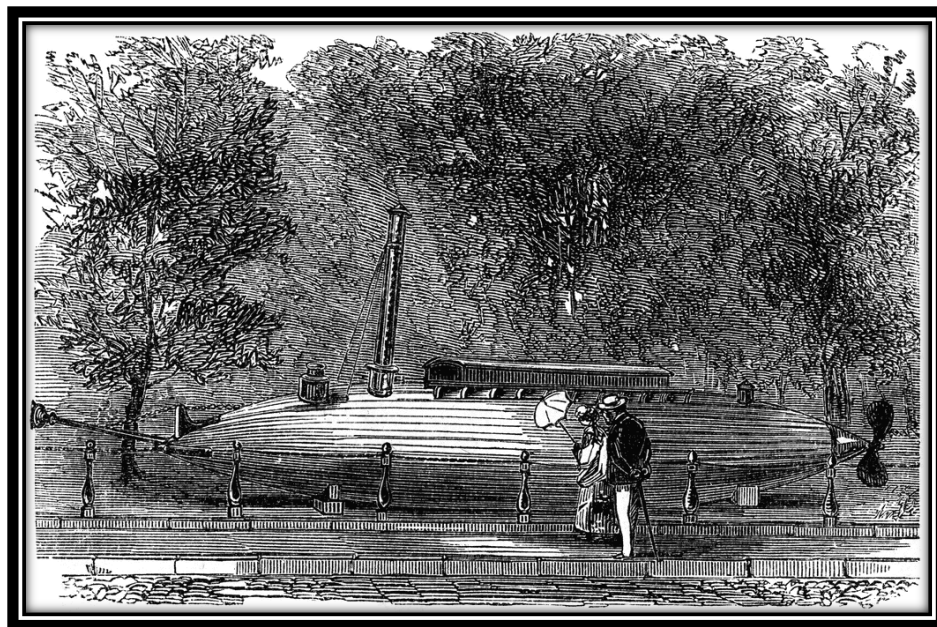


IMAGE- Sketch from *Harper's New Monthly* 1870 Vol. 42 No.247, 9.



IMAGE- *Midge* at the Brooklyn Navy Yard display. Reprinted with permission of Cowan's Auction House.



IMAGE *Midge* at the Brooklyn Navy Yard display. Reprinted with permission of the Library of Congress, Washington, D. C.



IMAGE- *Midge* at the Brooklyn Navy Yard display. Reprinted with permission of Library of Congress, Washington, D. C.

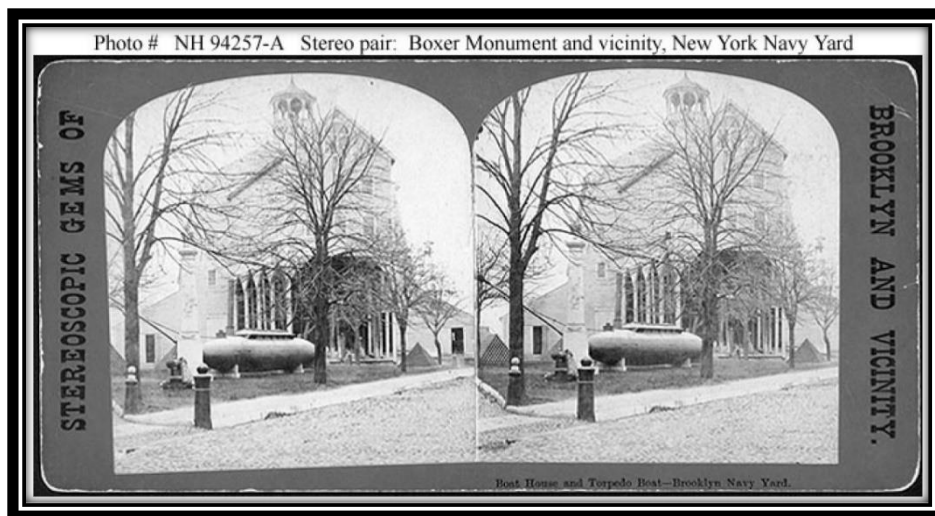


IMAGE- *Midge* at the Brooklyn Navy Yard display. Reprinted with permission of the Naval History and Heritage Command, Washington, D. C.



IMAGE- *Midge* at the Brooklyn Navy Yard display. Naval History and Heritage Command, Washington, D. C.

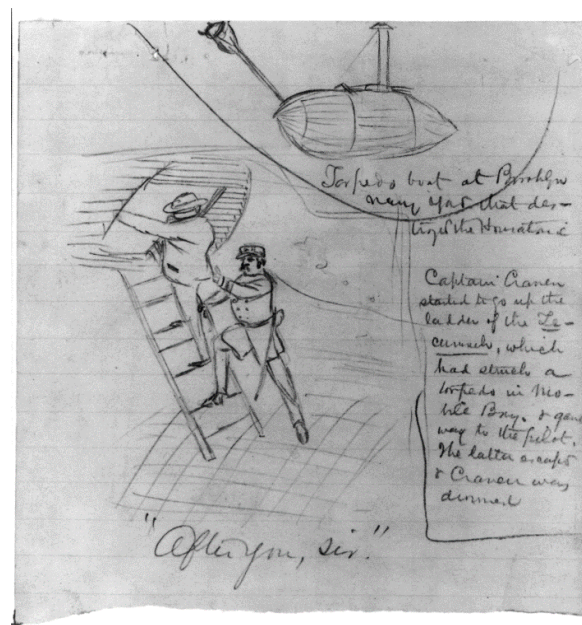


IMAGE- Sketch by Alfred Waud made sometime after the boats arrival in Brooklyn as noted in the caption. Library of Congress, Washington, D. C., Morgan Collection of Civil War Drawings, DRWG/US- Waud no.1100.

No. 7. *Knat*

This vessel is known only from a single letter written by Union Rear Admiral John Dahlgren and a few newspapers reports, all of which post-date the evacuation of Charleston by the Rebels. There are no references to a torpedo boat called *Knat* in official records. Three torpedo boats were scuttled by Confederates before evacuation of the city. *Knat*, along with sister vessel *Midge* (catalog entry No.6), were two of the three scuttled torpedo boats. The chronology was traced backwards from newspaper reports to the ship's log of the Union transport vessel to entries in the ORN:

The three torpedo boats in service had been sunk in the Cooper River, off the city wharves. Two have been raised and one put in good order, so as to steam about the harbor. In length about 64 feet, and 5 ½ feet in diameter, capable of steaming about 5 knots. There were six others [described by Chassaing and listed above] that were under repairs, or being completed, of which two are now ready for service.⁶⁷¹

The following entries were found in the Logbook of USS *Pontiac*:

May 25 1865-

From 4 to 8

At 4:30 16 men left the ship in charge of Boatswain Hardy of the 'Philadelphia' to aid in raising a Torpedo boat intended for Conveyance North by this ship.

At 7 the 16 men with B. M. Mayo returned to this ship from work above

May 26 1865-

From 8 to Meridian

At 9 sent 15 men ashore to assist in raising a Torpedo Boat.

At 12:30 got underway and steamed in the wharf of the old Rebel Navy yard at the mouth of Town Creek⁶⁷² and Cooper River and secured ship to Pier head.

From 4 to 6- crew employed parbuckling torpedo boat on the wharf with a view to getting it on board, estimated weight of Torpedo boat 20 tons

May 27 1865-

From 4 to 8

Crew engaged in raising Torpedo boat. Sent to 'Pawnee' and received from her a gang of men to assist with work on Torpedo boat.

⁶⁷¹ Rear Admiral Dahlgren to Secretary Welles, 1 June 1865, ORN Vol. 16 (1903) 387.

⁶⁷² The Confederate navy yard at Town Creek is at or very close to the Northeastern Railroad (N.E.R.R.) Wharf where *Midge* was loaded onto *Flambeau*.

From 8 to Meridian
Crew engaged in getting Torpedo boat on board
From Meridian to 4
At 3:30 got Torpedo boat on board and secured it on starboard side of spar deck
between shaft and forward pivot port.
At 5 rec permission per signal and steamed out from the dock

May 28 1865
12:18 out to sea

Note that *Knat* was loaded on the deck of *Pontiac* as *Midge* had been on *Flambeau*. *Pontiac* was directed to take the torpedo boat to Newport, R.I. for inspection, then to proceed to New York. No further entries in *Pontiac*'s logbook refer to the torpedo boat.

“You will proceed with the *Pontiac* under your command to New York, and report by letter to the Department, also to Commodore Charles H. Bell, Commandant of the Brooklyn Navy Yard. You will first touch at Newport, and deliver to the Superintendent of the Naval School,—the Rebel Torpedo Boat (“*Knat*,”) with its Torpedo, and the other articles from the Submarine defences [sic] of this place viz: — One Barrel Torpedo and fuze [sic]— One frame Torpedo, — and one Rocket.”⁶⁷³

The following reports, although erroneous in certain details, confirm the transport of the torpedo to a Northern port: “The *Pontiac*, Lieu. Commanding S. K. Luce [Stephen B. Luce], left this port [Charleston] yesterday for New York with a rebel torpedo boat in tow.”⁶⁷⁴ “*Pontiac*, paddle-wheel, 16, Lieutenant-Commander S. B. Luce left Charleston harbor May 31, for New York, with a Rebel torpedo boat in tow.”⁶⁷⁵ In actuality, Luce left Charleston on 28 May and arrived in Newport on 1 June. After five days he arrived at Long Island Sound and at 9:45 that morning “came to anchor off Brooklyn Navy Yard.”⁶⁷⁶ So, it is unclear if the torpedo boat was left at the Naval

⁶⁷³ Letter from Rear Admiral Dahlgren to S. B. Luce, 27 May 1865, Library of Congress, Papers of Stephen B. Luce, Reel 4.

⁶⁷⁴ *Daily Ohio Statesman* (Columbus, Ohio), 05 June 1865; *Daily Intelligencer* (Wheeling, Virginia), 5 June 1865.

⁶⁷⁵ *Army and Navy Journal* (New York) Vol. 2 No. 42, 10 June 1865, 660.

⁶⁷⁶ Logbook of the USS *Pontiac*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Pontiac*, E118.

Academy in Rhode Island or if was taken on to the Brooklyn Navy Yard. As reported in *Harper's New Monthly* in 1870, "Several torpedo-boats, among others the *Midge*, captured in Charleston Harbor, are scattered about the yard, and are objects of great interest."⁶⁷⁷ Alternatively, and more likely, the vessel was transferred to Annapolis in the summer of 1865, when the Naval Academy was transferred from its temporary location in Newport, Rhode Island where it had been moved at the onset of the ACW. A photograph, taken at the foot of Old Fort Severn, shows a "Confederate 'David' type torpedo boat at Annapolis, Md., in the late 1860s" and would support this hypothesis.

The coaming around the hatch/cockpit is remarkably like that of *Midge*, suggesting that the vessel may be a sister boat to *Midge* as is also suggested by the names, yet the conical bow section, smokestack, and other details are different, demarking a distinct vessel. A newspaper post from 1887 demonstrates that the torpedo boat was still extant, reporting, "On the grounds of the United States Naval Academy at Annapolis, a superannuated Confederate torpedo boat is an object of much interest to visitors, for, although it will stand no comparison with modern boats of the kind, it was during the rebellion one of the most formidable craft of its type."⁶⁷⁸ Presumably, the vessel was still on the grounds at the time of the newspaper post in 1887, but the ultimate fate of the vessel is unknown.

Identity- *Knat* (name likely assigned by Union officers), one of three torpedo boats scuttled by Confederate forces and later raised by Union sailors

Provenience- Charleston, SC

Location- US Naval Academy, Newport, RI/Annapolis Navy Yard, Annapolis, MD

⁶⁷⁷ "The Brooklyn Navy Yard" *Harper's New Monthly* 1870 Vol. 42 No. 247, 12.

⁶⁷⁸ "A Relic of the Confederacy" *Milwaukee Daily Journal* (Milwaukee, Wisconsin), 2 July 1887.

