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JOHN M. BROOKE AND THE
CONFEDERATE STATES NAVY

BY

G. M. Brooke, Jr.

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TABLE OF CONTENTS

CHAPTER	PAGE
I.---The Opposing Powers.....	1
II.--Brooke Before the War.....	21
III.-The First Year of War.....	28
IV.--Building the "Virginia".....	46
V.---An Ungainly Monster.....	61
VI.--The Battles of Hampton Roads.....	77
VII.-Brooke as Chief of Ordnance.....	96
Bibliography.....	115

CHAPTER I.

THE OPPOSING POWERS

The secession of South Carolina from the Union on December 20, 1860 culminated years of growing dissension between the angry factions of North and South, and was soon followed by similar action on the part of her sister states of the lower South. By the first day of February Mississippi, Florida, Alabama, Georgia, Louisiana, and Texas had severed their old ties and now existed as independent commonwealths. As such, in event of war, they could not endure, so they sent delegates to Montgomery, Alabama on February 4, 1861 to organize a provisional government. Thus was born the Confederate States of America. The problems confronting the new government were legion. Hostilities had not yet commenced, but there was no assurance that some chance spark would not set the tinder box of disunion aflame. The South had to prepare for any eventuality. With such a policy it was soon realized that the formation of a Confederate Navy was a matter of paramount importance. To meet the situation the Congress passed an act on February 21st to establish a Navy Department. Jefferson Davis, who had been elected President, immediately appointed Stephen R. Mallory to direct this Department as Secretary of the Navy; he was to hold this post

until the downfall of the Confederacy. Mallory had been United States Senator from Florida from 1851 until the secession of his state, and during a large part of this time he had been Chairman of the Senate Committee on Naval Affairs. The experience he had thus obtained was to prove invaluable in the gigantic task to which he had been assigned.

The new Secretary had scarcely two months in which to mold the limited resources at his disposal into the semblance of a Navy. Events were to move swiftly, for on April 12th the firing on Fort Sumter occurred. This was followed in quick succession by Lincoln's call for 75,000 militiamen, the secession of Virginia and the other states of the upper South, and Lincoln's proclamation declaring the Southern States to be blockaded. Once the fighting had started, various factors were to make the building and acquiring of a Navy a more difficult task than before.

The South had always been an agricultural region and for this reason its merchant marine had lagged far behind that of the industrial and commercial North. The warships of the old United States Navy had, of course, remained with the Union, as not a single resigning officer had brought his ship south.¹ On the other hand, the North

--
I. J. Thomas Sharf, The Confederate States Navy (Rogers and Sherwood, New York, 1887), 17.

had a Navy which had been built up over a period of seventy-five years and a merchant marine which had developed to the point where it was second to that of Great Britain.² Aside from a few small ships of no real importance, which had been seized by the seceding states in their harbors and turned over to the Confederate government, the South, at the outset, had no Navy. Its future policy would depend on what it could build and what it could buy. Until the secession of Virginia the Confederacy was without a first class navy yard, for of the ten in existence in the United States before 1861, only the one at Pensacola, Florida had gone to the South; and it was only good for shelter and repair work.³

To get a glimpse of the drab outlook which faced Secretary Mallory we can quote briefly: "The timber for his ships stood in the forest, and when cut and laid was green and soft; the iron required was in the mines, and there were neither furnaces nor workshops.....The Southern States had never produced a sufficiency of iron for the use of their people in time of peace, and now that was greatly to multiply the uses of that indispensable metal, the price rose from \$25.00 to \$1,300.00 per ton; and yet neither money nor industry

2. Jefferson Davis, The Rise and Fall of the Confederate Government, II (Memorial Edition, Garrett and Massie, Richmond, Va., 1938), 237.

3. Sharf, The Confederate States Navy, 31.

could supply the demand which the navy, the army, the fast wearing rails and engines of the railroads, and all the other necessities a great war required."⁴ In the early months the Tredegar Iron Works in Richmond was the only iron works suitable for casting heavy guns.⁵ As late as November, 1863 the South was still lamenting the lack of heavy ordnance, which might have rendered the blockaded Southern ports invulnerable to attack.⁶ Another great shortage was powder and ammunition. This was felt so acutely during the first few months that the new guns cast for the ironclad "Virginia" could not be tested for quite some time for fear of wasting this necessity.

