

Clocks of the Ironclads: “Damn the torpedoes, full speed ahead!”

by Andrew Demeter (FL)

There are countless chronicles of historic battles that were lost due to that missing “element of surprise.” This is not one of those stories. Readiness and precise timing favored the victor and both were accomplished by superb planning and communication.

By the beginning of the American Civil War, marine timekeeping had advanced considerably since the invention of the chronometer by John Harrison about one hundred years earlier. Pocket watches were readily available and their quality was primarily based on the customer’s ability to pay. Because naval and manufacturers’ records are considered non-existent, it has never been accurately determined when the U.S. Navy first began purchasing ordinary lever clocks for general use aboard their vessels. However, patents and clock manufacturers’ catalogs have supported the conventional opinion that it occurred sometime between 1849 and 1860. The patents filed by Silas Terry, Charles Kirk, and Rodney Barnes between 1845 and 1850 appear to be the nascent stage of mass manufacturing. It is also highly unlikely that the U.S. Naval Observatory, originally established in 1830 as the “Depot of Charts and Instruments,” had created any specifications for lever clocks until many years later. As a late entry to the market, even Chelsea Clock Co. (est. 1897) began filling the U.S. Navy’s orders for its commercial 4.5" dial “Yacht” model in 1898 without any naval markings. According to early factory sales ledgers, several of these were sent directly to individual ships while others were sent to the U.S. Naval Observatory. The latter procedure became the standard rule. A 1931 letter by the curator of the U.S. Naval Academy addresses this question and his search for the answer (Figure 1).

Summary of the Battle of Mobile Bay

After months of preparation and patience, Union Admiral David Glasgow Farragut directed his flotilla of 18 ships into Mobile Bay at 5:43 a.m. on August 5, 1864 (Figure 2). Four were ironclads. With the New Orleans campaign over, Farragut first arrived



Figure 1. Transcription of correspondence to Penrose R. Hoopes by H. F. Krafft, Curator, U.S. Naval Academy, 1931. Found by Robert Frishman in the Penrose Hoopes papers at the Connecticut Historical Society, Hartford, CT. Penrose Robinson Hoopes was the author of *CT Clockmakers of the 18th Century* and other books. COURTESY OF THE CONNECTICUT HISTORICAL SOCIETY, HARTFORD, CT.

off the Alabama coast on January 17, 1864. Reports indicated that the Confederate States Navy had several ramming ironclads in the Bay, particularly its most powerful ironclad the CSS *Tennessee*. It was suspected that a Confederate fleet of ironclad warships might have sufficient power to break the squadron

of the Union's frigates and gunboats blockading the entrance to the Bay. If successful, an attack on the Union's base at nearby Pensacola or a Confederate offensive to retake New Orleans would likely follow. At a minimum, it would re-open the Confederate seaport for needed supplies from blockade runners.

On May 25, 1864, Farragut led a reconnaissance mission inside the Bay where he examined the shore defenses and observed the presence of the CSS *Tennessee*. Unknown to Admiral Farragut, Confederate Admiral Franklin Buchanan (former Academy classmate and the vetted flag officer of the ironclad CSS *Virginia* in the historic battle with the ironclad USS *Monitor*) designated the CSS *Tennessee* as his flagship with command over Captain James D. Johnston.

Admiral Farragut feared his wooden ships were no match for the Confederate ironclads, and the eastern coastal campaigns prolonged his wait for the protective ironclads he had requested from Secretary of the Navy Gideon Welles. Welles was pressed for campaign support from north to south.

Launched September 12, 1863, and commissioned on April 19, 1864, the ironclad USS *Tecumseh* (Canonicus class, 223' Lg., 43'4" Beam, 11'6" draft) with its single turreted 15" cannon was originally slated for assignment to Farragut, but was temporarily ordered to join the North Atlantic Blockading Squadron supporting General Grant's operations against Richmond.

Tecumseh's sister ship, the USS *Manhattan*, was also built by the same shipbuilder, Perine, Secor & Co.,



Figure 2. *Battle of Mobile Bay*, by J. O. Davidson, 1886. COURTESY OF THE NEW YORK HISTORICAL SOCIETY. [HTTPS://WWW.CIVILWARTALK.COM/THREADS/THE-BATTLE-OF-MOBILE-BAY-CORRECTED.75181/](https://civilwartalk.com/threads/the-battle-of-mobile-bay-corrected.75181/).

