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# ***MERRIMACK***

## ***The Biography of a Steam Frigate***

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**Stephen Chapin Kinnaman**

Series in American History



**VERNON PRESS**

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Image on the back cover: *Launching of the Merrimack*. U.S. Navy Art Collection Catalogue # NH 86347-KN, courtesy of the Naval History and Heritage Command.

To my father, William Andrew Kinnaman



# TABLE OF CONTENTS

LIST OF ILLUSTRATIONS	ix
ACKNOWLEDGEMENTS	xi
PROLOGUE	xiii
MAPS	xxvii
BOOK ONE: <i>Special Service</i>	1
CHAPTER 1 <i>Six First-Class Steam-Frigates</i>	3
CHAPTER 2 <i>Constructor Lenthall's Conundrum</i>	11
CHAPTER 3 <i>The Charlestown Navy Yard</i>	21
CHAPTER 4 <i>A Warship is Commissioned</i>	29
CHAPTER 5 <i>The Trial Trip—What Does It All Mean?</i>	37
CHAPTER 6 <i>Commander Dahlgren and a Presidential Visit</i>	49
CHAPTER 7 <i>Derangement in our Motive Power</i>	57
CHAPTER 8 <i>Repairs at Boston</i>	67
CHAPTER 9 <i>New York Shakedown Voyage</i>	75
CHAPTER 10 <i>Southampton Water</i>	83

CHAPTER 11	
<i>European Port Tour</i>	93
CHAPTER 12	
<i>West Indian Cruise</i>	103
CHAPTER 13	
<i>Hampton Roads and Lay-up</i>	111
IMAGES	123
PLANS	139
BOOK TWO: <i>Pacific Squadron</i>	149
CHAPTER 14	
<i>Recommissioning</i>	151
CHAPTER 15	
<i>Around the Horn</i>	161
CHAPTER 16	
<i>West Coast of South America</i>	171
CHAPTER 17	
<i>The City of Kings</i>	179
CHAPTER 18	
<i>On To Panama</i>	189
CHAPTER 19	
<i>Back To Peru</i>	201
CHAPTER 20	
<i>The Lure of Hawaii</i>	213
CHAPTER 21	
<i>Realejo and Walker's Legacy</i>	225
CHAPTER 22	
<i>Panama, Callao and Long's Failing Health</i>	239
CHAPTER 23	
<i>Change of Command</i>	251
CHAPTER 24	
<i>Homeward Bound!</i>	263
EPILOGUE	273
APPENDIX 1	
<i>U.S. Navy Deck Logs</i>	287

APPENDIX 2	
<i>Principal Officers, Special Service</i>	293
APPENDIX 3	
<i>Principal Officers, Pacific Squadron</i>	295
APPENDIX 4	
<i>Inventory of Government Funds and Provisions in the Purser's Department</i>	297
NOTES	299
BIBLIOGRAPHY	335
INDEX	347





# LIST OF ILLUSTRATIONS

## MAPS

No. 1: <i>Plan of Boston</i>	xxix
No. 2: <i>U.S. Eastern Seaboard</i>	xxx
No. 3: <i>Norfolk, Hampton Roads and Vicinity</i>	xxxI
No. 4: <i>European Atlantic Coast</i>	xxxii
No. 5: <i>South America</i>	xxxiii
No. 6: <i>Bay of Callao</i>	xxxiv
No. 7: <i>Isthmus of Panama</i>	xxxv
No. 8: <i>North Pacific Ocean</i>	xxxvi
No. 9: <i>Puerto del Realejo</i>	xxxvii

## IMAGES

No. 1: <i>The Terrific Combat Between the "Monitor" 2 guns &amp; "Merrimac" 10 guns</i>	126
No. 2: <i>Boston Navy Yard</i>	127
No. 3: <i>Launching of the Merrimac</i>	128
No. 4: <i>The U.S. Steam Frigate Merrimac</i>	129
No. 5: <i>A Dahlgren Cannon</i>	130
No. 6: <i>United States 'Auxiliary Screw' Steam Frigate Merrimack</i>	131
No. 7: <i>Views of Norfolk and Portsmouth</i>	132
No. 8: <i>Burning of the Merrimack</i>	133
No. 9: <i>Secretary of the Navy J. C. Dobbin</i>	134
No. 10: <i>Constructor John Lenthall</i>	135
No. 11: <i>Captain Garrett J. Pendergrast</i>	136
No. 12: <i>Captain Robert B. Hitchcock</i>	137
No. 13: <i>Flag Officer John C. Long</i>	138

## PLANS

No. 1: <i>Sectional View of the U.S. Steam Frigate Merrimac</i>	141
No. 2: <i>Outboard Profile and Sail Plan</i>	142
No. 3: <i>Sheer, Half-Breadth and Inboard Profile Plans (Forward)</i>	143
No. 4: <i>Sheer, Half-Breadth, Body and Inboard Profile Plans (Aft)</i>	144
No. 5: <i>Propeller &amp; Well</i>	145
No. 6: <i>Boiler of the U.S. Screw Frigates</i>	146
No. 7: <i>Front Elevation and Cross Section Through the Cylinder</i>	147

## ACKNOWLEDGEMENTS

I have long been fascinated by the tale of the U.S. Steam Frigate *Merrimack*. The first of a class of new, powerful propeller-driven frigates, she was the talk of the nation when launched in 1855. Over the next few years news of her activities gradually slipped down the columns; by 1859 she drew coverage for her port calls as Pacific Squadron flagship. Then nothing—until she was burned during the Union's traumatic loss of its navy yard at Norfolk. A year later, resurrected as the Confederate ironclad ram *Virginia*, the so-called 'Merrimac' rocked both the North and South by her destructive exploits on the first day of the Battle of Hampton Roads, and again during her epic engagement with the Ericsson battery *Monitor*. Ever since then, the 'Monitor and Merrimac' have been frozen in time as a Currier and Ives image of a fierce gunnery duel between two revolutionary ironclads. But in that process the steam frigate *Merrimack* faded from memory. Who can recall any of her exploits as a United States ship?

It is for this reason that this book has been created—to tell the magnificent story of the U.S. Steam Frigate *Merrimack*. Her history is irrevocably entwined with that of the antebellum Navy—a service that was radically transformed by the crucible of the Civil War. And so this book's scope embraces a world afloat that is gone forever, but which is very much alive in the words and deeds of those who have left us a record of their everyday achievements.

My initial curiosity about *Merrimack* took me to Washington, D.C. and the reading room of the National Archives. There, in November 2000, the Archives' able staff placed before me the four leather-bound volumes of her log books spanning the frigate's brief career as a commissioned warship of the U.S. Navy. Over several long days, I poured through hundreds of pages and their cursive entries, gradually piecing together the details of her active but short life. I had an even more satisfying experience twelve years later when I returned to the same institution and pulled copies of the masses of correspondence that guided *Merrimack's* career—letters to and from the secretary of the navy, her flag officers and her captains. My biggest regret is that, to keep this book to a reasonable length and avoid bogging down the reader, only a small fraction of the

wonderfully colorful details arising from both logs and letters could be faithfully transferred to these pages.

The inspiration to write the story of *Merrimack* came from my father, William Andrew Kinnaman, to whom I have dedicated this book. An Annapolis graduate (class of 1945), former Navy officer, and avid reader of history, he urged me on but, regrettably, did not live to see the culmination of my efforts. Many others have supported my drive to complete this book's manuscript, but first and foremost was my dear wife, Maureen Carroll. I thank you both, from the bottom of my heart.

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Many thanks to each of you. Your help made my work writing this book that much easier. But any errors of concept, fact or interpretation, however, are mine alone for which I accept full responsibility.

Stephen Chapin Kinnaman  
Chappell Hill, Texas  
September, 2018

## PROLOGUE

*For never before was anything like it dreamed of by the greatest enthusiast in maritime warfare.<sup>1</sup>*

The 8<sup>th</sup> of March 1862 found the nation that was the United States of America divided into an unhappy amalgam of states, some owing allegiance to the federal Republic and others to a new southern Confederacy. The American Civil War, now entering its twelfth month, had already pitted brother against brother and state against state. It had also created new geographic boundaries determined by military strength. Nowhere was this national fracture more vividly etched than Saturday morning than on the waters of Hampton Roads, a large natural harbor lying entirely within the state of Virginia, at the juncture of the James River estuary and the mouth of the Chesapeake Bay. For while a fleet of over sixty vessels, both merchant and naval, lay on the calm waters of Hampton Roads that mild, bright and clear spring morning, the harmony of the old Union was visibly dislocated. In April of the previous year, the United States Navy had been forcibly evicted by forces loyal to the rebellion from its premier Atlantic base at Gosport, near Norfolk, Virginia. So while a formidable assemblage of U.S. Navy warships was present in its accustomed anchorage of Hampton Roads, it was cast in the unenviable position of blockading the approaches to its former base, a facility now in enemy hands. Even worse, rumors had been verified that the Confederates were hard at work converting the hulk of the steam frigate *Merrimack*, formerly the pride of the U.S. Navy and thought to have been burned beyond repair by federal forces fleeing Norfolk, into a powerful warship of an altogether novel form—a steam-powered ironclad ram.<sup>2</sup> What sort of adversary the resurrected *Merrimack*—now appropriately rechristened as the C.S.S. *Virginia*—might possibly be, when she might appear, and what the Confederacy ultimately planned to do with such a terrible monster, was anyone's guess. The Union's belated response to the Southern challenge, the new and untested Ericsson steam battery, U.S.S. *Monitor*, was still in transit to Hampton Roads and expected any day. Meanwhile the Union warships went about their Saturday morning routines with an air of practiced familiarity.

The Union Navy's blockading force at Hampton Roads on that fateful day consisted of a number of well-known and formidable warships of the antebellum U.S. Navy. The large steam frigates *Minnesota* and *Roanoke*, sisters to the unfortunate *Merrimack* and currently the most powerful vessels in the U.S. Navy, gave strength to the squadron, with the former acting as flagship. *Roanoke*, however, was hobbled that morning by the recent removal of her propeller shaft. The old sailing frigate *St. Lawrence* was also moored nearby. All of these ships, together with the French steam paddle sloop-of-war *Gassendi* and a small fleet of navy and army storeships, transports, tugs and miscellaneous craft were at anchor close to the Union-held Fort Monroe, situated on Old Point Comfort at the northeast corner of Hampton Roads. Anchored several miles further to the west, off of Newport News and the mouth of the James River, were the 50-gun sailing frigate *Congress* and the sloop-of-war *Cumberland*. Both ships had been placed in that exposed location to protect federal troops on the adjacent shore at Camp Butler and to block access to the Gosport Navy Yard by Confederate ships lying further up the James River. *Congress*, a frigate with a direct pedigree to 'Old Ironsides', had earned the reputation of being a favorite ship of the bygone sailing navy, while *Cumberland*, a former frigate, had been recently 'razeed' into a 24-gun spar deck sloop-of-war.