"Every pound of powder that could be procured has been sent to Norfolk for the "Virginia", wrote Commander George Minor in charge of the Bureau of Ordnance and Hydrography to John R. Tucker, commanding the Confederate forces in James River, while the "Virginia" was being fitted for action.⁷ Even when this ammunition could be produced in sufficient quantities it was often not of good quality. An army major writing to Brooke reported that, "The ammunition now on hand for the

4. Ibid

5. J. Russell Soley, The Blockade and the Cruisers, Vol. I, (Charles Scribner's Sons, New York, 1883), 22.

6. Official Records of the Union and Confederate Navies in the War of the Rebellion, Series II, Vol. II, 549.

7. Official Records, Series I, Vol. VI, 759.

Brooke Rifle Gun is very inferior. With the maximum elevation that the carriage will allow, only 2700 yards can be obtained with the army powder. If the navy powder is used, the army projectile, in three cases out of four, is exploded in the gun from the force of the charge and from its own inferior manufacture. I hope that you will soon be able to spare me some good ammunition for it."⁸

With reference to manpower the Confederates were both fortunate and unfortunate. They were not to suffer from a lack of trained commissioned personnel, primarily because the Navy was always so small that the limited number of officers was adequate. The records show that by early June, 1861 three hundred and twenty-one officers of the United States Navy had resigned to go with their states; this amounted to about one-fifth of the "old navy".⁹ Among these officers were some of the most brilliant in the naval service, just as had been true with the army. Buchanan, Tatnall, and Maury are just a few of the great naval leaders who felt a closer bond to their states than they did to the Union. These men were rapidly employed by the Confederacy to build ships, supervise port defenses at home, and to procure ships and supplies abroad. As ironclads and other warships began slowly to emerge from the

8. F. W. Smith to Brooke, October 29, 1864.

9. Sharf, The Confederate States Navy, 32.

Southern shipyards these veterans were utilized to command them. And whenever Captain James Bulloch or some other enterprising agent succeeded in getting a public cruiser built abroad, the Navy Department would send a staff of naval officers to some prearranged neutral place to take over the vessel.

However, the procuring of enlisted personnel was another story. As the South was so essentially agricultural, very few of its young men had ever followed the sea as common sailors. Of the fraction of these few who had been trained in the ways of naval warfare, the number who resigned from the United States Navy was negligible, so the South had to start from scratch. Throughout the war, one of the gravest problems facing the Navy Department was the securing of crews. Even with conscription in force the South encountered difficulty in this respect. After Commander Franklin Buchanan had been appointed to command of the "Virginia", he wrote as late as February 10, 1862, "The 'Merrimack' has not yet received her crew, notwithstanding all my efforts to procure them from the Army".¹⁰ The sea just did not appeal to these sons of the soil in the same way that land operations did, and throughout the war, the number of men obtained by vigorous recruiting barely offset the number lost by deaths, discharges and

10. Official Records, Series I, Vol. VI, 766

desertions.¹¹ In the case of a few of the public cruisers constructed in France and England, the ships were manned largely by Europeans.

The Industrial Revolution had not penetrated the agrarian South to nearly the same extent that it had the manufacturing North. This throws light on another shortage which was to affect the South adversely---that of trained mechanics and artisans. The Southern States suffered woefully from a lack of these skilled workers, because there had never been much need for them where an agrarian economy prevailed. Among the progressive navies of the world, steamships and ironclads were fast displacing the picturesque sailing ship and the wooden frigate. It was a period of rapid transition, and war, as always, accelerated mechanical production and inspired inventive genius. To build and operate these new vessels the South needed mechanics sorely, but it did not have them. The South which had always regarded the industrial worker of the North with mild contempt, now found the artisan's place in society was indeed an important one. The South was never able to obtain the full supply needed. As late as 1864 Commander Brooke, in charge of the Bureau of Ordnance and Hydrography, was urging a Confederate agent abroad to do all in his power to engage skilled workmen to fill in the breach caused by high geared production. It takes longer to train an expert mechanic than it does to

11. Sharf, The Confederate States Navy, 41.

increase industrial capacity, so in a race against time the obtaining of trained personnel is often the more difficult task of the two. Examples are easily listed. After yeoman service aboard the "Virginia" Catesby R. Jones was sent to Selma, Alabama to reorganize the iron foundry there and to increase its output of naval guns, so as to relieve the tremendous strain on the Tredegar Works. Immediately he was handicapped by a want of pattern makers and machinists.¹² A year after the Battle of Gettysburg Jones still suffered from a lack of skilled workers. At that time he wrote, "I have six guns awaiting bands, have no blacksmiths to¹³ forge them.