NY, and launched on October 14, 1863, in Jersey City, NJ, and then commissioned at the New York Navy Yard on June 6, 1864. The *Manhattan's* skipper, Commander J. W. A. Nicholson and her crew of about 115, were immediately assigned to Farragut's squadron. Acting Volunteer Lieutenant Robert B. Ely was reassigned to Nicholson's command and met the ship at the builder's yard. Before volunteering in 1861, Ely had been a merchant seaman and gunnery officer aboard a conventional wooden vessel.

A journal kept by Lt. Ely tells a poignant story of his first assignment to an ironclad, the USS *Manhattan* (Figure 3), documenting the cruise south and her participation in the Battle of Mobile Bay. With the permission of his grandson, Robert B. Ely III, this journal was partially published in an article titled "*This Filthy Ironpot*" in 1968. Lieutenant Ely's descriptions of design problems associated with inferior ventilation, stifling heat, poor seaworthiness, water leakage, and coal dust were made worse by a skipper who managed day-to-day operations that were better left to his staff officers. (Commander Nicholson's micromanagement style is perhaps a possible explanation for the demotion of his executive officer discussed later.)

While the USS *Manhattan* was en route south on July 1, Ely writes, "A man who would stay in an ironclad by choice is a candidate for the insane asylum, and he who stays from compulsion is an object of pity." The following day, Ely's entry describes the unbearable heat.

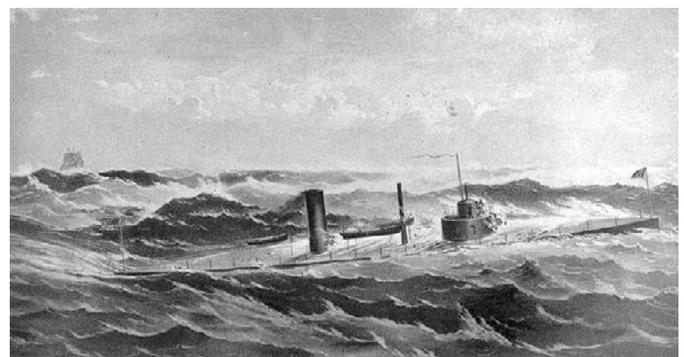


Figure 3. Unsigned 1860s lithograph of the USS *Manhattan* underway. COURTESY OF NAVAL HISTORY & HERITAGE COMMAND, FORMERLY KNOWN AS THE U.S. NAVAL HISTORICAL CENTER. [HTTPS://WWW.HISTORY.NAVY.MIL/SEARCH.HTML?Q=60256](https://www.history.navy.mil/search.html?q=60256).

"I can't imagine how the firemen and the coalheavers stand it. The thermometer in the fireroom stands at 135 F to 138 F. The Chief Engineer goes in there semi-occasionally to superintend the work and comes out again wringing wet, cursing the entire ironclad fleet."

Ely's construction of the term "semi-occasionally" appears to be a sympathetic description of a fellow officer's actions.

Resupplied at various ports along the way, the USS *Manhattan* arrived on station July 20 after a seven-hour journey through heavy rain from Pensacola, FL. Later that evening aboard the side-wheel gunboat USS *Port Royal*, Ely approached Captain Gherardi, one of his former superior officers. The poor seaworthiness of the ironclad and his growing dislike for Nicholson led to Ely's informal request for a transfer to Gherardi's command. Gherardi informed Ely that any application he might make to transfer Ely to his gunboat would be denied by Admiral Farragut. Secondly, Ely was informed that his dissatisfaction with service aboard the USS *Manhattan* and that his dislike for Nicholson were not mutual. He was told that Nicholson intended to replace his first lieutenant, making Ely the *Manhattan's* Executive Officer. Ely's promotion took place after the battle.