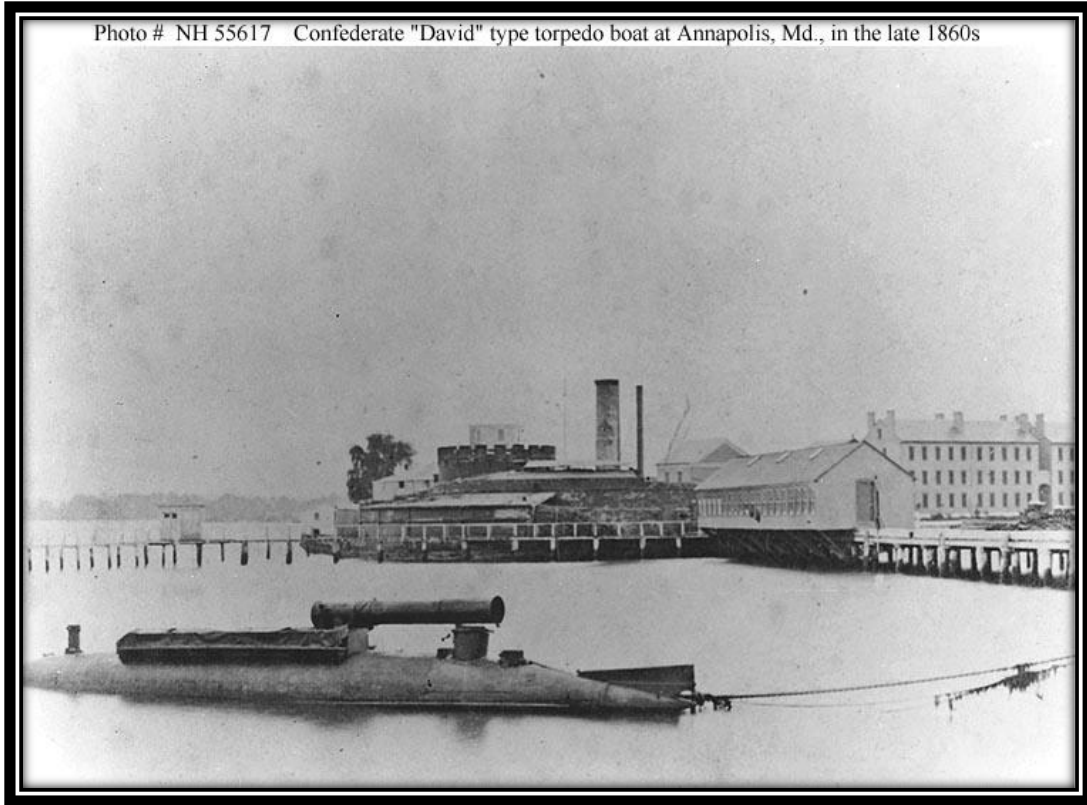


IMAGE- Annapolis (MD) Navy Yard at the foot of Old Fort Severn, post-war, late 1860s. Naval History and Heritage Command, Washington, D. C.

A Relic of the Confederacy.

On the grounds of the United States Naval academy at Annapolis, a superannuated Confederate torpedo boat is an object of much interest to visitors, for, although it will stand no comparison with modern boats of the kind, it was during the rebellion one of the most formidable craft of its type. It will be remembered that more than a score of northern



OLD CONFEDERATE TORPEDO BOAT.

vessels were destroyed by the southern torpedo service. The methods of the Confederate government were thorough in securing information for use in this service, and through the torpedo bureau at Richmond, Europe was scoured for material and ideas

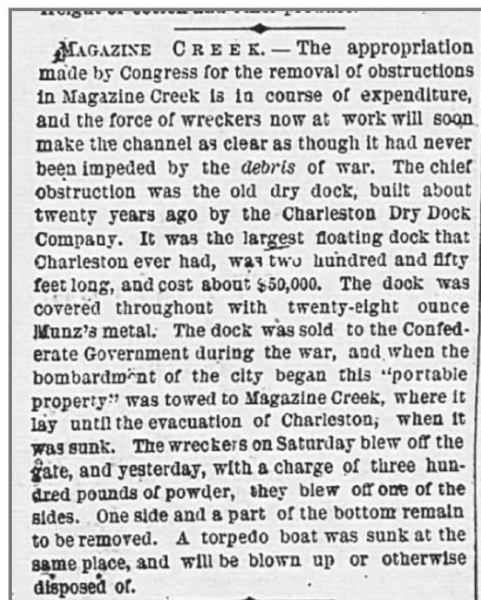
IMAGE- Newspaper post from the *Milwaukee Daily Journal*, 2 July 1887.

No. 8. Third scuttled vessel

Known only from a passing reference to three scuttled torpedo boats, two of which as accounted for in entries No. 6 and 7.

The three torpedo boats in service had been sunk in the Cooper River, off the city wharves. Two have been raised and one put in good order, so as to steam about the harbor. In length about 64 feet, and 5 ½ feet in diameter, capable of steaming about 5 knots. There were six others [described by Chassaing and listed above] that were under repairs, or being completed, of which two are now ready for service.⁶⁷⁹

The third scuttled boat may have been left as an obstruction near the entrance to Town Creek, very close to the Northeastern Railroad (N.E.R.R.) shop, but several hundred yards/meters north of the city wharves. Newspaper reports from late 1870 suggest the vessel was destroyed.



MAGAZINE CREEK. — The appropriation made by Congress for the removal of obstructions in Magazine Creek is in course of expenditure, and the force of wreckers now at work will soon make the channel as clear as though it had never been impeded by the debris of war. The chief obstruction was the old dry dock, built about twenty years ago by the Charleston Dry Dock Company. It was the largest floating dock that Charleston ever had, was two hundred and fifty feet long, and cost about \$50,000. The dock was covered throughout with twenty-eight ounce Munz's metal. The dock was sold to the Confederate Government during the war, and when the bombardment of the city began this "portable property" was towed to Magazine Creek, where it lay until the evacuation of Charleston, when it was sunk. The wreckers on Saturday blew off the gate, and yesterday, with a charge of three hundred pounds of powder, they blew off one of the sides. One side and a part of the bottom remain to be removed. A torpedo boat was sunk at the same place, and will be blown up or otherwise disposed of.

Image- *Charleston Daily News* 16 November 1870.

⁶⁷⁹ Rear Admiral Dahlgren to Secretary Welles, 1 June 1865, ORN Vol. 16 (1903) 387.

THE OBSTRUCTIONS REMOVED.—The work of removing the obstructions in Old Town or Shipyard Creek, near the Etiwan Phosphate Works, which has been steadily progressing for the past few weeks, has at last been completed, and the bottom of the creek free from the remains of gunboats, docks and torpedo boats. The work has been accepted by the United States engineer after a thorough examination, and the contractor, Mr. John D. Griffin, may be congratulated on the successful termination of his enterprise. The removal of the obstructions was an undertaking of some moment, and nothing but the most persistent energy and hard work could have accomplished it in so short a time.

Image- *Charleston Daily News* 20 December 1870.

Identity- unknown

Provenience- Charleston, S.C.

Location- Navy Shipyard area near N.E.R.R. shop. Likely destroyed 1870.

Nos. 9 and 10 Stony Landing vessels (2)

David Ebaugh, creator of the original *David*, was building two other torpedo boats at Stony Landing Plantation at the time of evacuation of Charleston.

I was employed by the Torpedo Co to build two more boats of about same dimensions of the *David*, also a *Ram*, the *Ram* was to be 100 feet long 8 feet diameter, twenty five feet of her bow was to be live oak, solid caped with heavy Iron, the Engines and boiler was brought from Scotland, run the blockade, these were being built at Stony landing when Charleston was evacuated and burnt by Gen. Potter's troops or bummers.⁶⁸⁰

These vessels were discovered and consequently destroyed by members of the 39th United States Colored Troops, under the direction of Dr. Henry Orlando Marcy, on their march through South Carolina. David Ebaugh was arrested, but immediately paroled.

On the Stono River⁶⁸¹ a mile away was a small navy yard where torpedo boats were built, a nitre manufactory &c [sic] all under the care of one Mr. D.C. Ebaugh [sic] a mechanic and inventor of note formerly from Baltimore –who lived four miles in the opposite direction. It was deemed desirable to burn the yard and capture the Superintendent.⁶⁸²

Marcy followed up the next day, reporting, “We returned to Stono [sic] landing and completed the Col's. work of last night Found he had not burned any thing [sic] belonging to the

⁶⁸⁰ Ebaugh 1953, 34-5. No other reference to Ebaugh's 100-ft *Ram* is known. However, the burning of vessels at Stony Landing is confirmed in an entry of March 4 1865, Marcy 1865.

⁶⁸¹ Cooper River. Marcy confused Stony Landing Plantation, with the Stono River and repeated a similar error in the following entry referring to Stony Landing as Stono Landing. Elsewhere in his diary, Marcy refers to Stoney Plantation, a distinct plantation near Goose Creek owned by the Stoney family (note different family name spelling-Stony versus Stoney).

⁶⁸² 3 March 1865, Marcy 1865.

Navy yard and only one of the 3 nitre sheds. We completed the work".⁶⁸³ Dr. Marcy went on the describe the vessels;

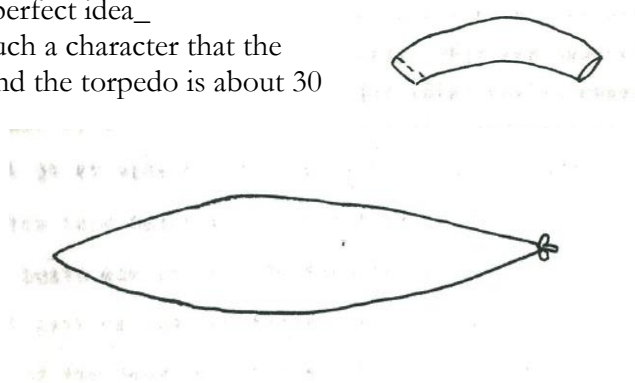
The torpedo boats are of simple manufacture yet very strong. The ribs are of pine or oak about five inches square and bent cut to suit the size of the boat designed- the following diagram may rudely represent it

These are pinned together and the whole boat is (pinned) made in this manner giving the sides a uniform thickness of about 5 inches- then over all, put on a longitudinal manner is a layer of plank which are fastened in the same way as the sides of a ship are usually made- Completed the torpedo boat varies in size from 25 to 40 or 50 feet in length and from 4 to 6 feet in diameter at the largest place-

The diagram below will give an imperfect idea_

The outrigging arrangement is of such a character that the torpedo can be raised or lowered and the torpedo is about 30 ft in front of the boat. It is

lowered in the water until only a few inches are above water and will be hardly noticeable. The torpedo boat David which struck the Ironsides was made here by Ebough [sic]. The motive power is a small engine.⁶⁸⁴



Identity- no known names- vessels were unfinished

Provenience- Stony Plantation, Moncks Corner, SC- 30 miles north of Charleston

Last known location- Burned at Stony Landing Plantation Moncks Corner, SC

NO IMAGES AVAILABLE

⁶⁸³ 4 March 1865, Marcy 1865. Even though Marcy refers to the 'torpedo boats' in the plural form, he only details one boat, leaving some question as to the number of vessels on the property at the time. There is no mention of any other vessels on the property.

⁶⁸⁴ March 3 and 4 1865, Marcy 1865.

PROVISIONAL VESSELS

No. 11. George Cook image vessel

This vessel is known only from a photograph made by George Cook, held by the Valentine Museum in Richmond, made at an unspecified location in Charleston. A short description is written on the reverse face of the image:

Cook Collection #2229
Submarine "Charleston" on its side in a field
1864
The first "David"---

As noted by museum staff, it is unclear by whom, or when, the information was written, so its accuracy cannot be verified. The photo was first published by James Barnes in *The Photographic History of the Civil War in Ten Volumes* (Vol. 6) in 1911. Barnes included the following text with the image.