The Montgomery Government did receive one great blessing before the fighting in earnest began, which solved in some degree its perplexing problems. Perhaps the largest and best equipped navy yard in the country was the Gosport Navy Yard in Norfolk. When Virginia seceded the Federal command was thrown into a dilemma with reference to the feasibility of holding the yard. The officer in charge felt discretion was the better part of valor, so on April 20, 1861 he ordered the ships scuttled, the stores destroyed

12. Catesby A. P. R. Jones to Brpoke, June 2, 1863.

13. Ibid., July 28, 1864.

and the Federal forces to evacuate. The following day the State of Virginia took over and found the wharves and many of the stores in good condition. Some of the ships could be saved and efforts were made to salvage them.

However, during McClellan's Peninsula Campaign, a year later, the Southern High Command decided a strategic withdrawal up the Peninsula between the York and James would best ensure the defense of Richmond. This entailed the evacuation of Norfolk by the Confederate forces on May 10, 1862. During its year in Confederate hands, however, the Gosport Navy Yard had rendered the Southern cause valuable service. The ironclad "Virginia", which was to revolutionize naval warfare by its engagements in Hampton Roads, had been reconstructed from the hull of the U. S. ship, "Merrimac", which had been raised from the bottom at the Gosport Navy Yard.

Despite the adversities which confronted them the officers of the Confederate Navy did not lose their sense of humor and at times the evacuating Federals left more than just ordnance and ammunition. Capt. J. W. Cooke wrote from Plymouth, N. C. in 1864 testifying to this: "The Yanks left several fine gardens planted which I have taken possession of, and have a detail to work them for the use of the different messes; we also frequently catch a fine beef now and then, and I have made a weir which furnishes our mess with

sufficient fish for daily consumption, so we are not advanced
to such very short rations".¹⁴ However, these blessings were
not unmixed for in the same letter Cooke says there are
"chills and fevers and mosquitoes innumerable".¹⁵

As the war dragged on the South had to rely more
and more on the negroes to perform important tasks. The
slaves were required to perform labor in defense plants so
that white men could be released for duty with the troops.
The results were often bad and sometimes amusing. At the
Ordnance Works in Atlanta, Georgia the Ordnance Officer found
Christmas week almost a dead loss because the carefree negroes
wouldn't work.¹⁶

The South made vigorous efforts to obtain much
needed war materièl abroad to supplement its meager supply
at home. The Confederate Navy fully understood its pre-
carious position and wrote with real anquish of any supplies
lost enroute. The loss of two big guns shipped by the Whit-
worth Ordnance Company in Manchester, England elicited a
letter in this vein. "You know in this country we have not
such facilities as those which enable our enemies to give
form to their conceptions and multiply their means of offense.

14. J. W. Cooke to Brooke, June 3, 1864.

15. Ibid.

16. D. P. McCorkle to Brooke, December 24, 1863.

We regretted exceedingly the loss of those excellent rifles which were on board the "Princess Royal". The Whitworth field gun is held in high esteem by our artillery who appreciate its power and accuracy. Nothing pleases them more than to plant a Whitworth on the flank of an enemy's battery and this occasionally happens when the horse artillery of General Stuart is brought into action.¹⁷

Once the die was cast the North lost no time in declaring the Southern coast in a state of blockade and she attempted immediately to render this blockade effective, so that it would conform to the requirements of international law, as set forth by the Great Powers of Europe at the Declaration of Paris in 1856. However, the view held by some perfunctory scholars that the blockade, alone, caused the fall of the Confederacy is erroneous. Nevertheless, it cannot be denied that the blockade did exert a profound influence upon Confederate naval strategy. The North had moved and now it was the South's turn to try to checkmate this move. This the Southern leaders endeavored to do by granting letters of marque, contracting for public cruisers and other implements of war abroad, and by building at home ironclads and other ships with which to break the blockade.