On July 5, 1864, after engagements with Confederate forces in the James River, USS *Tecumseh's* Commander Tunis Craven was ordered by Secretary Welles to join Farragut's squadron "with all practicable dispatch." On August 3, *Tecumseh* anchored at Pensacola where Craven received a dispatch from Admiral Farragut to proceed immediately to Mobile Bay for the planned invasion. Two additional twin-turreted ironclads, the USS *Chicasaw* and USS *Winnebago*, were already on station with Farragut's squadron after their reassignment from the Mississippi River Squadron in July. With the arrival of the USS *Tecumseh*, Farragut's reinforcements and tactical plans were complete.

Aboard his frigate USS *Hartford*, Farragut directed the slower ironclads to lead and flank the starboard side of his flagship and wooden vessels as the fleet entered the Bay under the Confederate cannons of Fort Morgan. On the opposite coasts and out of range, neither of the Confederate forts, Gaines or Powell, presented an immediate threat.

Up ahead, the USS *Brooklyn* had slowed its approach and Farragut ordered his flagship to pull alongside where he heard the warning shouted by Captain Alden: "Heavy line of torpedoes across the channel." The battle is probably best remembered by Farragut's response: "Damn the torpedoes, full speed ahead!" (Figure 4).

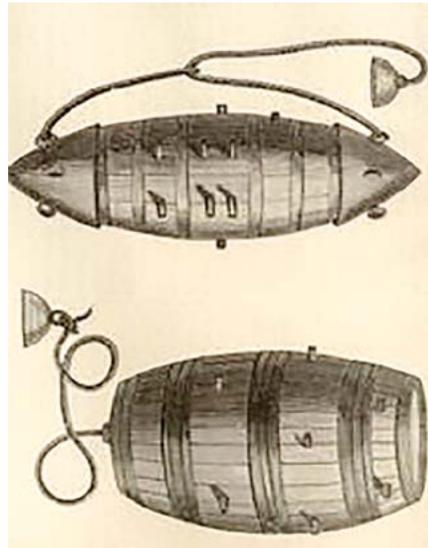


Figure 4. Torpedoes of the period consisted of floating wooden kegs (mines) containing gun powder with contact detonators. A torpedo's reliability often depended on how long they were submerged. Originally published in *Harper's Weekly*, April 20, 1865.

Heading directly for the feared CSS *Tennessee*, the ironclad USS *Tecumseh* took the lead, followed by the USS *Manhattan*, the USS *Chicasaw*, and the USS *Winnebago*. As the USS *Tecumseh* maneuvered toward the CSS *Tennessee*, the *Tecumseh* struck a mine, listed sharply, and promptly sank, losing 93 of her 113 crew, including her captain. In addition to the CSS *Tennessee*, the Union vessels were met by three Confederate gunboats and four more Confederate ironclads: the CSS *Tuscaloosa*, the CSS *Nashville*, the CSS *Huntsville*, and the CSS *Baltic*. Not all the Confederate ironclads had been fully armored with iron plates.

After several engagements between the Union and Confederate vessels, the USS *Manhattan* took up the lead to engage the CSS *Tennessee*, which had already targeted the Union's wooden vessels as its primary victims. The *Tennessee's* extensive artillery power of eight fixed cannons (three on each side, one forward and one aft) and heavy angularly plated sides made her a formidable enemy, but it also made her slow and difficult to maneuver. The Union's wooden ships suffered more damage from the CSS *Tennessee's* cannons than from her attempts at ramming maneuvers. With each effort, the responsive cannon fire from the Union's wooden vessels could not penetrate the CSS *Tennessee's* heavy iron armor and they suffered for it.

During a break in the action and a partial retreat by the Union ships to the upper entrance of the Bay, Admiral Buchanan ordered the captain of the CSS *Tennessee* to pursue the Union ships and direct her attack on Farragut's wooden flagship, the USS *Hartford*. Despite an immediate counterattack by Farragut's additional wooden ships, the slow-moving Confederate *Tennessee* was able to ram the *Hartford*, but the penetrating damage inflicted was above the USS *Hartford*'s waterline. The attack was time enough for the Union's ironclads to move in for a combined offensive on the CSS *Tennessee* following their engagements with the other Confederate ships (Figure 5).