This peaceful scene, photographed by [George] Cook, the Confederate photographer at Charleston, in 1864, preserves one of the most momentous inventions of the Confederate navy. Back of the group of happy children lies one of the 'Davids' or torpedo-boats with which the Confederates made repeated attempts to destroy the Federal vessels in Charleston Harbor, and thus raise the blockade. The Confederates were the first to employ torpedoes in the war, at Aquia Creek, July 7, 1861. Captain F. D. Lee, C. S. N., was working on designs for a torpedo ram early in the war, and Captain M. M. Gray, C. S. N., in charge of the submarine defenses of Charleston, with a force of sixty officers and men under him, was particularly active in developing this mode of warfare. The 'David' in the picture appears to be the first one built in the Confederacy; she was constructed at private expense by Theodore Stoney, of Charleston. She was driven by steam, and on the night of October 5, 1863, in command of Lieut. W. T. Glassell, with a crew of three volunteers from the Confederate gunboats, she succeeded in exploding a torpedo under the new [sic] 'Ironsides,' putting her out of commission for a time. The little 'David' was almost swamped. Her crew took to the water to save themselves by swimming. Lieutenant Glassell and James Sullivan, firemen, were captured after being in the water nearly an hour. Engineer C. S. [sic] Tombs, seeing that the 'David' was still afloat, swam back to her, where he found pilot J. W. Cannon, who could not swim, clinging to her side. Tombs clambered aboard and pulled Cannon after him, and together they managed

to build a fire under the boiler and bring the little vessel safely back to Charleston.⁶⁸⁵

Note that Barnes refers to the vessel in the image as “one of the ‘Davids’,” but also claims it “appears to be the first one built in the Confederacy,” echoing the inscription on the back of the original image, but leaving doubt as to the claim. The manner in which the planking is attached is consistent with the Chapman painting of *David*. The vessel appears to be in unfinished condition rather than the well-worn condition for which *David* was noted. No coaming, hatch, stack, or other distinguishing features are visible making positive association with photographs or to descriptions provided by Chassaing problematic. Regardless, it is unlikely that the pictured vessel is *David*, but instead a “David” likely photographed by George Cook in 1865 and it best matches the description of vessel No. 2 provided by Chassaing that was later sold at auction:

No.2 Situated at the Northeastern Railroad wharf. Length outside, 50 feet; breadth of beam, 5 ½ feet (same as above [No.1]). Hull in perfect condition and nearly complete, with exception of the hatches. No machinery in this boat, but we have an engine without boiler which will answer the purpose.⁶⁸⁶

However, without further evidence to confirm this possible identity, it is cataloged here as a provisionally distinct vessel.

Identity- likely vessel No. 2 described by Union Engineer Chassaing or a distinct vessel.

Provenience- Charleston, SC

Last known location- unspecified location in Charleston, SC

⁶⁸⁵ Barnes 1911, 267.

⁶⁸⁶ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.



IMAGE- Photo by George Cook, Charleston, ca. 1864-65. Reprinted with permission of the Valentine Museum, Richmond, Virginia.

No. 12. Vessel lost from *Mingoe*

This vessel is known only from entries in the ORN and the logbook of USS *Mingoe*. Taken as booty from Charleston on 6 June 1865, the torpedo boat was lost at sea the subsequent day. The following are entries from the logbook of USS *Mingoe*, under the command of S. P. Quackenbush:

June 4 1865-

Came to anchor near the Atlantic Wharf

June 5 1865-

At 6:30 sent the launch & crew to tow the Torpedo Boat

At 7:30 Launch returned with the Torpedo boat

June 6 1865-

At 6 left for Philadelphia

June 7 1865

From 4 to 8- 10 ins water in pumps Torpedo boat towing well but seems to be settling in the water

At 1:30 stopped & sounded in 28 ½ fathoms water grey sand and shell with black Sparks, the Torpedo boat going down by the stern first

At 5 sounded in 17 fathoms water NSB shells, Discovered the Torpedo boat settling down by the stern first

From 6 to 8 Torpedo boat down by the stern

At 7:15 stopped the engine to relax the hawsers round the Torpedo boat- lowered the 2nd cutter & secured the hawsers

At 7:30 made Hatteras Light bearing N by E distant 15 miles

From 8 to midnight- At 9:25 torpedo boat sunk & was obliged to cut her away

At 0 Cape Hatteras light bore by compass SW by W ½ W. Distant about 15 miles 10 ins water in the pumps lost 6 fathoms Hawser lg to the Torpedo Boat⁶⁸⁷

No known David-class vessels were located at the Atlantic Wharf (although *David* was launched there for testing), on the south-eastern tip of the Charleston peninsula, therefore it is impossible to say if this vessel was one of the five torpedo boats described by Chassaing.

⁶⁸⁷ Logbook of *Mingoe*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Mingoe*, E118.

The following report was sent by Rear Admiral Dahlgren to Gideon Welles, with a subsequent report sent by Commander Quackenbush:

“Sir: I beg leave to inform the Department that the U.S.S. *Mingoe*, Lieutenant-Commander S. P. Quackenbush, with a torpedo boat in tow, and the mortar schooner *Smith*, left the harbor this morning for the port of Philadelphia, and that I have dispatched the *Sarah Bruen* with part of the armor plating of the ram *Columbia* to Fortress Monroe. The *Bruen* will sail to-day.”⁶⁸⁸

“Sir: I regret to inform you that a torpedo boat which I took in tow at Charleston, S.C., sunk off Cape Hatteras at 6 p.m. on the 7th instant, in consequence of her ballast having shifted and her hatches not being caulked in a manner to prevent her becoming filled with water. Had she been perfectly tight I would have had no difficulty in bringing her into port, but under the circumstances it was impossible to preserve her.”⁶⁸⁹

Identity- possibly torpedo boat No.5 described by Union Engineer Chassaing

Provenience- Charleston, SC

Last known location- lost at sea near Cape Hatteras, NC

NO IMAGE

⁶⁸⁸ Rear Admiral Dahlgren reported to Secretary Welles, 6 June 1865, ORN Vol. 16 (1903), 342-3.

⁶⁸⁹ Lieutenant-Commander S. P. Quackenbush to Secretary Welles, 9 June 1865, ORN Vol. 16 (1903), 344.

NON-DAVID-CLASS CIGAR-SHAPED BLOCKADE RUNNERS

In addition to the torpedo boats used in offensive military activities, there were at least two large cigar-shaped blockade runners, believed to be for transport of up to 300 bales of cotton each. Although these were significantly different in size and were not offensive torpedo boats in terms of either form or function, they are included in the catalog for clarity, as they are often mistakenly referred to as “Davids” or torpedo boats in official records and in later historical accounts.

No. 13. (Chassaing’s No. 6) Ebaugh’s large blockade runner

On 28 April 1865, Rear Admiral Dahlgren described this vessel as “A cigar-shaped steamer 160 feet long, and said to be able to carry 250 to 300 bales of cotton, new, and may be ready for sea in two weeks.”⁶⁹⁰ Chassaing offered the following description:

No. 6. Situated near Bennet's [Bennett's] sawmill, west side of city. One hundred and sixty feet long, 11 feet 7 inches beam. Hull in sound condition and nearly complete externally. Boiler in place; also portion of engine. All these are in excellent condition; nearly the entire engine is on hand and is now being fitted in place.⁶⁹¹

David Ebaugh, who constructed the vessel, offered this description:

The large boat I built, intended to run the blockade, was captured. She was 163 feet long and 12 feet diameter. She was not complete—all the machinery was not in her. She was on the Ashley River near West Point Mill at the time of evacuation was taken to Brooklin [sic] Navy Yard, N.Y.⁶⁹²

⁶⁹⁰ Report of Rear Admiral Dahlgren to Secretary Welles, ORN Vol. 16 (1903), 322.

⁶⁹¹ Report of Chief Engineer Chassaing, 29 March 1865, ORN Vol. 16 (1903), 378-9.

⁶⁹² Ebaugh 1953, 35. In a separate letter, Ebaugh described the large boat again, giving the same dimensions and again mentions that the vessel was captured and taken to the Brookland [sic] Navy Yard, Ebaugh 1953, 35.

Through photographic evidence, coupled with written descriptions provided by Ebaugh and Dahlgren, along with contemporary maps, the location has been verified as West Point Mill on the Ashley River. Chassaing notes the location as, “Bennet’s sawmill, west side of the city,” Bennett’s sawmill was on property adjacent to and on the east side, of West Point Mills, but this should not be confused with Bennett’s Mill on the east side of the city, a prominent mill of the time.

Identity- Ebaugh’s large blockade runner

Provenience- Charleston, SC

Last known location- West Point Mill (Charleston), removed to the Brooklyn Navy Yard



IMAGE- A large cigar-shaped boat near West Point Mill (Charleston), post-war, 1865.

No. 14. *Preston* (blockade runner)

When researching *David*, I contacted the Museum of the Confederacy (now known as the American Civil War Museum), which holds the original painting of *David* made by Conrad Wise Chapman to see if they might be able to provide a few details about the painting. I was told that the painting was re-framed in 1906 and in the process of re-framing, an undated newspaper article was found attached to the back of the painting that contained a reference to a cigar-shaped boat moored at the Washington Navy Yard in 1866. The article was from the *Philadelphia Times*. It was syndicated and disseminated through other newspapers, including the *Morning Call* of San Francisco on 18 February 1895, which stated, “One of these, long, narrow and cigar-shaped [boats], was moored in the Potomac at The Washington Navy Yard in 1866.”⁶⁹³

In searching for references to this boat, a few newspaper posts and entries in the ORN were located relating to a cigar-shaped boat that wound up in the Washington Navy Yard, the earliest being from late May 1865 in a report from Union Rear Admiral Dahlgren to Secretary of the Navy Gideon Welles:

Charleston, S.C. May 23, 1865

Sir: I herewith enclose originals of survey and appraisement on the rebel ram *Columbia*, steamer *Transport*, cotton boat *Preston*, tugboat *Lady Davis*, and steamer *Mab*, all of which vessels were taken with the city of Charleston by the United States forces after its evacuation by the rebels in February last.⁶⁹⁴

On 15 June 1865, the cigar steamer, *Preston*, is documented at Port Royal under the command of Union Acting Ensign William Thomas,⁶⁹⁵ but had already been ordered to proceed North to be sold or repaired.⁶⁹⁶ By late July, Acting Rear Admiral William Radford reported, “I

⁶⁹³ *The Morning Call* (San Francisco, California), 18 February 1895.

⁶⁹⁴ Rear Admiral Dahlgren to Secretary Welles, 23 May 1865, ORN Vol. 16 (1903), 337.

⁶⁹⁵ Distribution of vessels of the South Atlantic Blockading Squadron report, 15 June 1865, ORN Vol. 16 (1903), 345.

⁶⁹⁶ “Naval Records” *Boston Daily Advertiser* (Boston, Massachusetts.) 15 June 1865.

doubt if the ‘Preston’ can be sold here [Charleston]. I think she was appraised far beyond her value, commercially. If not sold, she will be towed to Hampton Roads.”⁶⁹⁷

The vessel was not sold but instead was taken to Washington. *Preston* is said to have been perfectly sound and made the trip from Charleston to the Washington Navy Yard under its own power in ten days, with a maximum speed of five knots and average sea-going qualities.⁶⁹⁸ However, another source reports that *Preston* was taken in tow by the US steamer *Emma* and delivered to Hampton Roads on 13 August:

The U.S. steamer *Emma* arrived this morning [at Fort Monroe, VA] from Port Royal with the cigar shaped propeller *Preston* in tow. The *Preston* is 130 or 150 feet in length, draws 7 feet of water, and was found on the stocks in Charleston after the evacuation. She was evidently intended for a torpedo boat.⁶⁹⁹

This report is not in agreement with the *Preston’s* log, which shows the vessel to be in Washington and commissioned into US Navy service on 7 August 1865. Leakage was a major problem and by the end of the month, the boat was decommissioned and the crew reassigned.⁷⁰⁰ For the next two years the vessel sat unattended until it was sold in late-1867 for re-purposing: “The celebrated cigar boat *Preston*, built at Charleston by the confederates, and after the surrender of that place brought to Washington Navy Yard, having been purchased by Mr. Wm. Knight was brought to the foot of Thirteenth street yesterday afternoon [18 October 1867], and will be made into two long boats.”⁷⁰¹

Another newspaper post from late October 1867 gives more detail about the vessel, relating the size and confirming that although the boat was a “cigar boat” it was not *David*-class:

⁶⁹⁷ Acting Rear Admiral W. Radford to Secretary Welles, 27 July 1865, ORN Vol. 16 (1903), 353.

⁶⁹⁸ *Army and Navy Journal* (New York) Vol. 3 No. 1, 26 August 1865, 14.

⁶⁹⁹ “From Fortress Monroe” *Boston Daily Advertiser* (Boston, Massachusetts.), 15 August 1865.

⁷⁰⁰ The vessel was decommissioned in less than a month of service, on 29 August 1865, Logbook of *Preston*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Preston*, E118.

⁷⁰¹ *Evening Star* (Washington, D. C.), 19 October 1867. The vessel sold for \$17,200.