\* \* \*

Certain ironies and coincidences have a way of asserting themselves, and on that early March morning, they were present in abundance. Chief among them was the genesis of the ironclad threat facing the Hampton Roads squadron and the subject of this book, the U.S.S. *Merrimack*. The first of a series of six screw-propelled steam frigates authorized by Congress in 1854, *Merrimack* had enjoyed the reputation of being the most powerful and advanced warship in the U.S. Navy. An enormous vessel, bigger than any frigate built before, she equaled the fire power of many ships-of-the-line that had preceded her. The new class of steam frigates floated at a fully-laden draft of nearly 24 ft, which at the time was harshly noted to be great enough to "shut them out of nine-tenths of the harbors of the nation's entire sea-coast."<sup>3</sup> This prognostication was proven to be all too true during the remaining hours of 8 March 1862 and on the following day ... but then we are getting ahead of the story.

Sails constituted *Merrimack's* main source of propulsion. The new frigates' design philosophy intended their engines for only auxiliary service—entering and leaving ports and for maneuvering when fighting other ships. In consequence, *Merrimack* was relatively under-powered for a warship of her size, her machinery producing less than 1,000

horsepower. Her engines also suffered from poor design and gave frequent problems during the frigate's earlier commissions. The need to refit the ship and repair her defective machinery accounted for *Merrimack's* presence at the Gosport Navy Yard during spring of the year before, when secessionist forces seized the navy base. *Merrimack's* greatest weakness inadvertently contributed to her being recast as one of the Confederacy's most powerful threats, the ironclad ram C.S.S. *Virginia*.

The assignment of *Virginia's* officers provided more irony. Nearly a quarter of the old U.S. Navy's officers resigned their commissions at the beginning of the Civil War and had 'gone South', resulting in stark divisions, even at the family level.<sup>4</sup> First among the connections between the two naval services that were to face each other at Hampton Roads was that of *Virginia's* commander and flag officer, Captain Franklin Buchanan. A former U.S. Navy officer nicknamed 'Old Buck', Buchanan had a brother, McKean Buchanan, who remained in the U.S. Navy. McKean Buchanan was the paymaster on board the U.S.S. *Congress*, anchored that March morning off Newport News, and well aware that his brother was in command of the rumored Confederate ironclad.<sup>5</sup>

*Virginia's* first lieutenant or executive officer was a former U.S. Navy lieutenant and gunnery specialist by the name of Catesby ap Roger Jones. During *Merrimack's* first commission, Jones was attached to the ship at the behest of Commander John Dahlgren, the U.S. Navy's assistant inspector of ordnance, who wanted to ensure the frigate's battery of new Dahlgren-designed cannons were efficiently handled, and to note any areas for improvement. As fate would have it, following the wounding of Captain Buchanan, Jones was to command *Virginia* during her second day's action at Hampton Roads.

Another old ex-*Merrimack* hand also showed up on the list of *Virginia's* officers, H. Ashton Ramsay. Ramsay, formerly the steam frigate *Merrimack's* second assistant engineer during her stint as Pacific squadron flagship from 1857 to 1860, had been appointed the C.S.S. *Virginia's* acting chief engineer. Through Ramsay's presence, *Virginia's* new masters gained first-hand knowledge of the ironclad's inherited machinery idiosyncrasies.

And then there was Chief Engineer Alban Stimers, who had served on *Merrimack* during both of her commissions. On that fateful day in March, when the C.S.S. *Virginia* met her match in the first combat between ironclads, Stimers would be on board the U.S.S. *Monitor*.

We now have the basic contours of what a previous author aptly dubbed a 'Ship of Destiny': the former pride of the U.S. Navy, the steam frigate *Merrimack*, currently manned by enemies of the Republic—some of whom

had served in her as U.S. Navy officers—and now converted into a novel engine of war, an ironclad ram renamed by her new masters as the Confederate States Ship *Virginia*.<sup>6</sup>

\* \* \*

Late in the morning of 8 March, Union army lookouts at Newport News sighted smoke arising from the direction of the Elizabeth River, the entrance to the Gosport Navy Yard. Shortly before 1 p.m., the nascent activity prompted *Cumberland's* watchful officers to dispatch her tender, the steam tug *Zouave*, to investigate. Soon *Zouave's* captain sighted “what to all appearances looked like the roof of a very big barn belching forth smoke as from a chimney fire.”<sup>7</sup> *Zouave* fired a number of long range shots from her single gun, then turned tail and headed back to Newport News. *Virginia* had finally sortied.

The ironclad's sudden appearance caught the U.S. Navy off guard. *Cumberland's* crew's laundry was strung up between her masts, and her captain, William Radford, had left to attend a court-martial on board the nearby *Roanoke*. The ship nearest to *Cumberland*, *Congress*, was undermanned. A detachment of the 99<sup>th</sup> New York Infantry had come on board to make up some of the deficiency. Even more inimical to prompt action, her former captain, Commander W. B. Smith, having just handed over command to Lieutenant Joseph B. Smith, remained on board, awaiting a boat to take him to his new assignment. The other U.S ships lying closer to Fort Monroe exhibited varying degrees of readiness, but as events transpired, most were poorly placed to affect the outcome that day at Hampton Roads.<sup>8</sup>

While Captain Franklin Buchanan couldn't have known of the inefficiencies of the federal fleet that lay sprawled before him that morning, he did know that he was headed into harm's way, commanding an entirely untested warship, without the benefit of the sea trials and rigorous crew training so necessary to gain a captain's confidence. During the passage down the Elizabeth River, *Virginia's* steering proved erratic but fortunately her machinery performed well enough to give her a speed of five knots. Her deep draft—an undesirable legacy of *Merrimack's* frigate hull form—limited Buchanan's tactical options which were further curtailed by the ship's cumbersome maneuvering characteristics. But as great as the risks, the stakes were greater still. If the Union blockade of Hampton Roads could be lifted, or even significantly disrupted, McClellan's advance up the Yorktown Peninsula toward Richmond would be stopped in its tracks. On an even larger scale, a Confederate victory over Union naval forces might even yield the greatest prize of all: recognition of



the Confederate States by Great Britain and France. Buchanan's day of destiny had arrived, and he eagerly grasped it for all it was worth.

Now into the open expanse of Hampton Roads, Buchanan steered *Virginia* increasingly to the west, toward Newport News and the two isolated U.S. warships, *Congress* and *Cumberland*. Accompanied by the armed tugs *Beaufort* and *Raleigh*, *Virginia*'s officers and crew witnessed the frantic exertions of the U.S. Navy to prepare for what appeared to be imminent action: *Minnesota* was observed rapidly raising steam, while Union tugs moved to take *Roanoke* and *St. Lawrence* under tow. Laundry was hurriedly struck from *Cumberland*'s rigging as both she and *Congress* beat to quarters. The sun shone brightly over the still waters of Hampton Roads; a light wind blew from the west-south-west.

*Virginia* inexorably steamed on toward Newport News. It became clear to those watching that the Confederate plan was to attack both *Congress* and *Cumberland* before the other ships of the Union squadron could come to their aid. At about 2:20 p.m., when *Virginia* was within 1,500 yards of *Cumberland*, she finally opened fire with a ranging shot from her bow rifle. *Cumberland* replied in kind with her forward pivot gun, opening the general action. *Congress* had also begun firing on *Virginia*, and when the ironclad leviathan drew abreast, she blasted the Confederate ship with a full twenty-five gun broadside. But her shot simply glanced off *Virginia*'s armored sides with no visible effect. Now in a position to bring her own broadside to bear, *Virginia* loosed a devastating hail of fire into the wooden frigate, some of the balls 'hot shot' from her furnaces. A second broadside soon followed the first. The effect on *Congress* was immediate: her once immaculate decks ran red with her crew's blood, while smoke and flame erupted from where the heated balls lodged.<sup>9</sup>

Rather than turning to press her attack on *Congress*, the Confederate ironclad steamed west, toward *Cumberland*. Unlike her consort, *Cumberland* had deployed a system of spring cables which allowed the unpowered sailing vessel to swing her broadside battery to best advantage. After being raked by several punishing rounds from *Virginia*, *Cumberland* maneuvered on her springs, swung herself to present her broadside to the oncoming monster, and commenced firing. Union shore batteries at Newport News also opened up on the Confederate warship. Meanwhile, Buchanan steered *Virginia* straight toward *Cumberland*, firing from his bow rifle while his starboard guns engaged the Union shore batteries. Both sides' cannonade became so intense that the roads' still surface was constantly swept in all directions by the shot. It soon dawned on *Cumberland*'s crew that the Confederates planned to do more than just pummel their ship with cannon fire—they were going to ram!

Then *Virginia* struck: the clearly audible sound of *Cumberland's* bursting timbers was accompanied by a jolt that unsteadied a number of the Confederates. The ironclad's crew, safe in their armored casemate, realized they had driven their bow deep into the hapless sloop-of-war. *Virginia's* engines raced full astern. Her propeller lashed the sea, struggling to pull her free from *Cumberland's* side. *Virginia's* bow dipped ever lower as the rapidly filling *Cumberland* began to list, still blasting broadsides into her ironclad tormenter. Finally wrenching herself from her prey, *Virginia* swung alongside the wounded sloop, both ships hammering one another with furious cannonades. *Cumberland* began heeling further, her lower decks already under water; but her guns still returned fire, her crew bravely steadfast. At this point, one of *Virginia's* officers demanded *Cumberland's* surrender, only to hear the response, "Never! We will sink with our colors flying."<sup>10</sup> Her end came soon after, with one observer describing the scene, "then she went down like a bar of iron, but her flag still flew at her mast head; all was lost except honor."<sup>11</sup>

*Virginia* now began the laborious process of turning around in the restricted waters of the James River as a prelude to refocusing her attention on *Congress*. Meanwhile, the other vessels of the Union fleet struggled to provide relief to their two stricken consorts, but to little avail: *Minnesota* had run aground almost two miles from Newport News (the deep draft criticism of *Merrimack* and her sister steam frigates was demonstrated beyond doubt), and the disabled *Roanoke* together with *St. Lawrence* were got under tow but soon grounded, little closer to the action. *Congress*, in the meantime, had managed to beach herself on the Newport News foreshore and was struggling to staunch her leaks, extinguish fires, and prepare for further action. She did not have long to wait.

Within an hour, *Virginia* had turned and maneuvered into position across *Congress's* stern. She proceeded to pour a withering raking fire into the immobilized frigate, killing her captain, Lieutenant Joseph Smith, and many more of her crew. With their ship in flames and her decks swept by murderous cannon fire which could not be returned, *Congress's* officers hauled down their flag. *Virginia* ceased firing; it was just 5 p.m. The Confederates attempted to board the stricken frigate, but the U.S. Army units lining the shore would not stand for it and rained musket balls on every Southern movement. The Army's intransigence unwittingly sealed the fate of *Congress's* officers and crew.

The Confederates had no choice but to break off their attempt to board *Congress*. 'Old Buck', standing on *Virginia's* spar deck, became so enraged by the continued Union fire in spite of a flag of surrender that he shouted, "Destroy that \_\_\_\_\_ ship! She's firing on our white flag!"<sup>12</sup> He was then

struck in the groin by a musket ball, forcing him to relinquish command to Lieutenant Catesby ap Roger Jones. Buchanan's order stood. Hot shot smashed into the burning frigate as her crew sought to escape from the hopeless charnel house.