The attack by the ironclad USS *Manhattan* on the CSS *Tennessee* that followed is best described by Confederate Lieutenant Wharton from his view inside the *Tennessee*.

"A hideous looking monster came creeping up on our port side, whose slowly revolving turret revealed the cavernous depths of a mammoth gun." Wharton's order to "Stand clear on the port side!" was followed by a "thundering blast that shook us all while a blast of dense sulphurous smoke covered our port holes and 440 pounds of iron, propelled by sixty pounds of powder admitted daylight through our portside."

After Admiral Buchanan's leg was fractured by the blast, Captain Johnston took command of the CSS *Tennessee* while the USS *Winnebago* moved in on the starboard side and the USS *Chickasaw* was attacking off the stern. The pounding from both was relentless. The CSS *Tennessee*'s vulnerable rudder chains and smokestack were destroyed while the armor plate began tearing away from her sides. Unable to maneuver his ship and take aim at his attackers, Captain Johnston climbed on deck and lowered his flag to signal surrender, which was accepted by the USS *Manhattan*. Upon her surrender, the CSS *Tennessee* was immediately commissioned in the U.S. Navy with Acting Volunteer Lieutenant Pierre Giraud placed in command.

From the first shot fired to the surrender, three hours of battle resulted in 32 Confederate casualties and 335 Union casualties, including the 93 men who went down in the USS *Tecumseh*.

The Battle of Mobile Bay finally reduced the effectiveness of the Confederate navy to a non-defensive force

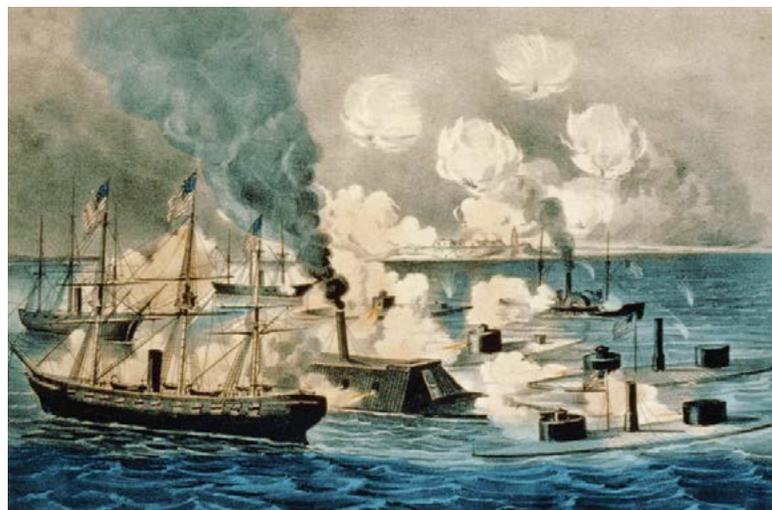


Figure 5. *The Great Naval Victory in Battle of Mobile Bay*, lithograph with watercolor. Currier & Ives, New York, NY, post-1863. COURTESY OF THE U.S. LIBRARY OF CONGRESS. [HTTPS://WWW.LOC.GOV/ITEM/2001704280/](https://www.loc.gov/item/2001704280/).