¹⁷. Brooke to Whitworth Ordnance Company, Manchester, England (date not given).

When the Civil War began the North had a fleet of ninety war vessels. Many of these vessels were being repaired and others were on the high seas or in foreign ports where they could not easily be reached, as this was before the days of the cable. Even so, the North enjoyed an enormous initial advantage. With commendable foresight, Gideon Welles, United States Secretary of the Navy, entered upon an ambitious building program to enlarge this fleet, which the great resources of the North made possible. The Federals, also, with their ready money enjoyed a purchasing advantage over the South whose wealth was represented by bales of cotton. An agent sent to Canada by Jefferson Davis early in 1861 found his enterprising Northern competitors had already bought every ship available. The success of this program cannot be gainsaid, for by December 1861 the North had 264 war vessels and 22,000¹⁸ seamen. This building program was further accelerated by converting merchant ships to warships. An attempt to meet the North on its own terms would have been fatuous. To combat the enemy the South adopted a policy which promised most to overcome the initial advantages of the Federals.

To bring the sea war home to the North Jefferson Davis fell back on letters of marque and reprisal which would

18. Sharf, The Confederate States Navy, 41.

give us privateers to destroy Northern commerce and act as a counter blockade to the foe. The success of this step was doomed to early failure, because the ports of France and the British Empire were closed to prize ships by their sovereigns in the middle of 1861. As the Southern ports were blockaded, and many of them soon fell into Federal hands, the adventurous spirits who hoped to make a little money for themselves and serve their country simultaneously were deprived of the opportunity.

The story of the public cruisers, of which the "Alabama", "Sumter", "Shenandoah", and "Georgia" were a few was a much brighter one. To read of the cruise of the "Alabama" is to follow a saga of the sea packed full of romance and adventure. These fast ships dealt telling blows against the North, almost sweeping Northern commerce off the seas, but their best efforts could not loosen the Northern blockade which was threatening to strangle the South. The "Alabama", the most successful of them all, alone captured seventy-three Federal ships---sinking some and sending others into prize courts. The North, rather than attempting to convoy its merchant ships, was willing to risk these losses which it thought it could replace, and adopted the alternative policy of tightening the blockade. In a way this strategy can be compared with the British blockade of Germany during the World War and the latter country's vain attempts to loosen the shackles by a

resort to unrestricted submarine warfare. The effectiveness of the public cruiser as a weapon of war can be best illustrated by giving a few figures. In 1860 American ships carried nearly seventy percent of our foreign commerce, but by 1872 the percentage had dropped sharply to $28\frac{1}{2}\%$.¹⁹ This alarming decline can be explained by several factors which contributed to it. Among these were an actual loss of ships, a converting of merchant ships to warships, and a change of national registry for merchant ships. By the close of the war foreign ships had obtained much of the business and hundreds of American ships that had been changed to foreign registry, to ensure their safety during the struggle, were hopelessly lost to the United States. This latter condition resulted from a domestic law which proscribed American ships which had changed their registry from changing back. From 1860 to 1864 the tonnage carried on American ships was cut in half. These results are a grim tribute to the efficacy of the Confederate public cruiser. The United States merchant marine suffered a severe body blow from which it has never fully recovered. So this second phase of the Southern naval effort was partially successful.

We now discuss another phase. Secretary Mallory was astute enough to realize that if he were to free the Southern

¹⁹. Davis, The Rise and Fall of the Confederate Government, II, 237.

ports from blockade he would have to make full use of all the new inventions of naval warfare, and by daring and genius overcome the Federal preponderance of power. What were the new developments in ordnance and ship construction which an ingenious people could utilize? Authority has stated that the nineteenth century made five significant contributions to the navies of the world: steam, shell projectiles, the screw propellor, rifled ordnance, and armor.²⁰ These inventions are interrelated. It is fair to assume that if the steamboat had never been invented there never would have been a screw propellor. Also, if the Paixhans shell had not been invented in 1837 then armor would not have been necessary, and if armor had not been employed then the use of rifled cannon would probably not have been fostered. All of these developments had evolved before 1861 and by that time the English and French navies, engaged in a bitter rivalry, had made some use of them. To these might be added extensive use of the naval mine, which at that time was called the torpedo. This last weapon was in large part responsible for the fact that Charleston, Wilmington, Savannah, and Mobile were able to hold out for so long a time against repeated Federal attacks.²¹

20. Harrison A. Trexler, The Confederate Ironclad "Virginia" ("Merrimac"), (University of Chicago Press, Chicago, 1938), 32

21. Davis, The Rise and Fall of the Confederate Government, II, 174.

It immediately is apparent that the naval salvation of the South would depend upon the most practical adaptation of these inventions to the resources at her command, coupled with her cruiser campaign.