*Congress* was clearly doomed. Jones, a former U.S. Navy officer, was probably relieved to be able to report to Buchanan that his directive had been carried out, and have an excuse to stop the slaughter. And as the Confederates could plainly see, there were other fish to fry; Jones decided to attack the steam frigate *Minnesota*. She was the biggest and best target: close by, hard aground, and one of the most valuable U.S. Navy assets still afloat in Hampton Roads. However, as *Virginia* moved in for the kill, her crew discovered that the fading light was making it difficult to hit their prey. Even worse, the tide was on the ebb, and *Virginia's* pilots cautioned Jones that to move any closer would cause the deep-draft *Virginia* to run aground. With some hesitation, Jones heeded the pilots' advice and steered for Sewell's point, at the mouth of the Elizabeth River. After all, it would be easy enough to finish off *Minnesota* the following morning, once *Virginia's* crew had been rested and her battle damage repaired. By 8:00 p.m. the battered ironclad was at anchor, safe under the guns of a nearby Confederate shore battery. Soon boats came out to take away the ship's wounded and the bodies of her only fatalities, two men who died during the fight with *Cumberland*.

\* \* \*

It had been a stunning day for both the United States and Confederate navies, although for entirely different reasons. Single ship actions which resulted in the capture or even the destruction of the antagonist were the expected outcome of early nineteenth century naval encounters. For a single ship to challenge an entire squadron and utterly destroy two of its finest vessels—while remaining fit for combat—was simply breath-taking. In addition to its material loss, on 8 March 1862 the U.S. Navy suffered nearly 280 men dead or wounded against 27 for the Confederates.<sup>13</sup> Panic greeted the news of the Union catastrophe. At an emergency meeting of Lincoln's cabinet, War Secretary Stanton voiced his fears that "the Merrimac would ... come up the Potomac and disperse Congress, destroy the Capitol and public buildings; or she might go to Boston or New York and destroy those cities."<sup>14</sup> It was the most humiliating defeat the U.S. Navy had suffered since the War of 1812, or would experience until Pearl Harbor. For the Confederates, *Virginia's* success was a tonic to a fledgling nation fighting a defensive war at sea against the might of the U.S. Navy's blockading squadrons. Could her accomplishment be repeated?

\* \* \*

By 6 the next morning, *Virginia* was under way and after a pause due to fog, was standing for Hampton Roads. During the night before, the Confederates had hastily surveyed their battle damage and repaired what they could. *Virginia's* funnel was shredded, her spar deck's stanchions, davits and fittings had been swept away, her bow was leaking in way of its fractured ram and some ninety-eight indentations from heavy shot were visible in her armor plating. With the glow provided by the still-burning *Congress*—which finally exploded just after midnight—one of the Southern pilots thought he saw a strange craft near *Minnesota*, possibly the rumored 'Ericsson battery'. Jones was skeptical and, hoping for a repeat of the previous day's success, prepared his ship for the job of destroying *Minnesota*. As *Virginia* drew closer to the still stationary steam frigate, an observer on board one of her gunboat consorts recorded his incredulous sighting: "Close alongside of her there lay such a craft as the eyes of a seaman does not delight in—an immense shingle floating on the water, with a gigantic cheesebox rising from its centre; no sails, no wheels, no smokestacks, no guns ... What could it be?"<sup>15</sup> They were soon to find out.

When she had closed to within a mile of her prey, *Virginia* opened fire. Then, as Engineer Ramsay observed, "suddenly, to our astonishment, a black object that looked like ... 'a barrel-head afloat with a cheesebox on top of it,' moved slowly out from under the *Minnesota* and boldly confronted us."<sup>16</sup> The U.S.S. *Monitor* had engaged the C.S.S. *Virginia*, and naval warfare would forever be changed. As *Minnesota's* captain noted, "the contrast was of a pygmy to a giant," and in time, as combat between the two ironclads progressed, he recorded the prescient observation that introduced this prologue.<sup>17</sup>

*Monitor* and *Virginia* then began one of the most famous warship duels in history: the second day of the Battle of Hampton Roads. Closing at times to mere yards apart, the two antagonists exchanged fierce gunfire for the next three hours. Her easy kill of *Minnesota* thwarted, *Virginia* struggled to swat away her tormenter. And *Monitor*, whose crew like *Virginia's* the day before, were fighting for the first time on a novel and untested warship, gave as good as they got despite having had a sleepless night. As the struggle carried on, it became increasingly apparent to all that the Confederate colossus had finally met her match. *Monitor's* nimbleness, aided by her shallow draft, enabled her to run circles around her much larger adversary, and her single turret proved to be a difficult target for *Virginia's* heavy guns. At about 11:30 a.m., while trying to close on *Minnesota* during a lull in the combat, *Virginia* ran hard aground. *Monitor* was quick to take advantage of the mishap, and blasted her rival at close range, severely punishing her armor plating.

The fate of *Virginia* was in the hands of Engineer Ramsay. Reacting in a way that would horrify modern safety managers, Ramsay “lashed down the safety valves, heaped quick-burning combustibles into the already raging fires, and brought the boilers to a pressure that would have been unsafe under ordinary circumstances.”<sup>18</sup> Her propeller thrashing wildly in reverse, *Virginia's* crew tensely awaited the outcome. Nothing. Even more oiled cotton wastes and splits of wood were heaved into the fires. Still nothing. The crew began to despair—then imperceptibly at first the huge ship shuddered, and slowly pulled herself free. They were saved!

A frustrated Captain Jones then attempted to ram the little *Monitor*, and for all his trouble succeeded in merely dishing in her side armor but no more. *Monitor* continued to hound *Virginia* and the Southerners gamely fired back, although it was beginning to dawn on them that their gunnery was having little effect on the Union ironclad. Armed with only explosive shells for the anticipated engagement with wooden warships, *Virginia's* gunners had not been supplied with the armor-piercing bolts which might have enabled her powerful Brooke rifles to penetrate *Monitor's* armor. When asked by Captain Jones why the guns of his division had fallen silent, Lieutenant Eggleston replied that “I find I can do the *Monitor* about as much damage by snapping my finger at her every five minutes.”<sup>19</sup> As the inconclusive engagement wore on, the Confederates determined they must board the *Monitor*, cover her pilot house with an old coat, and jam the turret with steel wedges. Unable to close on *Minnesota* or visibly damage their ironclad adversary, the ancient tactic seemed the only way to break the stalemate. Then, after over three hours of combat, *Virginia* made a lucky shot: her stern rifle, commanded by Lieutenant John Taylor Wood, swung into a direct bead on *Monitor's* stubby pilot house. Wood jerked the lanyard and the shell hit true, blasting the iron structure just as *Monitor's* Captain John Worden was peering out. Miraculously Worden was not killed, but he was temporarily blinded by the shell's explosion and fell to the deck. While her executive officer scrambled to take control of the ship, *Monitor* broke off action and retired into shallows where *Virginia* could not follow.

It didn't take long before *Virginia's* officers realized something was amiss. With *Monitor* seemingly running from the fight, the way was clear to resume the attack on *Minnesota*. But now the tide was beginning to ebb, and the ever-cautious Southern pilots refused to place the ironclad any closer than a mile from the grounded steam frigate. *Virginia's* crew was exhausted from hours of sustained, close-in combat; unable to effectively fight either *Monitor* or *Minnesota*, Jones called together his fellow officers. After presenting his synopsis of the situation, Jones proposed they return

to their base at Gosport. While some protests were voiced, the decision to retire was grudgingly accepted. It was now about 12:10 p.m. After firing a closing round from her stern rifle—the final shot of the first duel of ironclads—*Virginia* set a course for the Elizabeth River, leaving the Union squadron to lick their wounds. It was the last time the two ships would engage in close combat.

\* \* \*

The second day of the Battle of Hampton Roads ended in a curious denouement. Neither the North or South could claim victory, yet both celebrated the defeat of its enemy. Apart from Captain Worden, no other casualties were suffered by either side, and Worden eventually recovered his eyesight and went on to become an admiral. Each of the ironclads was still battle-worthy at the time of disengagement and, in fact, had sustained surprisingly few hits: *Monitor* was struck twenty times and *Virginia* not much more. Save for the loss of a Union tug, no other ships had been sunk or significantly injured. The difference in outcomes between the first and second days' battle was striking. Only upon taking a closer look at the balance of naval power at Hampton Roads on the evening of 9 March 1862, can it be grasped why both sides claimed a victory.

The Confederates had, in two days of fierce combat, badly shaken the Union blockading squadron that still lay under the guns of Fort Monroe. Two of the U.S. Navy's finest ships had been destroyed and their fleet's savior, *Monitor*, had been fought to a draw. *Virginia* remained a viable threat to any Union ship in Hampton Roads—and in the weeks to come would capture several transports. In the strategic sense, *Virginia's* very presence at Hampton Roads was a victory. Union General McClellan was forced to divert his Peninsula Campaign's base of operations from the James to the York River, and the U.S. Navy followed suit, adjusting the disposition of its ships to deal with the continuing presence of the South's powerful ironclad ram.

Yet the North had reason, too, for celebration. Its warships at Hampton Roads had been spared further destruction; after the events of 8 March, *Minnesota's* demise had been taken for granted by even the most optimistic U.S. naval officer. The novel threat of the C.S.S. *Virginia* had been met and checked on the battle's second day. The little *Monitor* was a success, and its name henceforth applied to that class of heavily armed warships distinguished by their shallow draft.

Beyond the simple calculus of the North and the South, the Battle of Hampton Roads exerted a profound and irreversible influence on the navies of the mid nineteenth century. The frigate *Congress* and the sloop-

of-war *Cumberland*, each hitherto regarded as the epitome of an efficient man-of-war, had been swept from the surface of the sea in mere hours by the studied actions of a single attacker mounting but a fraction of their broadside throw weight. Steam power, of course, played a vital part, but *Virginia's* ironclad casemate sealed the Union ships' fate. The second day of the battle merely underscored the conclusions of the first, namely that only an ironclad vessel could survive the assault from another ironclad. The 'wooden walls' that had defined naval power for centuries were now obsolete; they had been unceremoniously shoved aside by the march of technology.