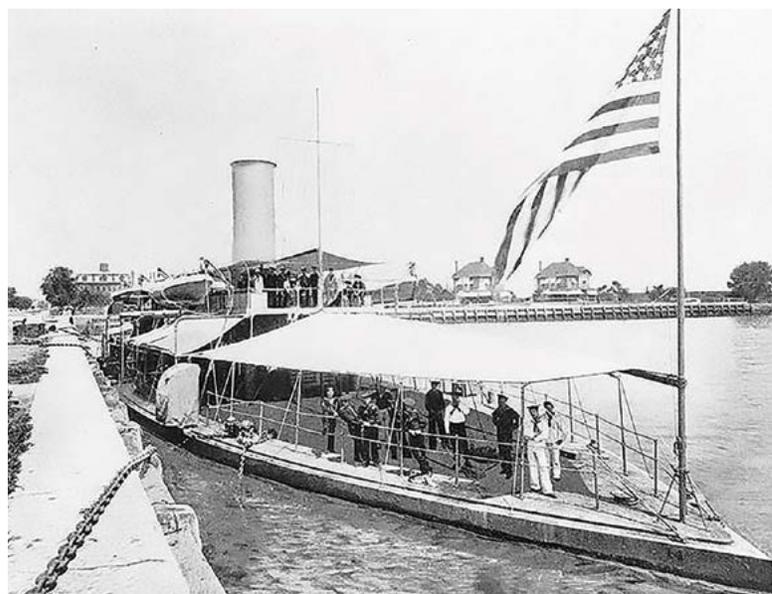


Figure 6. The USS *Manhattan* docked in port, ca. 1880s. COURTESY OF NAVAL HISTORY & HERITAGE COMMAND, FORMERLY KNOWN AS THE U.S. NAVAL HISTORICAL CENTER. [HTTPS://WWW.HISTORY.NAVY.MIL/OUR-COLLECTIONS/PHOTOGRAPHY/NUMERICAL-LIST-OF-IMAGES/NHHC-SERIES/NH-SERIES/NH-74000/NH-74470.HTML](https://www.history.navy.mil/our-collections/photography/numerical-list-of-images/nhhc-series/nh-series/nh-74000/nh-74470.html).

at almost every port. Only their base in Wilmington, NC remained. The Union's ironclads, particularly the ironclad USS *New Ironsides*, led the way for a land invasion there on Christmas Eve, 1864 and defeated the Confederate forces at Fort Fisher. Less than four months later the Civil War formally ended with Lee's surrender in Appomattox, VA, on April 9, 1865.



Figure 7. The USS *Manhattan* engine room clock with 8-1/2" dial. PHOTO BY THE AUTHOR.

Service after the Civil War

After the war, the USS *Manhattan* (Figure 6) continued to serve the fleet in cruises to a variety of southern ports. Her final destination was League Island in Philadelphia, PA, where she remained from 1881 until after the turn of the century. She was removed from the U.S. Naval Record on December 14, 1901, and sold for scrap on March 24, 1902.

On December 31, 1862, while under tow by the USS *Rhode Island*, the USS *Monitor* foundered during a storm off Cape Hatteras and sank; 4 officers and 12 sailors were lost. Her wreck was discovered in 1973 and partially recovered in 2002. Her artifacts are on display at the Mariners' Museum in Newport News, VA.

The USS *New Ironsides* was also decommissioned at League Island in Philadelphia, PA, in April 1865 and destroyed by fire in December of the same year.

In 1967 the U.S. Navy Department of Salvage in partnership with the Smithsonian Institution confirmed the location and the identity of the USS *Tecumseh* in Mobile Bay. Some items were removed during their dives (i.e., the anchor, some dishes, engine room gong), but consideration for complete recovery was abandoned after a major donor withdrew funding. She remains under the protection of the Secretary of the Navy as a declared "war grave" and is monitored by the U.S. Coast Guard.

In 1867, the CSS/US *Tennessee* was sold for scrap in New Orleans. The twin turreted USS *Chickasaw* and USS *Winnebago* met the same fate there in 1874, but

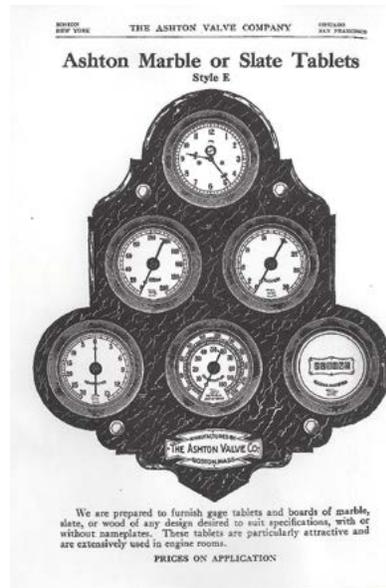


Figure 8. Ashton Valve Co. Catalog, 1916, page 144, Style E, Marble Gauge Board. Ashton gauge catalogs were not dated but were numbered to correspond with the year of issue. (No. 18 = 1918, etc.) The flyleaf on this no. 18 is signed "D.E. Davis 9/9/19." COURTESY OF ROGER CONNER.