Of these great developments the introduction of steam was far the most important from tactical, strategic and ultimate political consequences. It has been stated that: "In short, the steam warship was the most important development since the 15th Century, when the discovery of the art of tacking inaugurated the era of the sailing ship".²² Since the first steam warship had been built by Robert Fulton in 1814 for the harbor defense of New York City the adoption of the steam warship by navies had been slow, as some of the naval officers thought it could never be more than an auxiliary for coastal defense.²³ The later introduction of the screw propellor, however, assured the place of the steam warship as the ultimate successor of the sailing vessel and answered all objections to the wide adoption of steam. By 1839 Great Britain had 680 steamers in her merchant marine and in event of war she planned to convert these into warships.²⁴

^{22.} Bernard Brodie, Sea Power in the Machine Age (Princeton University Press, Princeton, N. J. 1941), 18.

^{23.} Ibid, 17.

^{24.} Ibid, 28.

The following year, of the 239 ships in the British Navy, twenty-nine were armed steamers.²⁵ During the 'forties and fifties Great Britain and France sought to enlarge the steam complement of their navies. Great Britain did this by the building of new ships and France by the conversion of sailing vessels. When the Civil War began the use of steam was rather widely appreciated, but its clear superiority over sail in battle had never been clearly demonstrated. The Civil War was to offer the classic example and to sound the death knell of the picturesque ship-of-the-line. What chance could a sailing vessel, dependent on the whims of nature, have against a ship motivated by steam?

For the invention of the screw propellor the world is indebted to John Ericsson. The United States Navy was the first to use this propellor having launched the frigate "Princeton" with this innovation in 1843. It is ironic to note that the progressive British Admiralty lost a trick to the United States at this time. When Ericsson offered his design to the British, they rejected the offer as being impractical; so, Ericsson was persuaded to come to America. As an example of the profound influence exerted by the screw propellor we quote from Major-General Lovell, in command of the Confederate forces at New Orleans when Farragut successfully ascended the Mississippi: "A vessel with her machinery below water may have 100 shots put through her, as we put

25. Ibid.

through the "Hartford" (Farragut's flagship), without suffering any material damage. The water line protects her machinery, so that the only chance of sinking her is by concentrating upon her a large fire of shells".²⁶ What a radical departure from the old paddle-wheel steamer and what a vast improvement!

We have just seen that the only way a screw steamer could be sunk was by firing shells at her. This may be taken as proof of the terrific destructive force of that projectile. A Frenchman, Paixhaus had made this contribution to the science of war in 1837. Rather than merely piercing a ship's side as the old solid ball shot did, this new projectile pierced the outer wall of the ship and then, while lodged inside, burst with terrible effect. It was the forerunner of the high explosive shell and the bomb of today. Early critics saw in this development a death warrant for the wooden warship and their view was prophetic.

The development of naval power has long been a duel between the offense and the defense. The Paixhaus shell gave the edge to the offense. The development of armor restored the balance in favor of the defense. Popular belief to the contrary, the "Merrimac" or "Virginia" was not the first

26. Trexler, The Confederate Ironclad "Virginia", 33.

ironclad. Following the introduction of the Paixhans shell the French and British experimented with armor and during the Crimean War they had some slight success. However, it remained for the Civil War to demonstrate graphically the value of armor.

With armor once again swinging the pendulum back to the defense, the great ordnance works got busy. The result in England was the introduction of rifled cannon by Whitworth and Armstrong in the decade before the Civil War. These were not the first rifled guns, but they were the first to prove clearly their great superiority over smooth bores. The rifled gun makes possible the use of an elongated projectile which increases the penetrating power. Also, the spin given the projectile improves the accuracy of the piece and extends the range by cutting wind resistance to a minimum. Shots fired from these great rifled guns could on occasion penetrate armored ships and thus equilibrium was temporarily restored.