\* \* \*

The Battle of Hampton Roads became not only a seminal event in naval history, but also in the national psyche of the United States. It grew beyond a naval engagement that marked a turning point in McClellan's Peninsula Campaign; it exemplified the triumph of Yankee ingenuity. Doughty little *Monitor*, a technical marvel of its time, had met the Southern menace and fought her until she withdrew from the field of combat—or at least that's how the victors saw it. The Union fleet had been saved, and even if *Virginia* still lurked in her den, she had been contained. The duel between the two ironclads has become a favorite, oft told story of the American Civil War. But curiously enough, the Battle of Hampton Roads is usually described as the fight between the *Monitor* and *Merrimack*. This is most certainly true of the more popular accounts of the battle. Contemporary Southern accounts reliably refer to their ironclad by the name she bore during her historic engagement, *Virginia*. Confederate Colonel William Norris aggressively justified their rationale:

And *Virginia* was her name, not *Merrimac* ... which meanly compares with the sonorous sweetness of "*Virginia*." She fought under Confederate colors, and her fame belongs to all of us; but there was a peculiar fitness in the name we gave her. *In Virginia, of Virginia iron and wood, and by Virginians* was she built, and *in Virginia's waters* ... she made a record which shall live forever.<sup>20</sup>

However, the vast majority of writers insist on calling the Southern ironclad *Merrimack*, the name of the old steam frigate from which she was converted. The reasons for this solecism are deeply embedded, for it is said that the victor writes the history. This might explain the constant use of the name *Merrimack* (or even more often, *Merrimac*) in the first-hand accounts of the U.S. Navy officers and crew who either participated in or witnessed the Battle of Hampton Roads. Reading the official report of the battle written by the U.S.S. *Minnesota's* Captain Van Brunt—who was literally in the middle of the action for two days—not once does the name

*Virginia* appear in his otherwise well-written and keenly observed account. Other reports and writings by Union naval officers show the same phenomenon. Even the Confederate naval officer, Lieutenant William H. Parker, who had cruised in the steam frigate *Merrimack* during her spell as flagship of the U.S. Navy's Pacific Squadron in the late 1850s and as captain of the gunboat *Beaufort*, accompanied *Virginia* during the Battle of Hampton Roads, clung to the appellation *Merrimac* in his memoirs.<sup>21</sup> What could cause knowledgeable observers, who most certainly knew that the ironclad attacking them was the C.S.S. *Virginia*, to consistently call the ship *Merrimack*? The answer must lie, in large part, to the writers' unwillingness to forget that the warship they now faced was once the U.S. Steam Frigate *Merrimack*. Little over a year before, *Merrimack* was one of the most powerful ships of the U.S. Navy; now the frigate's burned hull, transformed by rebel forces into a grotesquely shaped ironclad monster, was stalking the ships of the Navy's Hampton Roads squadron. To them, it was *Merrimack* they were facing those days in early March, and *Merrimack* she would always be. But by adapting such a mentality, the image of the steam frigate *Merrimack* soon faded. In time the myth of the *Merrimack*—the C.S.S. *Virginia* at Hampton Roads—eventually displaced the memory of the magnificent antebellum U.S. Navy warship. The steam frigate *Merrimack* lost her identity. To this day, one can peruse the shelves of a library (or surf the internet) and find numerous references to the fight between the *Monitor* and *Merrimack*, works on Union and Confederate ironclads, books detailing the ships and organization of the United States and Confederate navies, tales of the Southern commerce raiders, excellent histories of the naval campaigns that shaped the Civil War, and so on. But try and find a book about the career of the U.S.S. *Merrimack*. This work, in the author's humble opinion, represents a long overdue need to fill this missing gap of United States naval history.

\* \* \*

*Merrimack* is the biography of a warship, the U.S. Steam Frigate *Merrimack*. One of the principal sources for telling her story was the ship's deck logs. See Appendix 1 for an in-depth treatment of that subject. The official life of *Merrimack*, according to her log, started at the Charlestown Navy Yard (near Boston) on 20 February 1856, at the beginning of her first commission, and finished on 16 February 1860, at the end of her second commission, when she was laid up at the Gosport Navy Yard. Her first commission took her on a 'special service' cruise in the North Atlantic and, following repairs at Boston, her second commission saw her undertake a much longer voyage as the flagship of the Pacific Squadron. The career of the U.S.S. *Merrimack* was relatively uneventful—at least until April 1861,



when she fell into the hands of the Confederates. She never fired her guns in anger, nor was she the instrument of discovery or conquest. On the other hand, she steered clear of the accidents and disasters that so populated the marine world of the nineteenth century. Her qualities as a ship were decidedly ordinary as well. If anything she was under-powered as a steamer and turned in only average passages as a sailing ship. While not the last big wooden frigate built by the U.S. Navy with broadside guns on two decks—that honor belongs to the relatively obscure U.S.S. *Franklin*—she was the lead ship of a new class that epitomized the U.S. Navy's preference for frigates significantly larger than their foreign contemporaries.<sup>22</sup> Two of her sisters—*Minnesota* and *Wabash*—survived into the twentieth century, albeit as a gunnery hulk and a receiving ship, respectively.

So then if the life of *Merrimack* as a steam frigate was unremarkable, why tell it? Beyond being the 'ship of destiny' that struck fear into the North at Hampton Roads, *Merrimack's* career in the U.S. Navy serves as a vehicle to illustrate the world of American maritime commerce and naval activity on the eve of the American Civil War. Within the musty pages of her deck logs and other contemporary documents arises a fascinating picture of a by-gone age. Hidden between drowsy accounts of weather, courses made good, gun drills, and endless salutes are brilliant gems which throw light onto the routine of naval life during the years before a war that so altered the nation. It was a period that saw the ascension of steam over sail, albeit imperfectly, with *Merrimack* being in the vanguard of change. Shell guns had largely replaced solid shot cannon, and the naval rifle was rapidly coming to the fore. The ascent of the ironclad, scarcely noticed during the campaigns of the British and French fleets during the Crimean War, was dramatically demonstrated at Hampton Roads. *Merrimack's* brief career encapsulated an accelerating revolution of naval technology.

The late 1850s also marked the high water of the American merchant marine, a dominance it was to never again experience after being gutted by depredations suffered during four long years of conflict. Swift clippers, ubiquitous merchantmen, paddle wheel steam packets, and scores of smoky whale ships—all flying the stars and stripes—ceaselessly cruised the oceans of the world in search of profit. The period encompassed by *Merrimack's* short life was one of seemingly boundless American expansion, both geographically and metaphorically. The optimism of a growing young nation and its physical manifestations, unchecked as of yet by a bitter internecine struggle, were witnessed by the officers and men of the U.S. Steam Frigate *Merrimack*. Her career was then a microcosm of the antebellum United States of America during a vibrant but largely forgotten

time of national expansion. Yes, *Merrimack's* tale is indeed worth telling.  
*Bon voyage!*

\* \* \*

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# BIBLIOGRAPHY

## Government Documents and Publications

National Archives and Records Administration (NARA), Washington, D.C.:

- Record Group 24, Records of the Bureau of Naval Personnel, Deck Logs, USS *Merrimack*.
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, M89, Letters Received by the Secretary of the Navy from Commanding Officers of Squadrons (“Squadron Letters”).
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, M125, Letters Received by the Secretary of the Navy from Captains (“Captains’ Letters”).
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, M147, Letters Received by the Secretary of the Navy from Commanders (“Commanders’ Letters”).
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, M149, Letters Sent by the Secretary of the Navy to Officers (“Secretary Letters”).
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, M330, Abstracts of Service Records of Naval Officers, 1789-1893 (“Records of Officers”).
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, T829, Miscellaneous Records of the Office of Naval Records and Library, Confidential Letters Sent to Commanding Officers of Squadrons or Vessels from the Secretary of the Navy (1843-86) (“Confidential Letters”).
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, T829, Miscellaneous Records of the Office of Naval Records and Library, Muster Rolls.
- Record Group 45, Naval Records Collection of the Office of Naval Records and Library, Subject Files “U.S. Navy 1775-1910,” AR Repairs of U.S. Ships, USS *Merrimack*.

U.S. Department of the Interior:

- *Boundary Enlargement Report, Charlestown Navy Yard, Boston National Historic Park*. Denver: December 1978.

- *Charlestown Navy Yard*, Official National Park Handbook. Washington, D.C., 1995.

#### U.S. Department of the Navy:

- *Dictionary of American Naval Fighting Ships* (DANFS). Washington, D.C.: Office of the Chief of Naval Operations, Naval History Division, 1969.
- *Official Records of the Union and Confederate Navies in the War of the Rebellion*, 30 volumes and index. Washington, D.C.: U.S. Government Printing Office, 1894-1927.
- *Ordnance Instructions for the United States Navy*. Washington: George W. Bowman, Public Printer, 1860.
- *Register of Commissioned and Warrant Officers of the Navy of the United States, including Officers of the Marine Corps, and Others*, various years.
- Rickover, H.G. *How the Battleship Maine Was Destroyed*. Washington, D.C.: Naval History Division, 1976.

*United States Serial Set*

*United States Statutes at Large*

#### Published Memoirs and Papers

Ammen, Daniel, *The Old Navy and the New*. Philadelphia: J. B. Lippencott Company, 1891.

Dahlgren, Madeleine Vinton, *Memoir of John A. Dahlgren, Rear-Admiral, United States Navy*. Boston: James R. Osgood and Company, 1882.

Francis Winslow Papers, A Finding Aid to the Papers in the Naval Historical Foundation Collection. Washington, D.C.: Library of Congress, 2010.

Gilman, William Henry, *Letters Written Home*. Exeter, New Hampshire, 1911.

Parker, William Harwar, *Recollections of a Naval Officer*. New York: Charles Scribners' Sons, 1883.

Semmes, Raphael, *Memoirs of Service Afloat During the War Between the States*. Baltimore: Kelly, Piet & Co., 1869.

Welles, Gideon, *Diary of Gideon Welles, Secretary of the Navy under Lincoln and Johnson*, 3 Vols. Boston and New York: Houghton, Mifflin Company, 1911.

#### Biographical Dictionaries and Encyclopedias

*Appleton's Cyclopedia of American Biography*. New York: D. Appleton & Company, 1887-1889.

*Dictionary of American Biography*. New York: Charles Scribner's Sons, 1934.

*Dictionary of National Biography*. London: Smith, Elder and Co., 1897.

*Encyclopedia Britannica* (11<sup>th</sup> ed.). Cambridge University Press.

*Oxford Dictionary of National Biography*. Oxford University Press, 2004, 2005. Also the online edition, 2008.

### **Contemporary Newspapers and Serials**

*Ballou's Pictorial Drawing-Room Companion*

*Boston Daily Evening Transcript*

*Harper's Weekly*

*Journal of the Franklin Institute*

*Mechanics' Magazine*

*Putnam's Monthly Magazine of American Literature, Science and Art*

*The Artizan*

*The Engineer*

*The Congressional Globe*

*The Cosmopolitan*

*The Nautical Gazette*

*The New York Times*

*The Scientific American*

*The Spectator*

*U.S. Nautical Magazine and Naval Journal*

### **Supporting Sources, Books**

Adams, E. D., *Great Britain and the American Civil War*, 2 Vols. New York: Russell & Russell, 1925.

Amadon, George F., *Rise of the Ironclads*. Missoula, Montana: Pictorial Histories Publishing Company, 1988.

Anderson, C. L. G., *Old Panama and Castilla del Oro*. Washington: Press of the Sudwarth Company, 1911.

Bathe, Greville, *Ship of Destiny*. St. Augustine, Florida: Allen, Lane and Scott, 1951.

Baxter, James Finney, III, *The Introduction of the Ironclad Warship*. Annapolis: Naval Institute Press, 2001.

Bennett, Frank M., *The Steam Navy of the United States*. Pittsburgh, PA: W. T. Nicholson, 1896.

Berthell, Edward E. Jr., *The Mystery of the Merrimack*. Muskegon, Michigan: Dana Printing Company, 1959.

Brown, David K., *Before the Ironclad, Warship Design and Development, 1815-1860*. Annapolis: Naval Institute Press, 2015.

———, *Paddle Warships*. London: Conway Maritime Press, 1993.