Figure 9. The USS *Monitor*'s 8-1/2" dial empty clock case, 2008, recovered from the engine room. COURTESY OF THE MARINERS' MUSEUM, NEWPORT NEWS, VA.

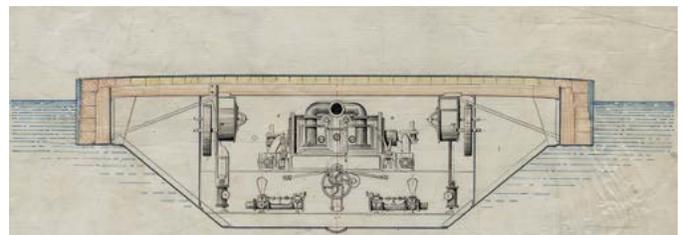


Figure 9A. Engine room diagram of the USS *Monitor*. Careful inspection of this diagram reveals the clock's location and the presence of additional instrumentation. COURTESY OF THE MARINERS' MUSEUM, NEWPORT NEWS, VA.

the latter ironclad was eventually re-sold by the salvager to the Peruvian Navy as a fighting vessel.

Clocks of the Ironclads

The USS *Manhattan's* E. Howard & Co. movement (Figure 13) has a 6-jewel escapement to accommodate a strong mainspring and keeps accurate time within two minutes per week.¹ The case was carefully polished and re-lacquered to keep the bezel's hot-rolled wavy glass intact which is retained by plaster. The locking bezel prevents accidental opening or any unauthorized efforts to alter the timing.

The absence of a rear case flange suggests that the clock was inserted in the USS *Manhattan's* engine room gauge board, a space-saving platform for monitoring all the engine room's instruments. An engineer could easily observe the engine's readiness and performance as well as the time (Figure 7). There is no evidence on the case to suggest it was ever mounted on a pedestal. Unlike the combined clock

and revolution counting devices, later engine room clocks were not confined solely for use in an engine room. They could also be placed elsewhere aboard ships for general use. Half-inset and full-inset models are still produced today by Chelsea Clock Co. for panel insertion where tight quarters restrict available space. Precise timing from the pilot house on down to the engine room would have been essential for a multitude of tasks in preparation of Farragut's planned invasion. Otherwise, line of sight signaling and navigation would remain limited.

The USS *Monitor's* clock made by Victor Giroud (NY) has a back flange on the case, indicating it was likely attached to the front of its engine room gauge board—where it was found detached—rather than inserted into it (Figures 9 and 9A).

A year apart in their manufacture, the similarity between Edward Howard's (1863) movement and the remains of the Victor Giroud (1862) movement recovered from the engine room clock of the USS

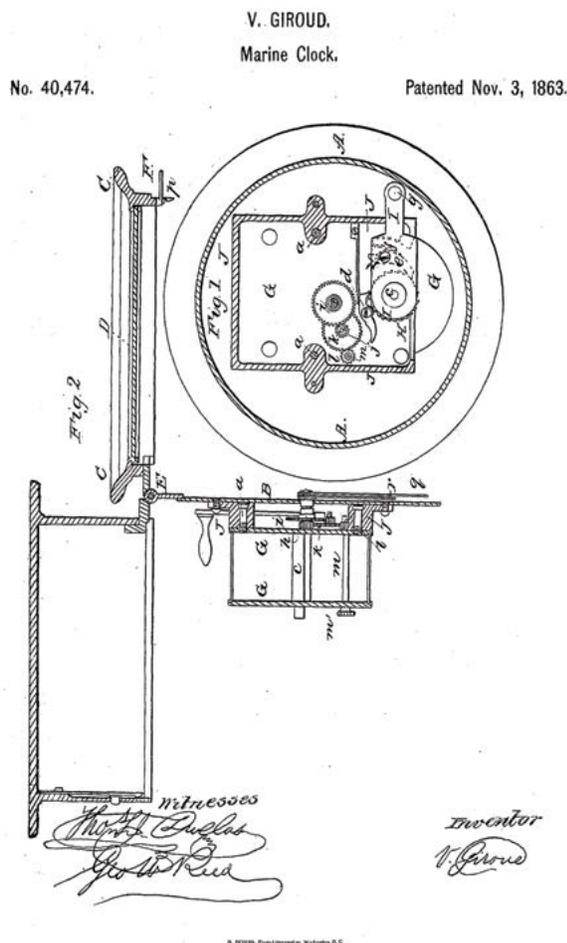


Figure 10. Victor Giroud patent. Washington, DC: U.S. Patent Office. [HTTP://WWW.GOOGLE.COM/PATENTS/US40474](http://www.google.com/patents/US40474).