“The Cigar Boat- This great curiosity in naval architecture, which has been for several days past lying between Carter’s and Riley’s wharves, was this morning carried up to the flats at the foot of Fourteenth street. It has already been published in the *Star* that Mr. Knight had purchased this steamer with the intention of splitting her in two in order to make two freight lifters out of her frame. In length we should suppose the cigar boat to be about one hundred and fifty feet, about twenty-five feet diameter across the middle, and tapers off to a diameter of less than two feet. At her stern is a two-pointed flange inserted in the centre, which affords the motive power, while her bow is perfectly sharp; the whole craft affording the exact counterpart of a huge cigar. She was built by the Confederates during the war for blockade purposes, and made several successful trips before her capture off Charleston. No greater curiosity has ever entered these waters, and to those who have leisure to do so a visit will repay the walk to the landing at which she is lying.”⁷⁰²

As of January 1868, *Preston* was still not salvaged, but had been re-assessed to show that the condition of the vessel was not as good as had been originally believed by the buyers:

“The Cigar Boat- The readers of the *Star* have already been apprised of the purchase by Messrs. Knight and Gibson, of this city, of the Confederate blockade cigar boat which was built and used in Charleston (S. C.) waters during the late rebellion. Since the purchase of the vessel she has hauled up at one of the landings northwest of the Long Bridge, with the view of converting her into fish lighters. At first it was supposed that about four boats could be procured from her, but owing to the worm-eaten condition of her hull, it has been found necessary to cast aside a portion of it and therefore only three lighters are secured. The bow end has been cut off and converted into the stern of the lighter, while to the centre portion has been added a prow adapted to the purposes for which the lighters are intended. Messrs. Knight and Gibson will fail somewhat in their calculations of profit from this source, but still will be able to save themselves from loss.”⁷⁰³

Identity- *Preston*

Provenience- Charleston, SC

Last known location- Washington Navy Yard- salvaged for parts and timber

⁷⁰² *Evening Star* (Washington, D. C.), 28 October 1867.

⁷⁰³ *Evening Star* (Washington, D. C.), 9 January 1868.

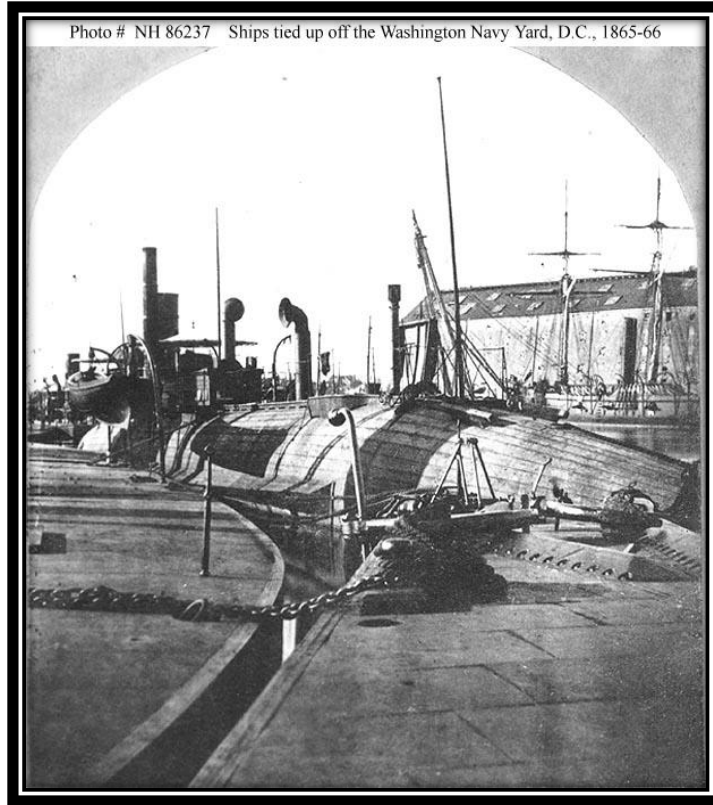
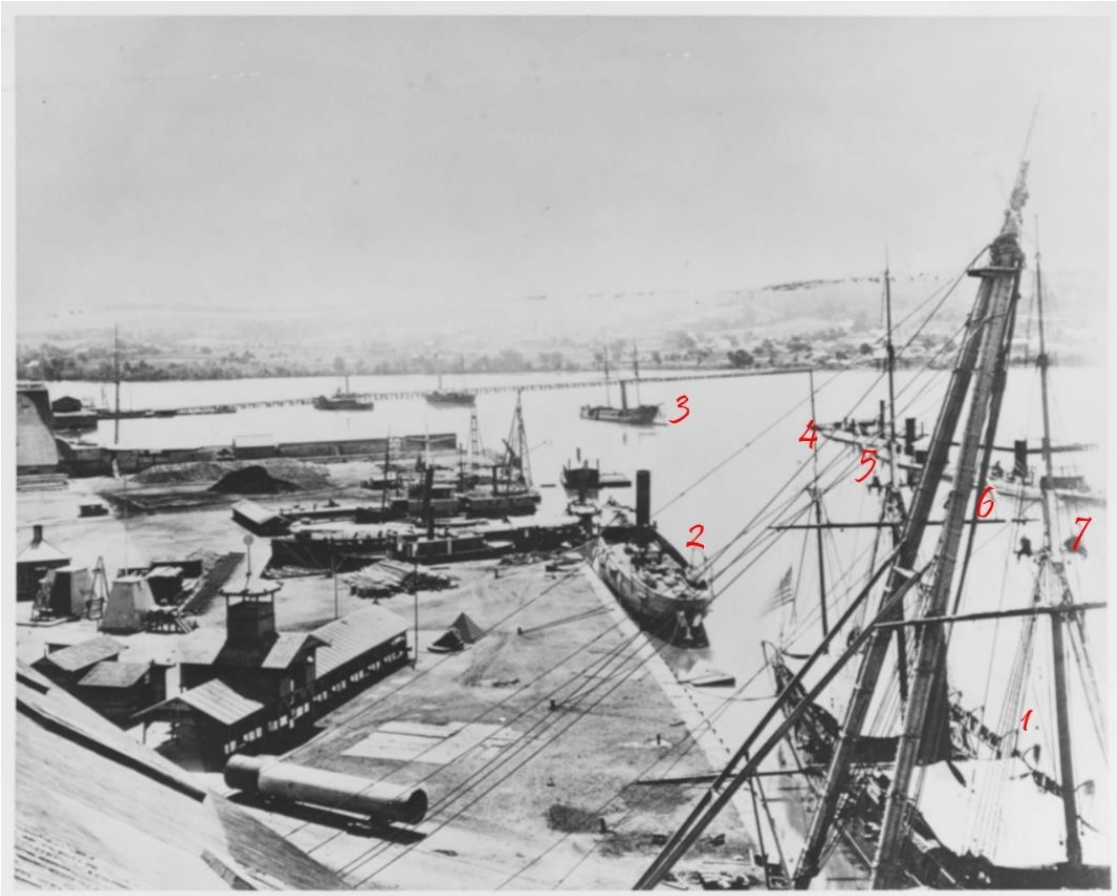


IMAGE- A large cigar-shaped steamer, *Preston*, shown at Washington Navy Yard, post-war, 1865-66. Naval History and Heritage Command.



IMAGE- Rebel Cigar Steamer. Image held by Carl Sandburg Home National Historic Site.



- 1- *Resaca* 216 x 31
- 2- *Marblehead* 225 x 43
- 3- *CSS Stonewall*
- 4- *Preston* ? x ?
- 5- *Chimo or Casco* 225 x 45
- 6- *Mahopac* 225 x 43
- 7- *Saugus (bow only)*

IMAGE- Another view of *Preston* (4) moored among other vessels at the Washington Navy Yard demonstrating the scale of the vessel. Naval History and Heritage Command, Washington, D. C.

"View on board ships moored off the yard's western waterfront in 1865-66. Ships in the immediate foreground are monitors. The odd 'cigar-shaped' steamer tied up to them appears to be the former Confederate 'enlarged' CSS *David* built at Charleston, South Carolina, late in the Civil War. The Navy Yard's western shiphouse is visible in the right background, with USS *Resaca* fitting out at pier-side. Photo mounted on a stereograph card."

APPENDIX D

OTHER CONFEDERATE TORPEDO BOATS OFTEN CONFUSED WITH “DAVIDS”

A David-class vessel could have been referred to in several ways, *e.g.*, a *David*, a *torpedo boat*, a *torpedo steamer*, *torpedo*, *torpedo-bearing vessel*, or a *submarine vessel*, thus conflating several different types of watercraft. Likewise, other styles of torpedo boats were frequently referred to as “Davids” as the term was used generically for Confederate boats sporting a spar-mounted torpedo. Taken together, these circumstances create a confusing lexicon for students of ACW torpedo boat studies. The following appendix is intended to clarify a few that are known in existing literature as “Davids,” but is not meant to be a comprehensive coverage of the topic.

To date, little has been published on specific Confederate torpedo boats, the exception being the iron-hulled submarine *H. L. Hunley*. A plethora of material covering details of its use and design became available, both before and after the recovery of the submarine in 2000. Yet, even a vessel as unique as *H. L. Hunley* was nonetheless referred to by contemporary writers as a “David.” As Admiral Dahlgren incorrectly contended:

Port Royal Harbor, S.C., February 19, 1864

Sir: I much regret to inform the Department that the U.S.S. *Housatonic*, on the blockade off Charleston, S.C., was torpedoed by a rebel “David” and sunk on the night of the 17th February about 9 o’clock.

From the time the “David” was seen until the vessel was on the bottom a very brief period must have elapsed; so far as the executive officer (Lieutenant Higginson) can judge, and he is the only officer of the *Housatonic* whom I have seen, it did not exceed five or seven minutes.⁷⁰⁴

Often the confusion was due to chroniclers lacking familiarity with specific naval vessels or naval terminology, or due to the necessary secrecy surrounding the vessels. The details of these novel craft were recurrently lost on the non-specialist as exemplified in an 1864 article in *Scientific American*. The anonymous author wrote, “They [torpedo boats] are all mentioned in the reports as

⁷⁰⁴ Rear Admiral Dahlgren to Secretary Welles, 19 February 1864, ORN Ser. 2 Vol. 1, 329-30.

long and low, and almost indistinguishable; the time of attack is generally at night, when darkness is likely to favor the operation.”⁷⁰⁵ Given this vague description it is understandable that several different types of craft were all assumed as a homogenous group, leaving readers of historical accounts questioning which vessels were or were not *David*-class.

Even someone as close to the topic as Gabriel Rains was guilty of conflating ‘Davids’ with other types of torpedo boats, stating, “At Charleston, Mobile, and Richmond, a number of small boats from 25 to 30 feet long made of boiler iron plates with a locomotive engine which operated a propeller at the stern as a motive, were made and called torpedo-boats or ‘Davids’.”⁷⁰⁶ Rains mixed several styles of torpedo boats and makes the error despite being in charge of marine torpedo production and implementation in Charleston from the beginning of August 1863 through mid-February 1864. This was the heyday of David-class torpedo boat use at Charleston. In the quote above, Rains also implies that “Davids” were produced outside of Charleston, which was not the case.

Steam Launches

Civil War Naval Scholar R. Thomas Campbell astutely contends, “For the most part, Confederate torpedo boats fall into one of two categories—the David class and the Squib class”⁷⁰⁷; the Squib-class taking its name from another vessel often misidentified as a David-style vessel. In early April 1864 a “David,” was reported by Lieutenant Commander J. H. Upshur, of the ironclad *Minnesota*, after his vessel was attacked by a torpedo boat.

Sir,- I have to report that last night about 2 o'clock, while riding to the ebb tide, a dark object was discovered slowly passing the ship, about two hundred yards distant. It was thought to be a boat, and hailed; to the hail was answered 'Roanoke.' By this time it was directly abeam, seemingly without any power of locomotion. The officer of the deck promptly gave orders to the tug astern to go and examine it, and repeated his orders several times before getting any reply, and, while endeavoring to

⁷⁰⁵ Submarine Warfare, *Scientific American* (1864) Vol. 10, No. 18, 282.

⁷⁰⁶ Schiller 2011, 73. Aside from the poor description of Davids, Rains includes a sketch image of a hand-cranked vessel (similar to *H. L. Hunley*) with the hull shape of a David, demonstrating a clear conflation, and poor understanding, of the individual vessels.