Butt, Marshall W., *A Brief History of Norfolk Naval Shipyard, Portsmouth, Virginia*. Portsmouth, VA: Public Information Office, 1951.

- Campbell, Thomas and Alan Flanders, *Confederate Phoenix, The C.S.S. Virginia*. Shippenberg, PA: Burd Street Press, 2001.
- Canney, Donald L., *Lincoln's Navy, The Ships, Men and Organization, 1861-1865*. Annapolis: Naval Institute Press, 1998.
- , *Sailing Warships of the U.S. Navy*. Annapolis: Naval Institute Press, 2001.
- , *The Old Steam Navy, Volume I, Frigates, Sloops and Gunboats, 1815—1885*. Annapolis: Naval Institute Press, 1990.
- Chapelle, Howard I., *The History of the American Sailing Navy*. New York: W. W. Norton & Company, Inc., 1949.
- , *The Search for Speed Under Sail, 1700-1855*. New York: W.W. Norton & Company, Inc., 1967.
- Chapman, Charles F., *Piloting Seamanship and Small Boat Handling*. New York: Motor Boating, 1962.
- Coletta, Paolo E., Ed., *American Secretaries of the Navy, 1775-1972, 2 Vols.* Annapolis: Naval Institute Press, 1980.
- Dando-Collins, Stephen, *Tycoon's War*. Philadelphia: Da Capo Press, 2008.
- Davis, William C., *Duel Between the First Ironclads*. Baton Rouge and London: Louisiana State University Press, 1975.
- Du Bois dont on fait les vaisseaux ... 1650-1850*, Service historique de la Marine, Chateau de Vincennes, 1997.
- Dudley, William S., *Going South: U.S. Navy Officer Resignations & Dismissals on the Eve of the Civil War*. Washington, D.C.: Naval Historical Foundation, 1981.
- Farr, Gail E. and Brett F. Bostwick, *John Lenthall Naval Architect, A Guide to Plans and Drawings of American Naval and Merchant Vessels, 1790-1874*. Philadelphia Maritime Museum, 1991.
- Fasano, Lawrence, *Naval Rank, Its Inception and Development*. New York: Horizon House, Publishers, 1936.
- Foss, William O., *The United States Navy in Hampton Roads*. Norfolk/Virginia Beach: The Donning Company/Publishers, 1984.
- Frey, Peter and Jürg Müller, *Brazil*. Berne: Kümmerly + Frey, Geographical Publishers, 1991.
- Gardiner, Robert, Ed., *Steam, Steel and Shellfire, The Steam Warship, 1815-1905*. London: Conway Maritime Press, 1992.
- , *The Naval War of 1812*. Annapolis: Naval Institute Press, 1998.
- Geoffroy, William, *Facts Connected with the Cruise of the United States Steam Frigate Merrimac*. Baltimore: Kelly, Hedian & Piet, 1860.
- Gillmer, Thomas G., *Old Ironsides, The Rise, Decline and Resurrection of the USS Constitution*. Camden, ME: International Marine, 1995.
- Griffiths, Denis, *Steam at Sea, Two Centuries of Steam Propelled Ships*. London: Conway Maritime Press, 1997.

- Guthorn, Peter J., *United States Coastal Charts, 1783-1861*. Exton, PA: Schiffer Publishing Limited, 1984.
- Hackemer, Kurt, *The U.S. Navy and the Origins of the Military-Industrial Complex, 1847-1883*. Annapolis: Naval Institute Press, 2001.
- Hamersly, Lewis Randolph, *The Records of Living Officers of the U.S. Navy and Marine Corps*. Philadelphia: J. B. Lippincott & Co. 1870.
- , *The Records of Living Officers of the U.S. Navy and Marine Corps*. New York: L. R. Hamersly & Co., 1898.
- Harland, John, *Seamanship in the Age of Sail*. Annapolis: Naval Institute Press, 1984.
- Hawkey, Arthur, *Black Night off Finisterre*. Annapolis: Naval Institute Press, 1999.
- Haws, Duncan, *Merchant Fleets 8: Pacific Steam Navigation Company (PSNC)*. Hereford: TCL Publications, 1990.
- Higgins, James, *Lima, A Cultural History*. Oxford: Oxford University Press, 2005.
- Isherwood, Benjamin F., *Experimental Researches in Steam Engineering*. Philadelphia: William Hamilton, Hall of the Franklin Institute, 1863.
- Howarth, Stephen, *To Shining Sea, A History of the United States Navy, 1775-1991*. New York: Random House, 1991.
- Johnson, Robert Erwin, *Thence Around Cape Horn, The Story of United States Naval Forces on Pacific Station, 1818-1923*. Annapolis: United States Naval Institute, 1963.
- Johnson, Robert Underwood and Clarence Clough Buel, Eds., *Battles and Leaders of the Civil War*. New York: Century, Co., 1887.
- Kemble, John Haskell, *The Panama Route, 1848-1869*. Columbia, S.C.: The University of South Carolina Press, 1990.
- Ketchum, Richard M., *The World of George Washington*. New York: American Heritage Publishing Company, Inc., 1974.
- Kinnaman, Stephen Chapin, *Captain Bulloch, The Life of James Dunwoody Bulloch, Naval Agent of the Confederacy*. Indianapolis: Dog Ear Publishing, 2013.
- Konstam, Angus, *Duel of the Ironclads*. Botley, Oxford: Osprey Publishing, Ltd., 2003.
- Landström, Björn, *The Ship, An Illustrated History*. Garden City, NY: Doubleday & Company, 1961.
- Lewis, Charles Lee, *Admiral Franklin Buchanan*. Baltimore: The Norman, Remington Company, 1929.
- Lloyd, Christopher, *Lord Cochrane, Seaman, Radical, Liberator*. New York: Henry Holt and Company, 1998.
- Long, Robert F., *Gold Braid and Foreign Relations*. Annapolis: Naval Institute Press, 1988.



- Lovette, Leland P, LT CDR USN, *Naval Customs Traditions and Usage*. Annapolis: United States Naval Institute, 1939.
- Lyon, David and Rif Winfield, *The Sail and Steam Navy List, All the Ships of the Royal Navy, 1815-1889*. London: Chatham Publishing, 2004.
- MacDougall, Philip, *Royal Dockyards*. London: David & Charles (Publishers) Limited, 1982.
- McConaghy, Lorraine, *Warship Under Sail: The USS Decatur and the Pacific West*. Seattle and London: University of Washington Press, 2009.
- May, Robert E., *The Southern Dream of a Caribbean Empire*. Gainesville, FL: University Press of Florida, 2002.
- Melville, Herman, *White Jacket or the World in a Man-of-War*. New York: New American Library, 1979 and 1981.
- , *Moby Dick, or the White Whale*. New York: The Pocket Library, 1955.
- Nordhoff, Charles, *Man-of-War Life*. New York: Moore, Wiltach, Keys & Co., 1856.
- Norris, William, *The Story of the Confederate States' Ship "Virginia" (Once Merrimack): Her Victory over the Monitor, Born March 7<sup>th</sup>, Died May 10<sup>th</sup>, 1862*. Baltimore: John B. Piet, 1879.
- Oeste, George Irvin, *John Randolph Clay: America's First Career Diplomat*. Philadelphia: University of Pennsylvania Press, 1966.
- Otis, Fessenden N., *Illustrated History of the Panama Railroad*. New York: Harper & Brothers, Publishers, 1862.
- Parramore, Thomas C. with Peter C. Stewart and Tommy L. Bogger. *Norfolk, The First Four Centuries*. Charlottesville and London: University of Virginia Press, 1994.
- Paton, William Agnew, *Down The Islands, A Voyage to the Caribbees*. New York: Charles Scribner's Sons, 1887.
- Paullin, Charles Oscar, *Paullin's History of Naval Administration 1775-1911*. Annapolis: U.S. Naval Institute, 1968.
- Park, Carl D., *Ironclad Down, The USS Merrimack-CSS Virginia, from Construction to Destruction*. Annapolis: Naval Institute Press, 2007.
- Peck, Taylor, *Round-Shots to Rockets, The History of the Washington Navy Yard and the United States Naval Gun Factory*. Annapolis: United States Naval Institute, 1949.
- Potter, David M., *The Impending Crisis, 1848-1861*. New York: Harper & Row, Publishers, Inc., 1976.
- Powell, William and Edward Shippen, Eds., *Officers of the Army and Navy (regular) who served in the Civil War*. Philadelphia: L. R. Hamersly, 1892.
- Quarstein, John V., *The Battle of the Ironclads*. Charleston, Chicago, Portsmouth, San Francisco: Arcadia Publishing, 1999.
- , *The CSS Virginia, Sink Before Surrender*. Charleston and London: The History Press, 2012.

- Radcliffe, Virginia, *The Caribbean Heritage, An Illustrated Guide to the Treasures of 500 Turbulent Years*. New York: Walker and Company, 1976.
- Ridgely-Nevitt, Cedric, *American Steamships on the Atlantic*. Newark: University of Delaware, 1981.
- Ringle, Dennis J., *Life in Mr. Lincoln's Navy*. Annapolis: Naval Institute Press, 1998.
- Rousmaniere, John, *The Low Black Schooner: Yacht America, 1851-1945*. Mystic, CN: Mystic Seaport Museum Stores, 1986.
- Scharf, J. Thomas, *History of the Confederate States Navy, from its Organization to the Surrender of its Last Vessel*. New York: Rogers & Sherwood, 1887.
- Schott, Joseph L., *Rails Across Panama*. Indianapolis, New York and Kansas City: The Bobbs-Merrill Company, Inc., 1967.
- Schroeder, John H., *Shaping a Maritime Empire, The Commercial and Diplomatic Role of the American Navy, 1829-1861*. Westport, CN and London: Greenwood Press, 1985.
- Silverstone, Paul H., *Warships of the Civil War Navies*. Annapolis: Naval Institute Press, 1989.
- Sloan, Edward W. III, *Benjamin Franklin Isherwood, Naval Engineer*. Annapolis: United States Naval Institute, 1965.
- Tucker, Spencer, *Arming the Fleet, U.S. Navy Ordnance in the Muzzle-Loading Era*. Annapolis: Naval Institute Press, 1989.
- Valle, James E., *Rocks and Shoals*. Annapolis: Naval Institute Press, 1980.
- Villiers, Alan, *Captain Cook, The Seamen's Seaman*. London: Hodder and Stoughton, 1978.
- Walker, William, *The War in Nicaragua*. Mobile: S. H. Goetzel & Co., 1860.
- Wallner, Peter A., *Franklin Pierce, Martyr for the Union*. Concord, NH: Plaidswede Publishing, 2007.
- Wilson, Timothy, *Flags at Sea*. London: Her Majesty's Stationary Office, 1986.

### Supporting Sources, Articles

- Bradley, Claudia, et al, 'List of Logbooks of U.S. Navy Ships, Stations, and Miscellaneous Units, 1801 - 1947,' National Archives and Records Service, General Services.
- Cressman, Robert T, 'The Most Beautiful of All the Ships of her Class,' *Naval History*, February 2013, pp. 14-15.
- Crowell, Margaret, 'Along North River: Stream of Indian Canoes, Pioneer Ships, and Modern Craft Described,' *The Hanover Branch and Norwell Advertiser*, Souvenir Supplement for Norwell, Massachusetts, Seventh Annual Edition, 27 May 1938.