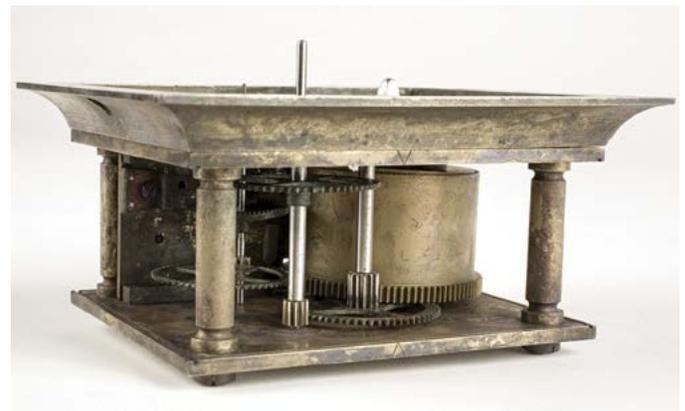


Figure 11. Giroud movement recovered in the engine room clock aboard the USS *Monitor* without its dust covers in place. COURTESY OF THE MARINERS' MUSEUM, NEWPORT NEWS, VA.

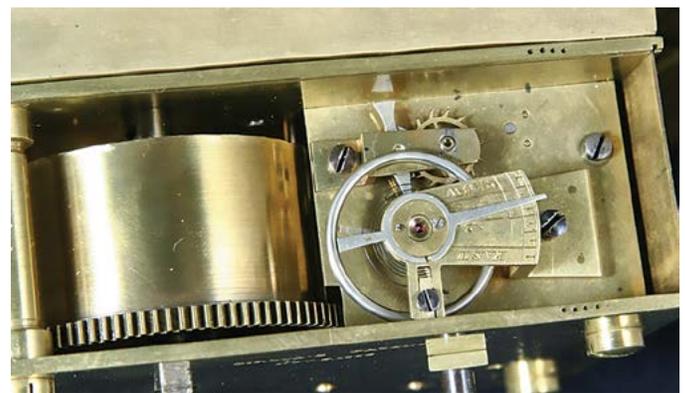
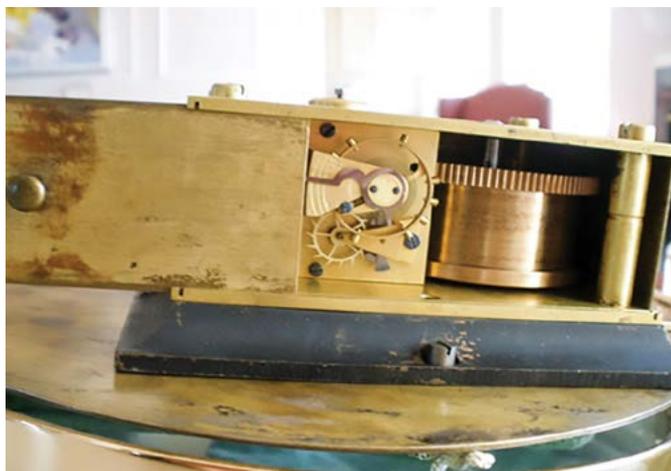


Figure 12. Typical Giroud movement restored by Roger Conner. COURTESY OF ROGER CONNER.

Monitor is unmistakable, which suggests the possibility of patent rights infringement. There are a few differences that might defeat this theory. While the E. Howard movement has a 6-jeweled escapement with poising screws on the balance wheel, the Giroud escapements have 2 jewels. The upper and lower balance staff is jeweled and the balance wheel is without poising screws. Without evidence of other patents from either company pertaining to the patterns of the movements' wheel trains, dial attachment or case designs, these features may have been considered standard mechanisms of the period like the dust covers. Giroud clocks seem to be as rare as E. Howard clocks made during this period of American history. I know of less than a handful of each that exists.