⁷⁰⁷ Campbell 2000, 68.

have this order executed, the object, a 'David,' approached the ship just abaft the port main chains and exploded a torpedo under her, the 'David' making off in the direction of the Nanesmond river. Several muskets and a round shot were fired at it, and every effort made to send in pursuit, but the tug allowed her steam to go down, which was not discovered until the 'David' had disappeared. Vessels were sent in search, but failed to find her.⁷⁰⁸

Upshur's vessel, *Minnesota*, had actually suffered an attack by *Squib*, a steam-launch torpedo boat designed by William A. Graves. One eye-witness boasted that he took several rides in *Squib* and described the vessel as "about 25 feet long and 4 feet wide, and carried four men, who were protected against musketry by a steel shield."⁷⁰⁹ By this description alone, the confusion with a David-class vessel might seem reasonable, even if the length was half that of a "David." However, *Squib* was much like the steam launches utilized by Captain Lee in Charleston during the spring of 1863, a full year earlier than the appearance of *Squib*.⁷¹⁰

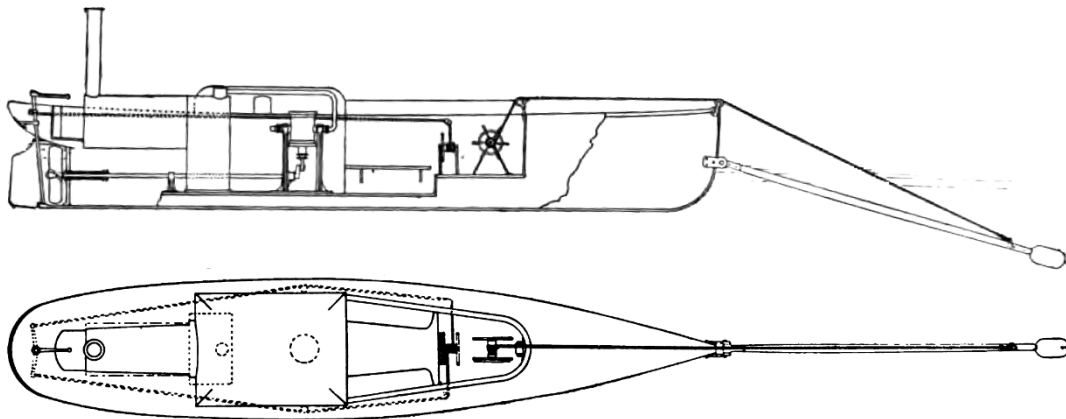


IMAGE- Squib from the ORN Vol. 9, 602.

⁷⁰⁸ Report of J. H. Upshur to Union Acting Rear Admiral S. P. Lee, 9 April 1864, ORN Vol. 9 (1899), 593; reprinted in Barnes 1869, 133.

⁷⁰⁹ Parker 1883, 328-9.

⁷¹⁰ Report of Captain John S. Barnes after the attack of USS *Minnesota* by Confederate torpedo boat *Squib*, 24 May 1864, ORN Vol. 9 (1899), 602.

The differences in design were later clarified by Union Captain John S. Barnes, “The boat employed on this occasion differed materially from the ‘Davids’ of Charleston, it being simply a steam launch, with machinery and helmsman protected from musketry by boiler iron.”⁷¹¹ Barnes refers specifically to the ‘Davids’ of Charleston” implying he was aware the David-class vessels originated and operated from that city.

Other Torpedo Boats of the Confederacy

Wilmington, North Carolina

As demonstrated, Lee received orders to construct nine vessels, three of which were intended for Wilmington. Lee offered, “That the vessels built by the Dept for the port of Wilmington may be constructed under my direction at Charleston and that those at Mobile should engage such of my attention as my work at Charleston permits.”⁷¹² Lee also began preparations for producing “torpedo steamers” in Mobile.⁷¹³ After meeting with the War Department concerning construction of torpedo boats in other cities, Assistant Adjutant General John Withers issued Special Orders No. 23 that assigned Lee’s duties:

Captain Francis D. Lee Corps of Engineers is assigned to the duty of superintending the construction of Torpedo bearing steam boats in accordance with the recent orders of the Secy of War under the direction and from the hands of the Engineer Bureau. He will take his station at Charleston S.C. with permission to visit other points of the Confederacy wherever his presence is required by the nature of his duties.⁷¹⁴

⁷¹¹ Barnes 1869, 136.

⁷¹² Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

⁷¹³ A. L. Rives, to Lee, 22 January 1864, ORA Vol. 35 pt. 1 (1891), 537-8.

⁷¹⁴ Special Orders No. 23 of Assistant Adjutant General Withers, 28 January 1864, Report from F. D. Lee to General Beauregard, National Archives, Record Group 109, Papers of Various Confederate Notables, General P.G.T. Beauregard’s Papers 1864-1865.

The stage was set to produce “Davids” for use outside of Charleston. Therefore, it is reasonable to assume that examples of David-class vessels may have been built in Wilmington. Records indicate that at least two torpedo boats were built at that port.⁷¹⁵ Campbell believed these to be *Equator* and *Yadkin*,⁷¹⁶ in reality, they were large gunboats of at least 300 tons that carried guns.⁷¹⁷ Mark Ragan believes the Wilmington torpedo boats to have been David-class.⁷¹⁸ This was not the case, for the two torpedo boats from Wilmington, mentioned in the ORN by Confederate Secretary of the Navy Mallory, were Squib-style steam launches designed by John L. Porter, both of which accidentally burned on 30 April 1864.⁷¹⁹

Even though plans were made for “Davids” to be constructed for Wilmington and Mobile, none can be documented. It is likely that some of the unfinished “Davids” discovered in Charleston after the evacuation of troops were intended for Wilmington or other cities but never delivered.

⁷¹⁵ Report of Rear Admiral S. P. Lee to Secretary Welles, 22 March 1864, ORN Vol. 9 (1899), 561.

⁷¹⁶ Campbell 2000, 80.

⁷¹⁷ Silverstone 2016, 178.

⁷¹⁸ Ragan 2015, 77-8.

⁷¹⁹ Secretary Mallory reports on 5 November that two torpedo boats were under construction in Wilmington, ORN Ser. 2 Vol. 2 (1921), 745. However, this appears to be outdated information. He is reporting on events that happened since 1 April 1864 in his last report. The Cotton fire at Eagle Island (Wilmington) happened in late April and the vessels do not appear in the report of John L. Porter, ORN Ser. 2 Vol. 2 (1921), 751. Porter (1886, 479) records the loss of the torpedo vessels.

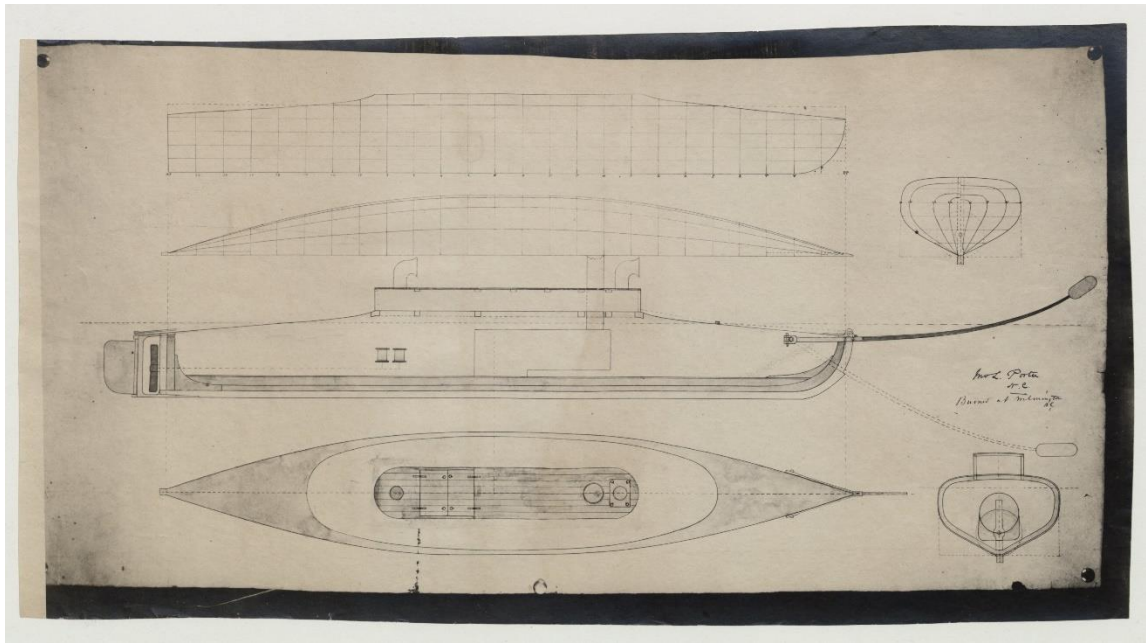


IMAGE- John Porter designed torpedo boat. Note it was “burned at Wilmington”.
 Accessed online at <https://digital.lib.ecu.edu/viewer.aspx?pid=4490&n=1>.

Richmond, Virginia

William A. Graves designed and built a group of boats at the Rockett’s shipyard near Richmond; *Wasp*, *Hornet*, and *Scorpion*.⁷²⁰ These were all similar in design, size, and function. *Scorpion* was damaged in the Battle of Trent’s Reach on 23 January 1865 when escorting the gunboat, *Drewry*.⁷²¹ Both vessels were grounded while under fire and consequently evacuated. Union forces recovered *Scorpion* and took the vessel as a prize, offering some description of the vessel.⁷²² “Her length is 46 ft, beam amidships 6 ft 3 in, and depth 3 ft 9 in.”⁷²³ Given the dimensions of the vessel, it is again easy to see how *Scorpion* might have been mistaken as a “David.” The report also noted an enclosed sketch, which was not included in the report. Instead there is an asterisk with the following

⁷²⁰ All three just slightly larger than *Squib*, Campbell 2000, 105.

⁷²¹ *Hornet*, one of two sister-vessels of *Scorpion*, was sunk in a collision with CSS Allison on 26 January and was raised by the Union Navy shortly thereafter (Memorandum regarding the James River Squadron 19 February 1865, ORN Vol. 12 (1901), 185-6). Nothing more is known of the third vessel, *Wasp*, except that Campbell (2000, 115) reports it was lost in April 1865.

⁷²² Various reports describing the recovery of the Rebel torpedo boat in the James River, 27-31 January 1865, ORN Vol. 11 (1900), 706-7.

⁷²³ Report of Chief Engineer Henderson, 31 January 1865, ORN Vol. 11 (1900), 707.

clarifying remark, “This drawing is substantially the same as that of the C.S. torpedo boat *Squib*, shown in Series 1, volume 9, p. 602.—Compilers” (see *Squib* IMAGE), demonstrating that *Scorpion* was a steam launch.⁷²⁴ R. Thomas Campbell reports there were other, unfinished Squib-type vessels under construction at Richmond that were set ablaze when the city was evacuated.⁷²⁵

The description of *Scorpion* provides details of the motive power for the vessel: “two oscillating condensing engines of 7 inches diameter of cylinder and 6 inches length of stroke.” Note the use of a pair of small engines and recall that Lee had ordered twenty pairs of engines for production of torpedo boats in cities outside of Charleston; a very similar description to Lee’s first torpedo ram plan.

Other Torpedo Boats of the Confederacy

In addition to the numerous Squib-class vessels, there were also a few unique torpedo boats produced in various cities of the Confederacy, most of which are thinly documented, and some known only from vague references.

Mobile, Alabama

In January 1864 Lieutenant Colonel A. L. Rives wrote to Francis. Lee:

Lieutenant-Colonel Sheliha, chief engineer Department of the Gulf, wrote to me on the 14th instant that steps had been taken to commence the construction of torpedo-boats at Mobile as soon as the plans had been received from you, and that a naval officer, the constructor of the iron-clad steamer Tennessee [Henry D. Bassett at Selma, A.L.], would be the best suited to take charge of it.⁷²⁶

⁷²⁴ Report of Chief Engineer Henderson, 31 January 1865, ORN Vol. 11 (1900), 707.

⁷²⁵ Campbell 2000, 115.

⁷²⁶ Lieut. Col. A. L. Rives writes to F. D. Lee in January 1864 ORA Vol. 35 pt. 1 (1891), 548-9.

Campbell wrote as an image caption, “A sketch of a David class torpedo boat, purported to have operated at Mobile, Alabama.”⁷²⁷ The image is taken from von Scheliha’s 1868 text, *Treatise on Coastal Defense*, with the caption, “Torpedo Boat, Used in the American War” with no mention of an association for use in Mobile.⁷²⁸ It is clearly based on the aforementioned image by Union Engineer W. S. Smith from the ORN in a report “transmitting drawings and reports of torpedoes, torpedo boat, and obstructions” in Charleston.⁷²⁹ Campbell associates the sketch with a vessel known as *Saint Patrick* and states, “The *St. Patrick*, a David similar to those at Charleston, was being built on contract to the Confederate Government by John P. Halligan at Selma, Alabama [for operations at Mobile].” In the next paragraph, however, Campbell admits there is little to connect the sketched vessel with *Saint Patrick*, “The details concerning the *St. Patrick*—whether it was a David class torpedo boat or capable of total submersion as a submarine—are still shrouded in mystery.”⁷³⁰ A description of the vessel differing substantially from that of a “David” is noted in a report from Union Major-General S. A. Hurlbut. He stated the vessel was submersible and had a dual mode of propulsion:

Memphis, April 12, 1864

I am informed, and I believe credibly, that a submerged torpedo boat is in the course of preparation for attack upon the fleet at Mobile.