- Daley, Mercedes Chen, 'The Watermelon Riot: Cultural Factors in Panama City, April 15, 1856.' *The Hispanic American Historical Review*, Vol. 70, No. 1 (Feb., 1990).
- Davis, Rear Admiral Charles H., USN, 'History of the U.S. Steamer Merrimack,' *The New-England Historical and Genealogical Register*, Volume XXVIII, for the year 1874.
- Eggleston, John R., 'Captain Eggleston's Narrative of the Battle of the Merrimack,' *Southern Historical Society Papers*, No. 41 (Sept, 1916).
- Griffiths, Oliver W., Ed., 'The New War Steamers,' *U. S. Nautical Magazine and Naval Journal*, Vol. II (April 1855).
- , 'Inefficiency of the Navy,' *U.S. Nautical Magazine and Naval Journal*, Vol. IV (March—October 1856).
- , 'Screw Steamers of the Navy,' *U. S. Nautical Magazine and Naval Journal*, Vol. VI (April—September 1857).
- 'Hawaiian Islands,' *Putnam's Monthly Magazine of American Literature, Science and Art*, Volume 5, Issue 27 (March 1855).
- James, Henry Alonzo, 'The Black Warrior Affair,' *The American Historical Review*, Vol. 12, No. 2 (Jan. 1907).
- Jones, T. Catesby, 'The Merrimack and Her Big Guns,' *The Virginia Magazine of History and Bibliography*, Vol. 50, No. 1 (Jan., 1942).
- Mell, C. D., 'Lignum-Vitae as a Lining for Stern Tubes,' *The Nautical Gazette*, Vol. 95, 24 May 1919.
- 'New American Steamships of War,' *Journal of the Franklin Institute*, Vol. 31 (February 1857).
- Ramsay, Henry Ashton, 'The Most Famous of Sea Duels, the Story of the Merrimack's Engagement with the Monitor, and the Events that Preceded and Followed the Fight, Told by a Survivor,' *Harper's Weekly* (February 10, 1912).
- Reaney, Henry, 'How the Gun-Boat *Zouave* sided the Congress,' *Battles and Leaders of the Civil War*. New York: Century, Co., 1887, Vol. 1,
- Selfridge, Captain Thomas O. Jr., U.S.N., 'The Merrimack and the Cumberland,' *The Cosmopolitan*, Vol XV (May-October 1893), pp. 176-84.
- 'The New Frigate Merrimack,' *The Scientific American*, Vol XI, No 28 (22 March 1856).
- 'Trail Trip of the United States Steam Frigate Merrimack,' *Journal of the Franklin Institute*, Vol. 61, Issue 4 (April 1856).
- Vizcarra, Catalina, 'Guano, Credible Commitments, and Sovereign Debt Repayment in Nineteenth-Century Peru,' *The Journal of Economic History*, Vol. 69, No. 2 (June 2009).

### **Plans, Drawings, Etc.**

John Lenthall Collection of the Franklin Institute at the Independence Seaport Museum, Philadelphia, PA.

- Frigate (1826), 2 plans, FI L90.43.63-64, Fore and Aft Body Plans.

National Archives and Records Administration (NARA), Washington, D.C., Record Group 19, Bureau of Steam Engineering, Alphabetical File—Merrimack, Van Nostrand folder:

- Sectional View # 22 (Inboard Profile)
- Engines & Cylinders

National Archives and Records Administration (NARA), Washington, D.C., Record Group 19, Bureau of Steam Engineering, Alphabetical File—Merrimack, Folder # 2:

- Boiler, 1854
- Plan # 2, Front Elevation & Cross Section through Cylinder, 1854
- Cross Section through Air Pump & Condenser
- Propeller & Well
- Hoisting Gear

National Archives and Records Administration (NARA), Washington, D.C., Record Group 19, Records of the Bureau of Ships, Report for USS Merrimack/CSS Virginia:

- Plan # 40-11-7I, Outboard Profile and Sail Plan, 1854
- Plan # 40-11-7K, Sheer, Half-Breadth, Body & Inboard Profile w/Compartments, 1855 (two sheets)
- Plan # 40-11-7L, Spar & Gun Decks, 1855
- Plan # 40-11-7M, Berth & Orlop Decks, 1855

National Archives and Records Administration (NARA), Washington, D.C., Record Group 74, Naval Bureau of Ordnance, Red Series:

- Carriage for U.S. Naval 9 inch Shell Gun for the Steam Frigate Merrimack, 1855, corrected in 1860

### **Sea Charts and Maps**

United States Coast & Geodetic Survey Charts (ca. 1927):

- No. 4109 *Hawaiian Islands, Oahu, Honolulu Harbor*
- No. 4132 *South Coast of Oahu, Diamond Head to Keahi Point*

United Kingdom Hydrographic Office (Admiralty Charts):

- No. 566, *Baía de Guanabara (Rio de Janeiro and Niteroi)*
- No. 1300, *Approaches to the Panama Canal*
- No. 1853, *Approaches to Bahia del Callao*
- No. 2036, *The Solent and Southampton Water*
- No. 2813, *Hampton Roads and Newport News*
- No. 3971, *Cabo de São Tomé to Rio de Janeiro*
- No. 4012, *North Atlantic Ocean, Southern Part*

- No. 4402, *Caribbean Sea*
- No. 4242, *Chile, Valparaiso*
- No. 4608, *West Coast of South America, Guayaquil to Valparaiso*

*The Times Atlas of the World*, Comprehensive Edition. Edinburgh: Times Books Limited, 1980.

*The Times Atlas of World History*. London: Times Books Limited, 1978.

### **Museums, Libraries, Etc.**

Fondren Library, Rice University, Houston, Texas  
 Hampton Roads Naval Museum, Norfolk, Virginia  
 Independence Seaport Museum, Philadelphia, Pennsylvania  
 Mariners' Museum, Newport News, Virginia  
 Museum of the Confederacy, Richmond, Virginia  
 National Maritime Museum, Greenwich, United Kingdom  
 National Museum of the Royal Navy, Portsmouth, United Kingdom  
 National Museum of the United States Navy, Washington, D.C.  
 Portsmouth Naval Shipyard Museum, Portsmouth, Virginia  
 Science Museum, London, United Kingdom  
 U. S. Naval Academy Museum, Annapolis, Maryland.

### **Websites**

'Brest' by Jeroen van der Werf, from the website:  
<http://www.fortified-places.com/brest/>  
 Captain Silas Stringham, see the website:  
<http://www.thelatinlibrary.com/chron/civilwarnotes/stringham.html>  
 Dictionary of American Naval Fighting Ships (DANFS), Naval History and Heritage Command website:  
<https://www.history.navy.mil/research/histories/ship-histories/danfs.html>  
 Findagrave website for Susan Virginia Barron Pendergrast:  
<http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&Grid=97456250>  
 Guano in Peru, see the website:  
<http://www.historytoday.com/john-peter-olinger/guano-age-peru>  
 'Hawaii History' website: <https://www.hawaiihistory.org>  
 Mallarino-Bidlack Treaty, see the Encyclopedia Britannica web site:  
<http://www.britannica.com/EBchecked/topic/64788/Bidlack-Treaty>  
 Naval History and Heritage Command website for officer biographical data: <https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/o/officers-continental-usnavy-mc-1775-1900.html>

*The American Presidency Project*, by Gerhard Peters and John T. Woolley, see the website: [http://www.presidency.ucsb.edu/ws/?pid=29494\\_and\\_also\\_pid=67796](http://www.presidency.ucsb.edu/ws/?pid=29494_and_also_pid=67796)

The Arsenal at Brest, see the website:

<http://www.naval-technology.com/projects/arsenaldebrest/>

The C.S.S. *Virginia* website by Mabry Tyson, under the career of Catesby ap Roger Jones: <http://cssvirginia.org/tyson/jones/carjcar.htm>

'The Islands of Callao' website:

[http://www.limaeasy.com/lima\\_districts/callao\\_district\\_islands.php](http://www.limaeasy.com/lima_districts/callao_district_islands.php)



# INDEX

NOTE: Officers' ranks or diplomatic assignments described herein are those held during the period of this book's narrative and may not fully reflect that officer's ultimate rank or that diplomat's subsequent service.

## A

Acapulco, Mexico, 173, 220, 222-224, 232, 239, 245  
Accessory Transit Company (the 'Transit'), 226, 228, 234, 236, 256  
Administrative rebuilding, 8  
*Agamemnon*, H.M.S., 20, 98  
Alden, James (commander, USN), 276, 277  
American Civil War, xiii, xxiii, xxiv  
Ammen, Daniel (lieutenant, USN), 198, 225, 253, 259, 266, 268, 285  
Annapolis, Maryland, 51, 54, 55  
*Apurimac*, Peruvian steam frigate, 181-183, 205  
Arnold, H. N. T. (lieutenant, USN), 198  
Atlantic Ocean, navigation, 103, 269, 270

## B

Bacon, George (passed midshipman, USN), 77, 120  
Barbados, British West Indies, 102, 104-106  
Baring Brothers & Co., 159  
Baynes, Robert (rear admiral, RN), 165, 204, 210, 245

Bell, Charles (captain, USN), 271, 272  
Belknap, A. A. (purser, USN), 159, 221  
Bigelow, George (passed midshipman, USN), 86, 154, 223  
Bigler, John (U.S. minister to Chile), 175, 253  
*Black Warrior* incident, 11, 61, 78  
Bocock, Thomas S. (U.S. congressman), 9, 11, 12  
Boston, Massachusetts, 21, 23, 36, 67, 69, 74, 111, 118, 120, 157-159  
Bradford, Robert (passed midshipman, USN), 86, 120, 154, 186, 223  
Brazil, Empire of, 157, 163  
Breese, Samuel (lieutenant, USN), 263  
Brest, France, 84, 93-95  
Broad pennant, flag officer's, 160, 254  
Brooklyn (New York) Navy Yard, 15, 16  
Buchanan, Franklin (captain, USN and CSN), xv, xvi, xviii, 284  
Buchanan, McKean (paymaster, USN), xv  
Buchanan, Thomas McKean (passed midshipman, USN), 197, 231



Bulloch, James Dunwoody, 11, 78, 79  
 Bureau of Construction, Equipment and Repair, 7, 12, 14, 203, 282  
 Burgoyne, Hugh (commander, RN), 165, 166

## C

Cadiz, Spain, 100-102  
 California gold rush, 4, 153, 192, 199, 222, 226  
 Callao, Peru, 173, 177, 179, 181, 183, 184, 186, 187, 191, 201, 204-209, 211, 240, 243, 244, 247, 249, 250  
 Cape Frio, Brazil, 162, 269  
 Cape Horn, South America, 152, 166-170, 247-249, 260, 264-266  
 Carpenter, Charles (passed midshipman, USN), 77, 120  
 Cass-Herrán Treaty, 193, 197  
 Cass-Yrissari Treaty, 228, 234  
 Castilla, Ramón (Peruvian president), 181, 206-209  
 Charlestown (Boston) Navy Yard, background, 15, 21; building *Merrimack*, 21-28, 31; repairing *Merrimack*, 68, 70-74, 119, 151  
 Chesapeake Bay, 53, 113  
 Chile, Republic of, 173, 175, 186  
 Chincha Islands, Peru, 176, 182, 183, 186, 217, 247  
 Clay, John Randolph (U.S. minister to Peru), 173, 181, 182, 206, 207, 209-211, 245, 249  
 Clayton-Bulwer Treaty, 228  
 Coaling, description of, 101, 205, 247; Stimers' proposal, 244; variety of coal, 268  
 Cochrane, Thomas, Earl of Dundonald (admiral, RN), 90, 91, 182  
 Collins Line, 43, 78  
 Colorado, U.S.S., 23, 49, 273