The purpose of Giroud's 1863 application for a patent (Figure 10) was to add a rear winding handle to the spring arbor of his clock. His application reads in part:

"My invention is more especially designed for clocks to be used in the engineers' rooms of steam vessels.



Figures 13. Like the Giroud movement, the E. Howard movement's upper knobbed dust cover slides open for regulation of the escapement. PHOTO BY THE AUTHOR.



Figure 14. The USS *Manhattan* clock and the E. Howard movement with direct dial attachment and dual hinge. PHOTO BY THE AUTHOR.

One object is to provide for the winding and the daily setting of the hands, which is necessary at sea, without the greasing and soiling of the dial and inside of the glass, which is almost unavoidable when the winding and setting are performed in front of the dial in the usual way. Another object is to obviate the difficulty which sometimes arises at sea from the loss of the ordinary winding-key, which is difficult to keep in place; and a third object is to avoid the bending or straining of the hands, which so often occurs in setting the clock by taking hold of the hands themselves."²

The Giroud movement (Figure 11) was partially rebuilt in 2008 for display at the Mariners' Museum in Newport News, VA. The conservation of the recovered movement with the assistance of NAWCC members Roger Conner (VA) and Jim Dyson (VA) was a lengthy and thoughtful process. Fortunately, Roger had a complete Victor Giroud movement (Figure 12) in his collection, and he was able to replicate the steel arbors, pinion gears, screws and some escapement parts.

Like the Giroud movement (1862), the E. Howard movement (1863) is attached directly to the rear of the dial (Figure 13). Likewise, a dual hinge allows the dial to swing open to accommodate easy access to the movement when a dial screw is removed at the 9 o'clock position (Figure 14).



Figure 15. The USS Manhattan's 8-1/2" dialed engine room clock. PHOTO BY THE AUTHOR.



Figure 16. Scrollwork on the USS Manhattan's dial. PHOTO BY THE AUTHOR.



Figure 17. The USS Monitor's engine revolution counter. COURTESY OF THE MARINERS' MUSEUM, NEWPORT NEWS, VA.



Figure 18. Restored USS New Ironsides combination clock and engine revolution counter in a 14" dialed case. The device is on loan from the U.S. Naval Historical Center in Washington, DC, to the Hampton Roads Naval Museum in Norfolk, VA. COURTESY OF JAMES DYSON.

The scrollwork design (Figures 15 and 16) of the USS *Manhattan's* 8-1/2" dial engraving is also similar to that seen on the USS *Monitor's* engine revolution counter's 8-1/2" dial (Figure 17) as well as the 14" dialed USS *New Ironsides* clock and engine revolution counter (Figures 19 and 20). This appears to have been a popular style of engraving adopted by competing manufacturers during this period and an effective advertising opportunity for both vendor and customer.

Launched on May 10, 1862, the USS *New Ironsides* clock also uses a V. Giroud movement. The clock was fully restored and is functional. There is no flange on the back of the case (Figure 18) and the pedestal mount appears original to the clock.

Considering the harsh conditions described by the USS *Manhattan's* Lt. Robert Ely, these movements withstood a significant level of abuse that included excessive heat, humidity, dirt and shock, which could

drive a human into an "insane asylum." Fortunately, there were some sane individuals who had the foresight to save them from the scrap piles.

Acknowledgments

Special thanks to Roger Conner, Jim Dyson, Bob Frishman, Lenny Taube, and Deric Wien for their technical expertise and contributions to this article.

Notes

1. Thanks to the expertise of NAWCC member Leonard Taube (Clockmedic.com), a 20-year veteran of the Chelsea Clock Co., now semi-retired.
2. "Improvement in marine clocks," Google Patents. Accessed April 26, 2017. <https://www.google.com/patents/US40474>.



Figure 19. Photo taken at the Hampton Roads Naval Museum, 2005. COURTESY OF JAMES DYSON.



Figure 20. The USS *New Ironsides* clock with a Giroud movement attached to the rear of the dial. COURTESY OF JAMES DYSON.

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