The craft, as described to me, is a propeller about 30 feet long, with engine of great power for her size, and boiler so constructed as to raise steam with great rapidity. She shows above the surface only a small smoke outlet and pilot house, boats [sic] of which can be lowered and covered. The plan is to drop down within a short distance of the ship, put out fires, cover the smoke pipe and pilot house, and sink the craft to the proper depth; then work the propeller by hand, drop beneath the ship, ascertaining her position by a magnet suspended in the propeller, rise against their bottom, fasten the torpedo by screws, drop their boat away, pass off a sufficient distance, rise to the surface, light their fires, and work off.

The torpedo to contain 40 pounds of powder and work by clockwork.

⁷²⁷ Campbell 2000, 85. No source for the sketch is provided, but it is clearly a minimally modified version of W. S. Smith’s 1865 sketch (see ORN Vol. 16 (1903), 399; Figure 45 of this text). Also see Campbell 2000, 68, 77, 81, and 84 for references to the construction of torpedo boats at Mobile.

⁷²⁸ von Scheliha 1868, Plate XII.

⁷²⁹ Sketch showing torpedo boats as constructed in Charleston, South Carolina, ORN Vol. 16 (1903), 399. Also see Scharf 1887, 759.

⁷³⁰ Campbell 2000, 84.

As near as my informant can give the plan, I send you a rude sketch [not found]. One of the party has gone North for a magnet and air pump. I expect to catch him as he comes back. The boat is to be ready by 10th May.

Your Obedient Servant,

S. A. Hurlbut
Major-General⁷³¹

Once more, the mentioned sketch could not be located during the assembly of the ORN/ORA. Commandant Catesby R. Jones of the Naval Gun Foundry and Ordnance Works at Selma, buttressed the arrangement of the propulsion systems just days before the boat was scheduled to be launched but was ultimately delayed for seven more months:

The boat will be launched in a few days. It combines a number of ingenious contrivances, which, if experiments show that they will answer the purposes expected, will render the boat very formidable. It is propelled by steam (the engine is very compact), though under water by hand. There are also arrangements for raising and descending at will, for attaching the torpedo to the bottom of vessels, etc. Its field of operation will be off Mobile Bay, and I hope you may soon have evidence of its success.⁷³²

The boat was described as powered by steam on the surface and by hand-crank while submerged, so *Saint Patrick* could not have been of the David class due to structural and design differences facilitating full submersion. It therefore must be considered a unique design and specimen of torpedo boat.

⁷³¹ Letter from Major-General Hurlbut to Secretary of the Navy Welles, 12 April 1864, ORN Vol. 21 (1906), 187.

⁷³² Letter from Commandant Catesby R. Jones of the Naval Gun Foundry and Ordnance Works at Selma, to Major-General Maury, 16 June 1864, ORN Vol. 21 (1906), 902-3. *St. Patrick*, built by John Halligan, did not get launched until January 1865 as the builder was promised no active commission as long as the vessel was under construction and this appeared to have hindered completion. The army finally took possession of the boat on 24 January 1865 and ran a botched sortie against *Octarara* on the night of 27 January 1865, when the torpedo failed to fire. For more details, see ORN Ser. 2 Vol. 1 (1921), 265 and ORA Vol. 49 pt. 1 (1897), 13, 934-5.

A group of five torpedo boats, built for the Western theater has been categorized by some as David-class. Four of these were purportedly built in Shreveport, Louisiana,⁷³³ while the fifth was built in Texas, between Galveston and Houston. They are treated here as a homogeneous group. The one from Texas is described in the ORN by Major A. M. Jackson of the 10th US Colored Heavy Artillery Regiment:

COLONEL: I have the honor to submit to your consideration the following report of information received at this office this 13th day of March, 1865: In a letter from Captain Collins, Confederate scout, to a person in this city, he states that he expects a visit about this time from one Ike Hutchinson, from Lavaca, Tex., who has charge of the torpedoes in Red River. This, taken in connection with Mr. Hunnicutt's report of the designs of Jones (also from Lavaca), who was at Houston, Tex., January 12, to destroy the ironclad Tennessee and other gun-boats at the mouth of Red River, leads me to believe that there is some such plan on foot, of which the commanders of gun-boats should be notified.

The following is a description of the torpedo-boats, one of which is at Houston and four at Shreveport:

The boat is forty feet long, forty-eight inches deep, and forty inches wide, built entirely of iron, and shaped similar to a steam-boiler. The ends are sharp pointed. On the sides are two iron flanges (called fins) for the purpose of raising or lowering the boat in the water. The boat is propelled at the rate of four miles an hour, by means of a crank worked by two men. The wheel is on the propeller principle. The boat is usually worked seven feet under water, and has four dead-lights for the purpose of steering or taking observations. Each boat carries two torpedoes, one at the bow attached to a pole twenty feet long; one on the stern fastened on a plank ten or twelve feet long. The explosion of the missile on the bow is caused by coming in contact with the object intended to be destroyed. The one at the stern on the plank is intended to explode when the plank strikes the vessel. The air arrangements are so constructed as to retain sufficient air for four men at work and four idle, two or three hours. The torpedoes are made of sheet-iron three-sixteenths of an inch thick, and contain forty pounds of powder. The shape is something after the pattern of a wooden churn and about twenty-eight inches long. Jones,⁷³⁴ the originator and

⁷³³ "The rebels are fitting out at Shreveport four torpedo boats. They will be ready in two months." Order of Rear Admiral Porter, 25 June 1864, ORN Vol. 26 (1914), 438.

⁷³⁴ Ragan (2002, 243; 2015, 159-61) states this was Singer Secret Service operative James Jones from Texas, when it is much more likely that the author of the letter was referring to Francis Marion (F. M.) Jones, a shipbuilder from

constructor of these boats, also constructed the one which attempted to destroy the New Ironsides in Charleston, S.C.⁷³⁵

These references remain problematic for a number of reasons. First, the descriptions are undoubtedly not of David-class vessels, but of something more akin to the submarine *H. L. Hunley*. Second, there are at least two distinct vessels being described here; one powered by two men, and another powered by four men. Third, these are not eyewitness reports, but those of third-parties. Next, there is conflation of Singer Group operative James Jones, from Texas, with shipbuilder F. M. Jones, of Charleston, who was involved with the STC and construction of David-style torpedo boats. Finally, there is no other evidence to suggest these vessels were actually ever built. Regardless, these vessels, if they ever came to fruition, were not David-class.

Columbus, Georgia

“There is also building at this station a torpedo boat which, with the engines, etc., are in a state of great forwardness.⁷³⁶ Campbell mentions two of these under construction at Columbus in November 1864, stating one was never finished and “only the 45-foot *Viper* was completed before the end of the conflict.”⁷³⁷ This idea is supported in a letter from Lieutenant Augustus McLaughlin to Catesby R. Jones dated 10 May 1864, “I have just recd instructions from the Dept to build two Torpedo Boats. The drawings were gotten up by Graves. They are 45 ft long 5 ft beam draw 4 ½ ft.”. Later letters between McLaughlin and Jones only mention a single torpedo boat, suggesting the second was never constructed.⁷³⁸

Dimensions for *Viper* vary from 45-50 feet in length and 5-6 ft in beam. One source provides more detail, [*Viper* was] “...about fifty feet in length and six feet in breath. She had a three-

Charleston that built at least two David-class vessels in addition to repairing *David*, helping in the construction of F. D. Lee’s *Torch*, and constructed two Confederate ironclads, *Palmetto State* and *Chicora* in the second mention of ‘Jones.’

⁷³⁵ Major A. M. Jackson to Lieutenant-Colonel C. T. Christensen, 13 March 1865, ORA Vol. 49 pt. 1 (1897), 913-4; ORN Vol. 22 (1908), 103-4.

⁷³⁶ Report of vessels now in progress of construction, 1 November 1864, ORN Ser. 2 Vol. 2 (1921), 752.

⁷³⁷ No reference was provided (Campbell 2000, 105, 117-8).

⁷³⁸ “I will have completed in about three weeks a torpedo boat designed by Graves.” Letter dated 15 November 1864; “The torpedo boat is being fitted out as fast as possible.” Letter dated 14 February 1865; *Viper* File, The National Civil War Naval Museum, Columbus, GA.

foot diameter brass screw. I believe she was the open-launch type of torpedo boat, rather than the semi-submersible David type.”⁷³⁹ The idea that *Viper* was a steam-launch, of the Squib-style is supported by documents of the US Navy.⁷⁴⁰ Ultimately, the torpedo boat was lost at sea near Tampa Bay, Florida while under tow by USS *Yucca* to Key West.⁷⁴¹

Savannah, Georgia

Although some naval historians refer to torpedo boats built in Savannah, there is still doubt that they even existed.⁷⁴² Ragan offers the following: “There is a question of torpedo operations having taken place in Savannah; no surviving documentation other than the [Robert W.] Dunn letter even hints that operations were ever conducted in that Georgia coastal city at any time during the war.”⁷⁴³

There are, in fact, several references in the ORN. By mid-March 1864, requests were being made for ‘Davids’ for use by Savannah forces.⁷⁴⁴ Flag-Officer John Tucker could not grant the requests but planned to provide information for torpedo boats to be built in Savannah:

The one I have had, the ‘David,’ belongs to a company. They have called on me to return the ‘David,’ which, of course, I am obliged to do. The station is building two of these boats to be turned over to me when completed, but I fear that will be some time yet. I will send drawings and explanations which will enable you to have one or more boats constructed at Savannah.⁷⁴⁵

⁷³⁹ Letter from National Civil War Naval Museum director Bob Holcombe to Dr. Roger C. Smith 19 November 1991, *Viper* file, The National Civil War Naval Museum, Columbus, GA.

⁷⁴⁰ In letter from Holcombe to Ralph Donnelly, he states, “Since the VIPER was, according to the USN in CWNC-VI-187, of the same class as the torpedo boat building on the Peedee...” and “The USN classifies here (actually the whole class) as torpedo launches”, letter dated 16 April 1982 held at the National Civil War Naval Museum, Columbus, GA.

⁷⁴¹ The location of the sinking is recorded in the logbook of *Yucca* and the wreck may have been located by recreational divers in the 1970s. This remains unconfirmed.

⁷⁴² For example, see Campbell 2000, 28-9, 68; Perry 1965, 123; Ragan 2002, 41-2; 2015, 36; Schafer 1996, 103.

⁷⁴³ Ragan 2015, 35.

⁷⁴⁴ Brigadier-General W. S. Walker to Brigadier-General Thomas Jordan, 15 March 1864, ORN Vol. 15 (1902), 718.

⁷⁴⁵ Flag Officer J.R. Tucker to Flag-Officer W.W. Hunter, 18 March 1864, ORN Vol. 15 (1902), 719.

A month later, W. W. Kennison reported information from deserters, that, “No ‘David’ boats are at Savannah, nor torpedoes.”⁷⁴⁶ However, within two weeks plans were being implemented for torpedo boat construction in Savannah, albeit of an unknown design. In April 1864, engineer John J. Clarke requested skilled laborers to work in a mechanical shop proposed to build torpedo boats.⁷⁴⁷ In mid- May 1864, requests were still being made from Savannah army officers for *David*-class boats to be sent from Charleston or for aid in the construction of local vessels.