Compass deviation, adjustment for, 214, 224, 232  
 Commissioning ceremony, 32-34, 151  
 Congress, U.S.S., xiv-xviii, xxii, 16-18, 267-269, 283  
 Constellation, U.S.S., 8  
 Constitution, U.S.S., xiv, 14, 16, 17, 21, 22, 281  
 Corwine, Amos (U.S. consul), 193, 242  
 Cowes, Isle of Wight, 83, 84  
 Crimean War, 1853-56, xxv, 5, 85, 209  
 Cumberland, U.S.S., xiv-xviii, xxiii, 21, 275, 278-280  
 Cyane, U.S.S., 235, 240, 241, 243, 254  
 Cyrus Alger & Co., Boston, Massachusetts, 23

## D

Dahlgren guns, xv, 14, 19, 29, 274  
 Dahlgren, John A. (commander, USN), xv, 13, 19, 51-53, 120, 271  
 Davis, Charles (commander, USN), 154, 194, 200, 203, 207, 227  
 Davis, John (lieutenant, USN), 198, 260  
 Decatur, U.S.S., 164, 190, 194-197, 199, 201, 204, 207, 209, 210, 223, 225, 226, 230-237, 240  
 Deck logs, examination of data by Naval Observatory and Hydrographic Office, 159, 266; general, xxiv, 32, 287-291; Volume 1, 33, 121; Volume 2, 159, 214; Volume 3, 259; Volume 4, 259, 272  
 Delano, Edward Hartt (naval constructor), 22, 25-27, 36, 38, 40  
 Dobbins, James C. (U.S. secretary of the navy), background, 3; naval expansion, 3-10, 13, 23, 28, 37, 54; orders, 29, 30, 36,

40, 50, 55, 68, 73, 76, 77, 79,  
108, 112; subsequent service,  
282  
Dunnington, John (master,  
USN), 86, 108, 286  
Duplaine, E. A. C. (third assistant  
engineer, USN), 198, 271, 272

## E

Edwards, David S. (fleet surgeon,  
USN), 232, 245, 246, 248, 265  
Elizabeth River, Virginia, 41, 49,  
271, 278  
English mail steamers (Pacific  
Steam Navigation Company),  
183, 184, 206, 209, 246, 260  
*Eurydice*, H.M.S., 105, 107  
*Excellent*, H.M.S. (R.N. gunnery  
school), 89, 90

## F

Ferdinand II (Portuguese king  
regent), 89, 97, 98  
Fernando Noronha, island of,  
Brazil, 269  
Forrest, French (flag officer,  
USN), 162, 163, 166  
*Franklin*, U.S.S., 8, 9, 13, 16  
*Fredonia*, U.S.S., 164, 172, 185,  
197, 261, 263  
Frigates, 6, 105

## G

*Ganges*, H.M.S. 165, 166, 172,  
175, 203, 204, 208, 210, 245  
*Germantown*, U.S.S., 15, 274, 278  
Gideon, George (first assistant  
engineer, USN), 78, 79, 120  
Gilman, William Henry (flag  
officer's secretary), 156, 163,  
169, 180, 206, 207, 210, 213,  
215, 218, 219, 246, 253, 283  
*Gloire*, French ironclad, 85  
Goldsborough, Louis (captain,  
USN), 54  
Gosport (Norfolk) Navy Yard,  
background, xiii, 15, 49, 111;

destruction of, 278-280;  
*Merrimack's* lay-up, xv, 274-  
277  
Gregory, Francis H. (captain,  
USN), background, 21-22;  
*Merrimack's* captain, 28-30,  
32, 33; navy yard  
commandant, 21-23, 25;  
subsequent service, 72  
Griffiths, John W., 37, 42, 46, 58  
Guano trade, 173, 176  
Guayaquil, Ecuador, 188, 223,  
232, 252, 255, 256  
Guayaquil, Gulf of, 188, 202, 249,  
252  
Guaymas, Mexico, 221, 223, 233,  
241, 249, 254  
Gun drill, practice, 39, 52, 53,  
104, 106, 117, 118, 176, 184-  
186, 201-204, 208, 225, 234-  
236, 243, 248, 251, 270

## H

Hackemer, Kurt, 13  
Hampton Roads, Battle of, xvi-  
xxv, 41, 284  
Hampton Roads, Virginia, xiii,  
51, 112, 113, 270, 271, 278, 280  
Hardwicke, Charles Philip Yorke  
(rear admiral, RN), 86  
Harris, J. Whipple (midshipman,  
USN), 120, 121, 154, 223  
Harrison, George W. (lieutenant,  
USN), 29, 34, 99, 120, 286  
Hartt, Samuel (chief, Bureau of  
Construction, Equipment and  
Repair), 7  
Hatfield, Chester (passed  
midshipman, USN), 120, 154,  
223  
Havana, Cuba, 60-62, 65  
Hitchcock, Robert B.  
(commander, USN),  
background, 120, 151, 152;  
*Merrimack's* captain, 151,  
154, 167, 171-173, 181, 184,  
187, 214, 224, 225, 259, 261,  
266-268, 270-272; subsequent  
service, 283

Hollins, John (second assistant engineer, USN), 181, 196, 197  
 Honolulu, Oahu, 209, 211, 213, 215-220  
 Hoyt, Eben (third assistant engineer, USN), 182, 197, 271  
 Humphreys, Joshua (naval constructor), 17  
 Humphreys, Samuel (chief naval constructor), 17

## I

Isherwood, Benjamin F. (chief, Bureau of Steam Engineering), analysis of *Merrimack's* machinery, 46, 115-117; background, 44; *Experimental Researches in Steam Engineering*, 44, 45, 268, 282; restoring *Merrimack's* machinery, 276, 277; subsequent service, 282, 283  
*Imperieuse*, H.M.S., 20

## J

Joinville, Prince de (French royal family, vice admiral), 88, 89  
 Jones, Catesby ap Roger (lieutenant, USN and CSN), background, xix, 51; CSN service, xv, xix-xxi, 51, 284; *Merrimack's* lieutenant, xv, 51, 69, 86, 89, 95, 104, 108, 120  
 Jones, Meriwether Patterson  
 Jones (lieutenant, USN), 51, 86, 120  
 Jones, Thomas ap Catesby (captain, USN), 52, 200

## K

Kamehameha (Hawaiian kings),  
 Kamehameha I, 216;  
 Kamehameha III, 156, 217;  
 Kamehameha IV, 220,  
 Kamehameha V, 220

Kelly, John (captain, USN), 164, 166, 175, 197, 203, 207, 221, 223, 247, 249, 252, 254, 256  
 Key West, Florida, 61, 63-65  
 Kossuth, Lajos, 156

## L

La Union, El Salvador, 235  
 Lamar, Mirabeau (U.S. minister to Nicaragua), 228, 230, 231, 234, 237  
*Lancaster*, U.S.S., 248, 249, 254, 256, 257, 260, 261, 263, 265, 273  
 Law, George, (passed midshipman, USN), 197, 231  
 Lawson, P. B., 30, 38, 40  
 Lenthall, John (chief, Bureau of Construction, Equipment and Repair), 12, 14-17, 21-23, 55, 68, 186, 246, 282  
*Levant*, U.S.S., 256, 257, 259-261  
 Lifting screw propeller, 19, 20  
 Lignum vitae, 70, 84  
 Lima, Peru, 179-181, 184, 209  
 Lincoln, Abraham (U.S. president), 273-275  
 Lisbon, Portugal, 96-100  
 Lockwood, Samuel (commander USN), 243  
 Long, John Collins (captain and flag officer, USN), background, 155-158; invalidated home, 158, 194, 218, 219, 245-248, 253; Pacific Squadron flag officer, 155-158, 160, 163, 164, 166, 169, 170, 172-175, 181, 183, 185, 186, 188, 190, 193-197, 199-204, 206-210, 218-226, 230-237, 240-249, 251-254, 256, 264; subsequent service, 283  
 Long, Robert (chief engineer, USN), background, 77, 114; *Merrimack's* chief engineer, 78, 114, 154, 233; subsequent service, 285, 286  
 Loring, Charles (first assistant engineer, USN), 154, 286

Louis Philippe, (French king), 88, 95

## M

Mallarino-Bidlack Treaty, 192, 228  
 Mallory, Stephen R. (U.S. senator, C.S. secretary of the navy), 49, 50, 280  
 Martin, Daniel (engineer-in-chief), 12, 24, 30, 36, 38, 40, 54  
 Martinez, Tomas (Nicaraguan president), 228, 230, 234, 236  
*Massachusetts*, U.S.S., 164, 223  
 Maury, Matthew Fontaine (commander, USN), 159, 269  
 McBlair, Thomas P. (purser, USN), 107, 108, 113, 221  
 McCauley, Charles (captain, USN), 274-278  
 McDonough, Charles (lieutenant, USN), 155, 174, 196, 197  
 Meade, Richard (passed midshipman, USN), 77, 86  
 Meade, R. K. (U.S. minister to Brazil), 157-159, 165  
 Melville, Herman, 80, 81, 179, 218  
*Merrimack*, U.S.S., appearance, 31, 32; crew and officer discipline, 61, 63, 64, 69, 73, 76, 77, 96, 118, 174, 175, 181, 195, 196, 199, 241; coaling, 63, 73, 89, 99, 101, 117, 165, 174, 194, 205, 206, 218, 221, 241, 244, 247, 260, 268; construction, 21-28; design, 12-19, 37, 170, 281; destruction, xiii, 278, 279; first commissioning, xxiv, 32, 33; launching, 26, 27; lay-up, xv, 273, 275-277; legacy, xxiv-xxvi, 281; machinery, xv, 18-20, 24, 25, 27, 29, 57, 58, 115-117, 239, 258, 281; Pacific Squadron flagship, xxiv, 152, 190, 205, 222, 226, 230, 240, 252, 260, 261, 271; particulars,

xiv, 17, 20; propeller/shaft bearings, 28, 59, 60, 64, 68, 70, 71, 75, 76, 97, 101, 103, 281; second commissioning, xxiv, 151; special service, xxiv, 51, 55; speed, 20, 38, 45, 46, 82, 84, 112, 116, 259, 265; trial trip, 37-47  
 Mexican War, 1846-48, 4, 192, 273  
*Minnesota*, U.S.S., xiv, xvii-xxi, xxiii, xxv, 23, 154, 273, 286  
*Mississippi*, U.S.S., 15, 156  
*Monitor*, U.S.S., xiii, xx-xxiii  
 Montgomery, John Berrien (flag officer, USN), background, 248, 255; Pacific Squadron flag officer, 248, 249, 253-257, 260, 261; service commanding *Portsmouth*, 255; subsequent service, 284  
 Moorsom, William (captain, RN), 90  
 Morris, Charles (captain, USN), 12  
 Murray, Francis K. (lieutenant, USN), background, 35; *Merrimack's* lieutenant, 34, 58, 108, 113