The American Civil War served as a catalyst to prove these tremendous achievements in naval construction and naval ordnance. If that war did nothing else it demonstrated emphatically that naval warfare had undergone a remarkable evolution and that steam, armor, the screw propeller, rifled ordnance, and the shell projectile were here to stay. The sailing vessel, the wooden ship, the paddle-wheel,

smooth bore ordnance and solid shot were as out of date as hoop skirts in the 1940's.

With the limited resources at its disposal the Confederate Navy made a gallant effort and its ultimate defeat must be blamed not on a lack of leadership, but on an overpowering foe.

The South capitalized fully on the latest naval developments and endeavored to use them to the greatest advantage. Some of the results were remarkable.

CHAPTER II.

BROOKE BEFORE THE WAR

There were many able and brilliant men among those officers who resigned their commissions in the United States Navy to go with their native states. These men believed sincerely in the states' rights theory of the Constitution, and so devoutly did they believe in it, that they were willing to sacrifice their ambitions, their future security, and even their lives in the hope that their belief should prevail. They were not in the least disloyal or ungrateful to the Federal Union; it was rather that they felt their first allegiance was to their state. Among these officers was John Mercer Brooke.

Brooke was born near Tampa Bay, Florida on December 18, 1826 to Major-General George Mercer Brooke, United States Army, and Lucy Thomas Brooke of Duxbury Massachusetts. From his antecedents we see that Brooke had perhaps an even stronger tie binding him to the Federal Union and "Old Glory" than did many of his brother officers. For his mother was of Northern heritage and his father was a professional soldier with the resulting strong attachment to the United States. These factors, however, could not offset the ingrained loyalty to Virginia, the home of his forefathers.

At the age of fifteen Brooke entered the Navy as a midshipman and later when the Naval Academy was opened at

Annapolis he was admitted there and graduated with the first class in 1847. From the time of his graduation at the Academy until his resignation from the United States Navy in 1861 Brooke led an interesting and adventurous life which carried him to many remote quarters of the globe. Space will not permit of more than a very brief account of these years.

From 1851-1853 he served at the Naval Observatory in Washington, D. C. While at the Observatory he worked with Matthew Fontaine Maury, the "Pathfinder of the Seas". These men were to collaborate with one another many times in the coming years and finally when the Civil War was over they both received appointments to the Academic Staff at the Virginia Military Institute. It was while at the Observatory that Brooke invented the deep-sea sounding lead, "by means of which specimens of the deep sea bottom were brought to light for the first time, affording positive evidence that bottom had been reached."¹ The practical effect of this discovery was enormous, for by being able to definitely determine the depth of the sea at any point, it was possible to chart the bottom of the oceans. This step was necessary before any submarine cables could be laid. For this contribution to science Brooke was awarded, by the King of Prussia in 1867, the Prussian

1. Frank Astor Newton, "The Surviving Leaders of the Confederacy," (National Magazine, March, 1897), 568.

Gold Medal for Science of the Academy of Berlin.

From the Observatory Brooke was ordered to the North Pacific and Behring Straits Exploring Expedition. He was placed in charge of the astronomical department on the Sloop of War, "Vincennes", under Commodore John Rodgers. In this capacity he was charge with the duty of measuring chronometrically differences of longitude and of making magnetic observations and deep sea soundings for depth and temperature. During this expedition Brooke made a reconnaissance of the east coast of Japan from Shimoda on the main island of Honshu to Hakodate on the northern island of Hokkaido which had never ~~before been~~² charted.