It is believed, too, that great damage could be inflicted upon the enemy’s water craft in the Saint Johns River, if a torpedo-boat, such as I have learned has been tested in the waters of Charleston Harbor, could be procured to operate against them. There are now, and have been for more than a month, four gun-boats between Picolata and the mouth of the river. Innumerable creeks, bays, and lakes empty their waters into the Saint Johns on its east side, which is in our possession. Several of these streams are navigable by steamers drawing 5 and 6 feet water for several miles in the interior. From these, torpedo-boats could easily reach the river, perform their work, and return within our lines at any time in a few hours. Through Captain Chisolm [Director of the Southern Torpedo Company], of General Beauregard’s staff, I applied to Mr. Wagner [President of the Southern Torpedo Company], of Charleston (who I learned from Captain Chisolm had the control of one or two of these boats), for one to operate in the waters, and in the manner I have described, but was unable to procure it. Captain Lee [Director of the Southern Torpedo Company], of the Engineers, temporarily of my staff, who is eminently practical and somewhat of a machinist and mechanic withal, thinks he can construct one of these boats with the workmen NOW in his employ, and with material that can be obtained within the district. He is now engaged upon a plan and specifications, and is making an estimate of costs, &c., and when submitted, if deemed feasible, I propose to adopt it, and to assign him, in addition to his other duties, to that of superintending its construction; in all of which I would be pleased to have the approval of the major-general commanding.⁷⁴⁸

⁷⁴⁶ Acting Volunteer Lieutenant W. W. Kennison to Commander W. Reynolds, 15 April 1864, ORN Vol. 15 (1902), 399

⁷⁴⁷ Letter from John J. Clarke to Brigadier-General Thomas Jordan, 28 April 1864, National Archives Record Group 109, Confederate Citizen Files, M346, roll 0170.

⁷⁴⁸ Major-General Patton Anderson to Captain H. W. Feilden, 14 May 1864, ORA Vol. 35 pt. 1 (1891), 373-4.

Anderson had been in contact with Theodore Wagner, the President of the Southern Torpedo Company, through Captain Chisolm, a director for the STC, to inquire about the availability of torpedo boats. The STC was unwilling or unable to grant Anderson's request as the vessels controlled by the STC were active in sorties at the time (see Chapters VII and VIII) and somewhat unreliable. Not only did Anderson request 'Davids' to be sent from Charleston, but alternatively offered to have them built in Savannah if those in Charleston could not be spared. He further offered the recently transferred Engineer Francis Lee, who also served as a director for the STC, as a conduit for the undertaking. Whether the information sent by Tucker was for *David*-class vessel construction or, more likely, for one of Francis Lee's steam launch designs, is unclear, but no evidence of David-style craft in Savannah has surfaced to date.

On 24 October 1864 Rear Admiral Dahlgren reported, "Sir: Deserters recently arrived from Savannah report that a torpedo boat has just been finished at that place and immediately sent to Mobile by railroad, which it may be well to know there."⁷⁴⁹ No more is known of this vessel.

In December, after the fall of Savannah, the *Cleveland Morning Leader* reported that a torpedo boat had been confiscated at Savannah.⁷⁵⁰ Dahlgren confirmed the prize in a diary entry from 4 January 1865, "Secured an unfinished torpedo boat, which was at a wharf in the city when [sic], but by some hocus-pocus had been looted and got down among the bushes of St. Augustine Creek."⁷⁵¹ A few days later, in a report to Secretary of the Navy Gideon Welles, Dahlgren wrote that there were two torpedo boats:

Among the articles found here after our troops entered was a torpedo boat, which I have received from General Sherman and sent to Port Royal. As yet it is only the unfinished wooden shell; no machinery was found about the place, but may be among some that was thrown overboard. There is another torpedo boat in the yard of the builder, not finished, which I may be able to secure. Some drawings and models [presumably sent from Tucker in Charleston] were found in the shipyard where the torpedo boats were built, of torpedo boats and ironclads, which will

⁷⁴⁹ Rear Admiral Dahlgren reported to Secretary Welles, 24 October 1864, ORN Vol. 16 (1903), 33; Vol. 21, 712.

⁷⁵⁰ "One torpedo boat and three small steamers were captured," reported by the *Cleveland Morning Leader* (Cleveland, Ohio), 29 December 1864.

⁷⁵¹ From the diary of Rear Admiral Dahlgren's diary, 4 January 1865, ORN Vol 16 (1903), 364.

hardly be considered as an accession to the skill and knowledge of our builders. I transmit them, however.⁷⁵²

The same day, Dahlgren sent instructions to Lieutenant-Commander Scott regarding affairs in the Savannah River:

The torpedo boat in the yard is to be launched when fit, and, with all its appurtenances [sic] transferred to the naval commandant at Port Royal. The divers will work at the obstructions in the South Channel (the North is said to be under contract) and at the raising of the steam machinery of the torpedo boats, reported to have been sunk off the wharf.⁷⁵³

Efforts continued to raise the presumed scuttled machinery, “The hull of one torpedo boat has been taken to Port Royal, and if the machinery can be gotten it may be possible to turn it to some account, but this must be a work of some time.”⁷⁵⁴ The ultimate fate of these two vessels remains unclear, as does their design. However, iconographic material suggests these vessels were of a unique plan.

An extant time-worn photograph made by the famous photographer Sam Abbott Cooley shows a possible torpedo boat docked at Savannah. In the photo, the boat appears unfinished and without machinery and could be the one described by Dahlgren. However, this remains unproven. The photograph is part of the Samuel Cooley Collection suggesting Cooley made it, but little more is known about the image. However, a sketch of a similar vessel appeared in Frank Leslie’s *Illustrated Newspaper* and depicts the destruction of Krenson and Hawkes shipbuilding yard in Savannah on 21 December 1864. On the right side, under the stern of a burning Charleston-class ironclad is what appears to be an unfinished steam-powered boat of the same design as the vessel in Cooley’s photograph. This suggests that the photograph was indeed taken at Savannah, although it does little

⁷⁵² Neither the drawings nor images of the models were included in the ORN Report, No. 15 of Rear Admiral Dahlgren to Gideon Welles, 8 January 1865, ORN Vol. 16 (1903), 163.

⁷⁵³ Instructions from Rear Admiral Dahlgren to Lieutenant-Commander Scott, 8 January 1865, ORN Vol. 16 (1903), 164.

⁷⁵⁴ Rear Admiral Dahlgren to Secretary Welles, 5 February 1865, ORN Vol. 16 (1903), 218.

to confirm the use of this design as a torpedo boat. If these images do indeed depict the torpedo boats in question, then it is safe to posit that they are not David-class.

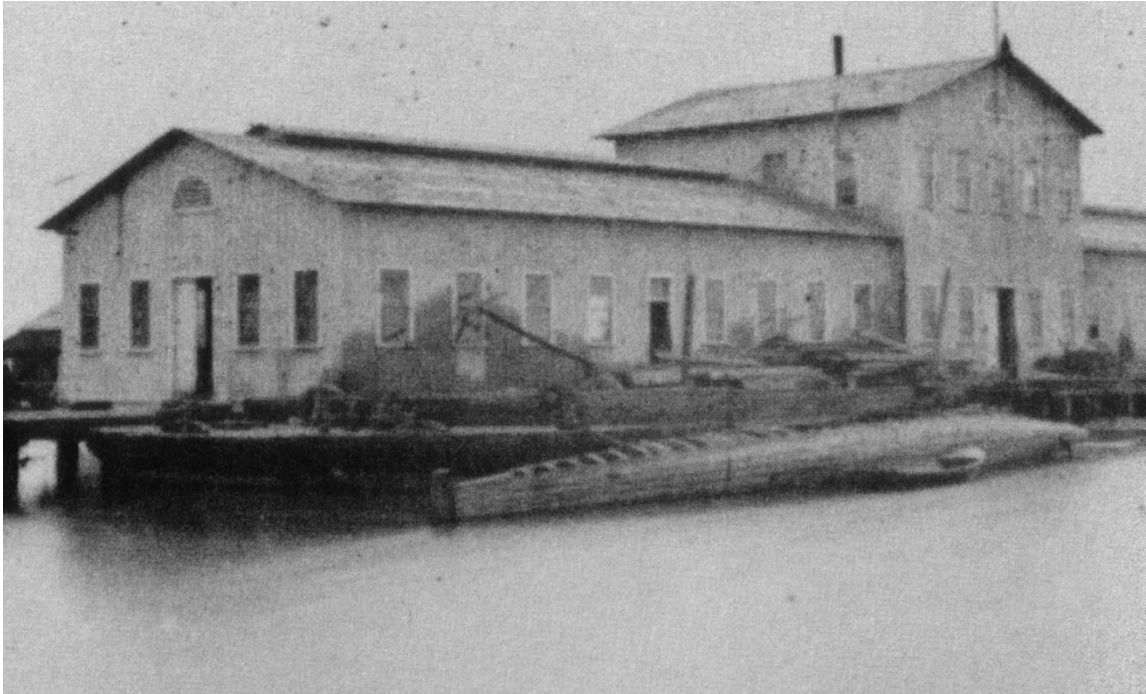


IMAGE- Possible torpedo boat captured at Savannah. Reprinted with permission of the Western Reserve Historical Society, PG 325, Box 3, Folder 83, Samuel A. Cooley Collection.

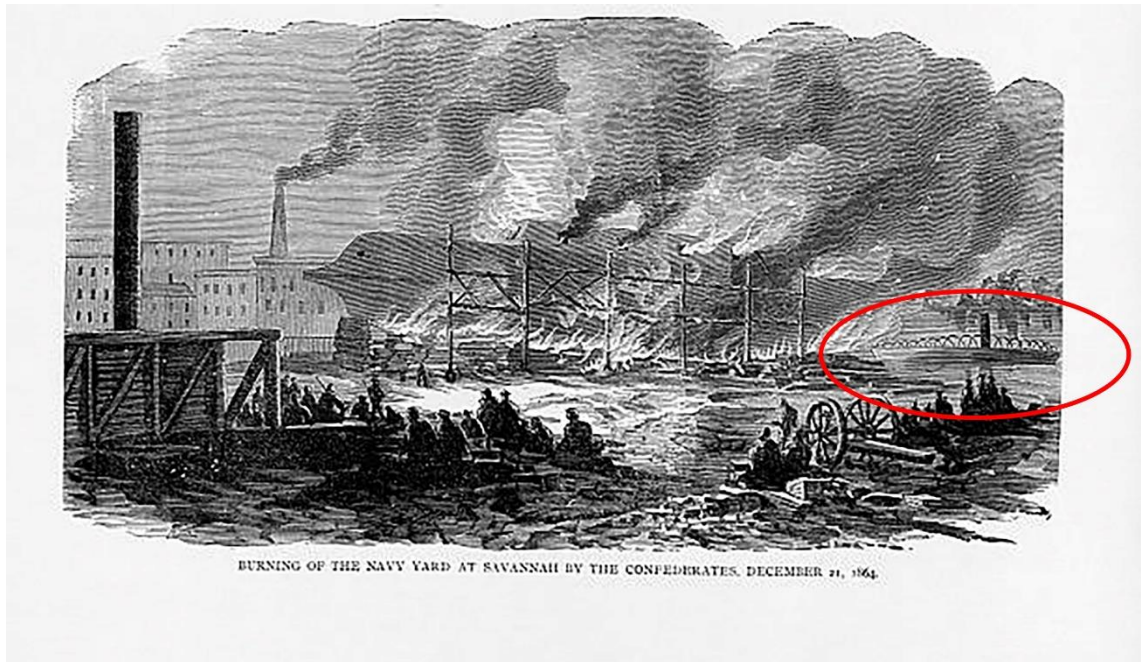


IMAGE- Destruction of Krenson and Hawkes yard at Savannah.
Frank Leslie's Illustrated Newspaper 1865.

Vessels in Other Cities

The most problematic torpedo boat designs to identify may be those from Pee Dee, South Carolina, and Augusta, Georgia, as these vessels are only known from vague references. When writing about the Pee Dee vessel, historians generally limit this to a passing mention of a torpedo boat that was built.⁷⁵⁵ A boat was planned for construction there in April 1864.⁷⁵⁶ Construction began shortly after the Pee Dee Navy yard became operational in October, but the torpedo boat was not yet completed as of late February 1865 and was likely never finished before the destruction of the naval station on 15 March 1865.⁷⁵⁷ In October 1865, Acting Ensign Sturgis Center wrote after visiting the site of the

⁷⁵⁵ For example, one of the few historians to mention the Pee Dee vessel is R. Thomas Campbell (2000, 68, 105), yet he only mentions that a vessel was built there, with no details or description.

⁷⁵⁶ Extract of the Secretary of the Navy Mallory, Vessels Under Construction, 30 April 1864, ORN Vol. 15 (1902), 732.