## N

Nantucket shoals, 118  
 Nemours, Duke of (French royal family, general), 88, 89, 98  
 New Granada, republic of, 153, 189, 191-193, 197, 228  
 New York City, 75, 76, 198  
*Niagara*, U.S.S., 23, 154  
 Nicaragua, Republic of, 153, 203, 209, 221-234, 236-238, 240, 241, 243, 257, 278  
 Norfolk, Virginia, 41, 111, 256, 261, 278, 279

## O

*Ohio*, U.S.S., 36, 74, 121, 155  
 Ordnance inspection, 120, 235, 237, 270, 271

Ouseley, Sir William Gore (U.K. diplomat), 229, 230, 233

## P

Pacific Mail Steamship Company, 192, 198, 222, 244, 285

Pacific Ocean, navigation, 152, 153, 168, 213, 214, 221, 258, 259, 264, 265

Pacific Squadron, 152-154, 164, 174, 178, 186, 191, 193, 196, 198, 203, 223, 226, 227, 230, 231, 233, 235-237, 240, 245, 248, 249, 253-255, 257, 258, 261, 271, 273

Paixhans guns, 5, 19

Panama, city of, 153, 184, 188-194, 197, 198, 200, 201, 222, 223, 233, 235-238, 240-243, 245, 251-258, 260

Panama Railroad, 192, 193, 242

Panama route, 153, 192, 193, 199, 227-229

Parker, William H (lieutenant, USN and CSN), background, 165; CSN service, 285; *Merrimack's* lieutenant, 155, 167, 170, 171, 175, 176, 180, 183, 187, 209, 224, 225, 235, 254, 257, 264, 271; subsequent service, 285

Parrott, Robert P., 24, 28, 29, 40, 58, 114

Paulding, Hiram (flag officer, USN), Gen. Walker confrontation, 228, 233; Gosport relief mission, 277-280; Home squadron, 64, 249

*Pawnee*, U.S.S., 278, 279

Payta (Paita), Peru, 173, 187, 188, 191, 194, 201, 202-204, 243, 244, 249, 251, 259

Pedro V (Portuguese king), 97, 99

Pedro Gonzalez, island of, 194, 204

Pendergrast, Austin (lieutenant, USN), 35, 283

Pendergrast, Garrett J. (captain, USN), background, 30-32; *Merrimack's* captain, 30, 32-35, 37-41, 46, 47, 50, 51, 53, 55-65, 67, 72, 73, 75, 76, 79, 82, 84, 86, 92, 95, 96, 98-101, 103, 105-109, 111-115, 117-120, 174, 185, 231; subsequent service, 275, 277-279, 283; views on flogging, 73

Penn, John, 70

*Pennsylvania*, U.S.S., 15, 274, 278

Perry, Matthew C. (captain, USN), 64, 107, 186, 192, 200

Peru, Republic of, 173, 175-177, 179, 181, 186, 201, 207, 208, 232

Philadelphia Navy Yard, 15, 186, 283

Pierce, Franklin (U.S. president), 3, 10, 11, 23, 53, 108, 112

Pisco, Peru, 176, 179, 186

Pizarro, Francisco, 179, 180, 190

Porcher, Philip (acting master, USN), 197, 214, 224, 259, 263, 272, 286

Porter, John (naval constructor), 280

Porter, William (commander, USN), 249

Portsmouth (Kittery) Navy Yard, 8

Portsmouth Naval Hospital, Portsmouth, Virginia, 111, 113, 271, 275

*Princeton*, U.S.S., 9, 15

Putyatin, Yevfimiy (admiral, Russian Navy), 87

## R

Ramsay, Frank M. (acting master, USN), 155, 161, 224

Ramsay, H. Ashton (engineer, USN and CSN), CSN service, xv, xx, xxi, 198, 286; *Merrimack's* second assistant engineer, 198, 271, 272; subsequent service, 286

*Raritan*, U.S.S., 15, 274  
 Real Philip fortress, Callao, Peru,  
 177, 179, 184, 245  
 Realejo (Corinto), Nicaragua,  
 209, 223-227, 229, 231-237,  
 239, 245, 254  
 Rio de Janeiro, Brazil, 162-166,  
 261, 265, 267-269  
*Roanoke*, U.S.S., xiv, xvi-xviii, 23,  
 49, 119, 120, 154, 229, 255, 273  
 Royal Navy, comparative  
 warship designs, 20; design  
 practices, 69-71

## S

St. Croix, Danish West Indies,  
 106-109  
*St. Lawrence*, U.S.S., xiv, xvii,  
 xviii, 162, 163, 166  
*St. Mary's*, U.S.S., 158, 164, 173,  
 194, 195, 200, 203, 207, 220,  
 221, 223, 227, 233, 235, 240-  
 243, 249, 254  
 St. Thomas, Danish West Indies,  
 109  
 San Francisco, California, 152,  
 164, 192, 193, 198, 200, 209,  
 222, 255  
 San Juan del Norte (Greytown),  
 Nicaragua, 226, 228, 278  
 San Juan del Sur, Nicaragua, 154,  
 203, 206, 207, 209, 223, 226,  
 235, 240, 256  
 San Lorenzo, island of, 177, 184,  
 186, 205, 208, 244, 248, 249,  
 251  
 Sands, Joshua (flag officer, USN),  
 267  
 Sandwich (Hawaiian) Islands,  
 155, 173, 201, 207, 209, 210,  
 215-218  
*Saranac*, U.S.S., 156, 157, 164,  
 166, 173-175, 193, 195, 197,  
 198, 203, 210, 221, 223, 231-  
 234, 236, 240, 241, 243-247,  
 249, 252, 254-256, 258  
*Saratoga*, U.S.S., 107, 228  
 Schriver, Albert (passed assistant  
 surgeon, USN), 246  
 Schroeder, Charles (third  
 assistant engineer, USN), 78,  
 86, 286  
 Screw propeller, 6, 14, 15, 19, 20  
 Secession, Southern, 274  
 Semmes, Raphael (captain,  
 CSN), 269  
 Seymour, Sir George (admiral,  
 RN), 90, 91  
 Sharp, William (lieutenant,  
 USN), 198, 260, 286  
 Shock, William (chief engineer,  
 USN), background, 25, 62;  
*Merrimack's* chief engineer,  
 34, 40, 58, 62-64, 67, 71, 75,  
 76, 78; subsequent service,  
 285  
 Simmons, Melvin (master  
 carpenter), 22, 27  
 Simmons, Miss Mary E., 27  
 Sinclair, Arthur (commander,  
 USN), 164, 175, 197, 203, 233,  
 236, 241, 243  
 Sloops-of-war, 6  
 Southampton, England, 65, 79,  
 84, 111  
 Smith, Joseph (chief, Bureau of  
 Yards and Docks), 7, 12, 35,  
 54, 174  
 Smith, Joseph B. (lieutenant,  
 USN), background, 35;  
*Merrimack's* lieutenant, 34,  
 58, 87, 113; subsequent  
 service, xvi, xviii, 35  
 Stanton (U.S. secretary of war),  
 xix  
 Steam frigates, xiv, 7, 8, 12  
 Steers, George, 14, 15, 83, 84  
 Stimers, Alban (chief engineer,  
 USN), background, xv, 71, 72;  
*Merrimack's* first assistant  
 engineer, 58, 71, 75, 78, 233;  
*Merrimack's* chief engineer,  
 233, 239, 244, 247, 252;  
 subsequent service, 286  
 Stringham, Silas (captain, USN),  
 28, 29, 33, 119, 158, 159  
*Susquehanna*, U.S.S., 64, 65, 283

## T

- Taboga, island of, Panama, 189, 190, 240, 253  
 Tagus River, Portugal, 97, 100  
 Talcahuano, Chile, 169-172  
 Taliaferro, William (general, Virginia militia) 278, 279  
 Thatcher, Henry (commander, USN), 194, 197, 199, 235, 236, 240, 243  
 Thorburn, Robert (commander, USN), 221, 233, 241, 242  
 Toucey, Isaac (U.S. secretary of the navy), background, 112, 115, 275; orders, 117, 154, 157, 164, 194, 203, 206, 208, 209, 218, 220, 221, 223, 224, 228, 235, 236, 242, 248, 256, 260, 271, 272; subsequent service, 282  
 Tumbes (Tumbes), Peru, 188, 200, 202, 252

## U

- U.S. merchant marine, 5, 105, 152, 153, 171, 172, 177, 181-183, 202, 207, 217, 223, 245, 257, 264  
 U.S. Naval Academy, Annapolis, Maryland, 54

## V

- Valparaiso, Chile, 169, 172, 174-176, 183, 184, 197, 223, 233, 241, 254, 256, 257, 259-261, 263  
*Vandalia*, U.S.S., 164, 173-175, 185-187, 193, 196-198, 203, 207, 210, 220, 235-237, 240-243, 253-260  
*Virginia*, C.S.S, Battle of Hampton Roads, xvi-xxiv, 283; fate, 44; *Merrimack* origins, xiii, 49, 280, 284  
*Vixen*, H.M.S., 209, 229, 233, 235, 236, 241, 247

## Y

- Yellow fever, 61, 108-114, 117, 119, 284

## W

- Wabash*, U.S.S., xxv, 23, 154, 228, 286  
 Wainwright, Jonathan M. (lieutenant, USN), background, 34, 35; *Merrimack's* lieutenant, 34, 58, 88, 90, 95, 120; subsequent service, 34, 35, 284  
 Wainwright, Richard (lieutenant, USN), background, 152; *Merrimack's* lieutenant, 152, 185, 247; subsequent service, 284  
 Walker, William, 153, 154, 203, 227-230, 233, 234, 255, 278  
 Walker's Big Frigates, 85, 86  
 Walter, William (third assistant engineer, USN), 182, 197  
 War of 1812, 6, 172, 283  
 Warship daily routines, 79-82, 214  
*Warren*, U.S.S., 236, 243, 255  
*Warrior*, H.M.S., 85  
 Washington, George (U.S. president), 105  
 Washington Navy Yard, 15, 18  
 Watermelon War, 193, 198  
 Welch, Aristides (purser, USN), 29  
 Welles, Gideon (U.S. secretary of the navy), 275-278, 283  
 Welsh, Charles (U.S. acting secretary of the navy), 208, 248  
 West Point Foundry, Cold Spring, New York, 24, 28  
 Wheelwright, William, 183, 184  
 Whittier, Rufus (marine lieutenant, USN), 174, 196  
 Winslow, Francis (lieutenant, USN), 156, 176, 194, 211, 253, 284, 285

- 
- Wise, Henry (lieutenant, USN),  
279  
Worden, John (lieutenant, USN),  
xxi, xxii  
Wurtemberg, Duke of, 88, 89

**Z**

- Zouave*, U.S.S., xvi