⁷⁵⁷ "The torpedo boat is being fitted out as fast as possible—engines ready, and being placed in the vessel. The boilers are well advanced. She will be ready for service I should think in three weeks." National Archives Record Group 45, Confederate Navy Subject Files, M1091, letter from McLaughlin to shipbuilder Jones, 14 February 1865. According to Naval Station Commander Edward J. Means, as of 22 February, "The torpedo boat will be ready to

former Navy Yard at Pee Dee, “a torpedo boat about 60 feet long lays along side of her [a 128 ft tender], with Engine complete.”⁷⁵⁸ Few other details of this vessel have been located. It is therefore impossible to definitively claim it was, or was not, David-class. However, according to a letter located in the National Civil War Naval Museum, “the VIPER was, according to the USN in CWNC-VI-187, of the same class as the torpedo boat building on the Pee Dee [Pee Dee]” and “The USN classifies here (actually the whole class) as torpedo launches...”, suggests the Pee Dee was likely Squib-style.⁷⁵⁹ *Viper* was designed by John Greaves, and according to Pee Dee naval station commander Edward J. Means, Greaves wanted to build a torpedo boat at Pee Dee, suggesting the Pee Dee torpedo boat may have also been a Greaves design.⁷⁶⁰

In November 1864, a board of officers was “convened for the purposes of examining and testing certain torpedo boats.”⁷⁶¹ The tests were to be carried out at Augusta and testers included: *David* commander James Tomb, who was at this point Senior Chief Engineer; former *David* Commander William Glassell; and Chief Engineer J. J. Darcy.⁷⁶² By the end of January 1865, this crew was helping to lay torpedoes in the Savannah River.⁷⁶³ They were also involved in at least one “special expedition,” a few months later.⁷⁶⁴ Unfortunately, nothing else is known of torpedo boat activity in Augusta and nothing is known of the design of this (or these) vessel(s). Given the direct connection with former crew members of the original *David*, it is feasible that a similar design was passed along to Augusta for testing, but it is equally likely to have been a unique design, or a modified steam launch.

Due to insufficient records, there remains a remote possibility that David-class boats may have also been produced at Pee Dee, Savannah, and Augusta, yet with no tangible evidence, no

move in four or five days and will be of great service in getting the tender up the river.” Edward J. Means Letter Book, Mss. 287, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, LA.

⁷⁵⁸ Squadron Letters, National Archives Record Group 45, Confederate Navy Subject Files, M1091, roll 246, frame 195.

⁷⁵⁹ Letter from National Civil War Naval Museum Director Bob Holcombe to Ralph Donnelly, 16 April 1982, *Viper* File, National Civil War Naval Museum, Columbus, GA.

⁷⁶⁰ Report of Commander Means, 21 December 1864, Edward J. Means Letter Book, Mss. 287, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, LA.

⁷⁶¹ Order of Flag-Officer John Tucker, 18 November 1864, ORN Vol. 16 (1903), 463.

⁷⁶² Special Order of Major-General Jones, 22 November 1864, ORN Vol. 16 (1903), 464.

⁷⁶³ Order of Flag-Officer Hunter, 31 January 1865, ORN Vol. 16 (1903), 506.

⁷⁶⁴ Order of Brigadier-General Fry, 12 April 1865, ORN Vol. 16 (1903), 514.

photographs, no sketches, and no actual descriptions, any such claim is impossible to support or refute.

Although a number of errors of design, identity, and purpose of Confederate torpedo boats have been corrected in this brief synopsis, the information contained within should be considered after reading other torpedo boat historiographies.⁷⁶⁵

Postscript- The Fate of *Scorpion*

On 21 August 1865, the *Norfolk Post* reported, “The cigar-shaped torpedo boat captured at Charleston is also at the yard [Norfolk Navy Yard] and regarded as a poorly constructed affair.”⁷⁶⁶ However, all evidence suggests this boat was neither a cigar-shaped torpedo boat (David-class) nor did it come from Charleston. This vessel was traced backwards to discover that it originated, not in Charleston as the newspaper post suggested, but from the James River in Virginia. The Squib-class vessel had been disabled and abandoned after the grounding of *Drewry*⁷⁶⁷ that was itself destroyed early the next morning when a shell exploded in its magazine. The blast was strong enough to dislodge *Scorpion* and refloat it in the rising tidewater. The boat then drifted downriver where it became stuck again on Confederate-laid obstructions.⁷⁶⁸ It was raised on 27 January 1865 by a crew from USS *Onondaga*, who used the torpedo boat as a tender.⁷⁶⁹ In a letter dated 6 February 1865, Rear Admiral David Porter instructed Commodore William Radford to send “the prize torpedo boat” to Commander W. H. Macomb, commander of USS *Phlox*.⁷⁷⁰ The boat was described in some detail:

⁷⁶⁵ For example, Campbell (2000) *Hunters of the Night*); Ragan (1999/2002) *Submarine Warfare in the Civil War and Confederate Saboteurs* (2015).

⁷⁶⁶ *Norfolk Post* (Norfolk, Virginia), 21 August 1865.

⁷⁶⁷ “The torpedo boat *Scorpion* had to be abandoned in consequence of damage from this explosion [of *Drewry*]”, “Fortunately, (or fear of such a disaster, the crew had been taken on board of the *Richmond* about 15 minutes before the explosion took place, and were thus all saved except two, who were killed, having gone to the torpedo boat *Scorpion*, lying alongside of the *Drewry*. The *Scorpion* was badly damaged by the explosion and was not brought off when the *Richmond* floated, but she subsequently drifted off with the high tide down to the obstructions, where she fell into the hands of the enemy a day or two after,” Report of Flag-Officer Mitchell, 25 January 1865, ORN Vol. 11 (1900), 668-70.

⁷⁶⁸ Reports of Confederate Flag-Officer Mitchell, 25 January and 3 February 1865, ORN Vol. 11 (1900), 668-70.

⁷⁶⁹ Report of Acting Volunteer Lieutenant Simmons, 28 January 1865, ORN Vol. 11 (1900), 706-7; Report of Chief Engineer Henderson to Commodore William Radford, 31 January 1865, ORN Vol. 11 (1900), 707.

⁷⁷⁰ Instructions from Rear Admiral Porter to Commodore Radford, 6 February 1865, ORN Vol. 12 (1901), 7.

Sir: I would respectfully enclose a sketch* of the rebel torpedo launch now in use as a tender to this vessel, and also of the two torpedoes and arrangements of percussion fuzes [sic] with which they were fitted.

The machinery of the boat consists of two oscillating condensing engines of 7 inches diameter of cylinder and 6 inches length of stroke, of admirable workmanship, and so arranged that one person can manage both engine and boiler with the greatest facility.

The boiler is of ordinary tubular variety and very tight.

She has fair speed for a boat of her kind, and is well adapted for the purpose for which she was built. The steering gear is forward, but there are no arrangements for permanently living on board.

Her length is 46 feet, beam amidships 6 feet 3 inches, and a depth 3 feet 9 inches.

Very respectfully, your obedient servant,

Alexander Henderson
Chief Engineer, U.S. Navy⁷⁷¹

* *This drawing is substantially the same as that of the C.S. torpedo boat Squib, shown in Series I, Volume 9, p. 602.—Compilers*⁷⁷²

On 6 February 1865, Porter sent the torpedo boat to Wilmington, “I have just ordered down the torpedo boat captured in James River. Don’t let it fall into rebel hands again. It will be a good thing to use their own designs against them.”⁷⁷³ However, the torpedo launch was lost to the sea while under tow on 13 February 1865 and remained submerged until some point between mid-April and late-July 1865. The logbook of USS *Phlox* contains the following entries pertaining to the torpedo boat:

12 February

At 6:20 took a torpedo boat in tow and some sick discharged men on board and started down the river.

⁷⁷¹ Report of Chief Engineer Henderson to Commodore W. Radford, 31 January 1865, ORN Vol. 11 (1900), 707.

⁷⁷² In this ORN entry, the original drawing is not shown, but it is noted that the boat is essentially the same as the one depicted in an earlier volume, of *Squib*; ORN Vol. 9 (1899), 602.

⁷⁷³ Report of Rear Admiral David D. Porter, 6 February 1865, ORN Vol. 12 (1901), 9.

At 10:00 arrived at the U.S. Schooner Sand Rotan⁷⁷⁴ which we were to take in tow. The wind blowing so fast found it impossible to take her in tow. Signaled for her to get underway and follow us, which was done.

At 10:30 the towline of the torpedo boat parted. The schooner ran her down and sank her and the man, John Smith. The man that was in her drowned. Let go the anchor at James Town Island.

The following entries come from the ORN:

U.S. IRONCLAD NEW IRONSIDES,
Off Bermuda Hundred, February 13, 1865.

SIR: I have to report to you that the torpedo boat recently taken from the enemy, which you ordered to report to Commander Macomb, U.S. Navy, was sunk while being towed to Norfolk by the U.S.S. *Phlox*, off Jamestown Island. This intelligence was communicated to me by telegraph. The following is a COPY of the telegram:⁷⁷⁵

The *torpedo launch* [emphasis added] was run into and sunk by schooner *Sam Rotan*. One man drowned.

I have sent the *Cactus* down with orders to raise her if possible; if not, to procure assistance from the Norfolk navy yard. As soon as further reports are made to me, I will send them to you.

I have sent the General Putnam to Mobjack Bay, it being reported that there is a great deal of smuggling and blockade running in those waters, and no vessel being stationed there.

I am, very respectfully, your obedient servant,

WM. RADFORD,
Commodore, Commanding Fifth Division.⁷⁷⁶

U.S.S. LENAPEE,
Wilmington, N. C., April 8, 1865.

SIR: I have the honor to report all quiet in this section, there having been no appearance or information of rebel soldiers in this vicinity since my last report.

⁷⁷⁴ *Sand Rotan* is printed in the logbook of *Phlox* (Logbook of USS *Phlox*, National Archives Record Group 24, Records of the Bureau of Naval Personnel, Logs of Ships and Stations 1801-1946, Logs of US Naval Ships 1801-1915, *Phlox*, E118.), but the ORN lists the vessel as *Sam Rotan* or *Samuel Rotan*.

⁷⁷⁵ A written copy of the received telegram is held by the National Archives (Record Group 45, Confederate Navy Subject Files, Mines and Torpedoes).

⁷⁷⁶ Commodore Radford to Secretary Welles, 13 February 1865, ORN Vol. 12 (1901), 17-8.

I have kept a large gang of men and the *Republic*, when she could be spared from other duty and the weather permitted, employed in removing obstructions, and have been very successful in widening the channel.

The rebels executed their work so well that it is slow business, but I hope in *two weeks more to finish when I shall endeavor to recover the rebel torpedo boat.*⁷⁷⁷

U.S.S. LENAPEE,
Wilmington, N. C., July 31, 1865.

SIR: I have the honor to acknowledge the receipt of your Order dated 26th instant, and will respectfully state that, as there is much here requiring my personal supervision, I have directed the *Donegal* to return to Port Royal.

The presence of an armed vessel in the Cape Fear River is necessary in consequence of the bitter feeling between the white and black population, which may at any time rise into an actual outbreak, but is at present kept subdued by the knowledge that the means to quell it are within reach. The crew of the *Lenapee* is, to a certain extent, acclimated, and thus by retaining her the hazard of bringing a new crew into the river at this season will be avoided.

The preliminary party for raising wrecks, etc., in this river arrived and reported a few days since.

I have in my charge, at this place, about 200 tons (estimated) of iron plating, prize of war, which I am anxious to ship to Norfolk, but have been unable to charter a vessel for that purpose.

The Release will be dispatched, according to your order, as soon as practicable.

I shall send by her north a quantity of rod iron and iron shafting, prize of war.

The rebel torpedo boat raised by my orders is at present used by the surveying party, and will be sent north on the *Hetzæl* unless you otherwise direct. I have the honor to be, respectfully, your obedient servant,

THOS. S. PHELPS,
Lieutenant- Commander.⁷⁷⁸

Port Royal, S. C., August 8, 1865.

SIR: I have the honor to enclose herewith a copy of a report which I have this day received from Lieutenant-Commander T. S. Phelps, commanding U.S.S. *Lenapee*, senior officer, Cape Fear River, N. C.

⁷⁷⁷ Lieutenant-Commander Thomas S. Phelps to Rear Admiral D. D. Porter, 8 April 1865, ORN Vol. 12 (1901), 106-7.

⁷⁷⁸ Report of Acting Rear Admiral Radford, US Navy, transmitting report of Lieutenant- Commander Phelps, Relative to affairs in Cape Fear River, ORN Vol. 12 (1901), 172-3.

The rebel torpedo boat, referred to in the report, will be sent north in the *Hetzal*.

I have the honor to be, very respectfully, your obedient servant,

WM. RADFORD

Just after being raised, *Scorpion* was used by a surveying party before being delivered, aboard *Hetzal*, to Commodore Radford at the Norfolk Navy Yard on 3 August 1865.

Nothing more is known of the vessel.