Upon the return of the expedition to this country, Brooke assisted Commodore Rodgers in the preparation of various charts and reports based on the expedition. In May 1858, while thus engaged, Brooke was ordered to survey the route between San Francisco and China via the Hawaiian Islands and Japan. In command of the schooner, "Fenimore Cooper", the survey was made. Later expeditions verified the accuracy of the findings made by this expedition. The survey was abruptly ended when a typhoon washed the schooner on the beach near Yokohama while Brooke was in Tokyo, then called Yedo, con-

2. Shimoda and Hakodate had just been opened as treaty ports to American trade by Perry's Treaty of 1854.

ferring with Townsend Harris, first United States Minister to Japan. A careful examination of the hull showed that, although the ship had been pronounced sound when she sailed from America, she had rotten timbers which could not be repaired. This necessitated all of the officers and crew prolonging their visit until passage home could be obtained. From the date of the disaster, August 22, 1859, to February 10, 1860 Brooke and his crew resided in Yokohama, awaiting passage on the U. S. S. "Powhatan", Flagship of the Asiatic Squadron. During those months, so few years after Japan had been opened to the Western Powers, these men did much to cement the friendship between Japan and their own government. As Brooke was a man of scientific attainments, and Japan was most eager to make up for the lethargy she had displayed during her centuries of seclusion, the lieutenant was freely consulted and confided in by officials of the Empire.

In 1854 Commodore Matthew C. Perry had concluded a treaty with Japan which opened the ports of Shimoda and Hakodate to American ships. A further clause permitted the American Government to send a consul to the treaty port of Shimoda to handle American interests. In 1856 Townsend Harris arrived at Shimoda to serve in that capacity. Harris set about his duties with a zest and by 1858 had concluded a Convention with Japan which, among other things stipulated that the two governments should exchange diplomats. Townsend Harris, doubtless

in recognition of his services, was appointed first American Minister to Japan in 1859;³ he and his staff were to reside in Tokyo. The Japanese reciprocated by appointing an envoy to Washington. It was decided by the Shogun's government⁴ that their diplomatic staff should travel aboard the "Powhatan". This was early in 1860 when Brooke and his stranded officers and crew were in Japan. However, complications arose. Even in this bygone day the Japanese displayed that characteristic of their temperament which has been so closely associated with their national character. It was a question of "face". In typically Japanese fashion they reasoned that if they sent their envoy and staff on a foreign ship the Western World would believe that they had no warships of their own. In such a contingency Japanese prestige would suffer a severe blow at the outset. Accordingly they decided to send a warship of their own to San Francisco, in addition to the "Powhatan" to prove to all that they were a great nation. Once again difficulties were encountered, for the Shogun would authorize the voyage only on condition that Brooke and some of his crew be allowed to travel on the Japanese ship, so he could give advice to the Japanese captain in navigation.⁵

^T
 3. Samuel Flagg Bemis, A Diplomatic History of the United States (Henry Holt and Company, New York, 1936), 358.

4. Until the restoration of the Mikado in 1868, the Shogun was the real power in Japanese politics.

5. Notes kept by Brooke which outline this part of his life.

Permission was readily obtained from Flag Officer Josiah Tatnall, commander of the "Powhatan".⁶ This proved to be a very sensible precaution upon which the Shogun insisted, for the records show that if Brooke hadn't been on board, the ship probably never would have reached port. Never before had a warship of the "Rising Sun" traversed the wide waters of the Pacific and the captain and admiral aboard soon demonstrated an appalling ignorance of navigation. For the most part they were confined to bed with seasickness and the duty of running the ship devolved upon the Americans and one Japanese seaman who had once sailed with a whaling fleet.⁷

The Japanese warship, the "Kanrin Maru"⁸ departed for America at the same time as the "Powhatan", but each ship followed its own route. After a heavy passage the "Kanrin Maru" arrived at San Francisco. The Japanese were especially elated by the trip, because their ship arrived in San Francisco thirteen days ahead of the "Powhatan". Because of the bad weather, the American ship had had to run south via Hawaii and this explains the time differential. The Japanese, however, were not averse to crediting their feat to superior seamanship.

6. The same Tatnall who had said: "Blood is thicker than water", in justification of the aid he had rendered the French and English during one of their engagements with the Chinese in the 1850's.

7. Journal kept by Brooke aboard the "Kanrin Maru".

8. This ship had not been built by the Japanese---it had been purchased from the Dutch.

Upon his return to the United States Brooke was again assigned to duty at the Naval Observatory. He was at this post when Virginia seceded.

At this time it would be pertinent to ask: Did Brooke feel war was inevitable and, if so, did he look towards the struggle with relish or dread? Without the benefit of any special correspondence on the subject we could probably deduce that Brooke would dread a "brother's war" above all else--- and so he did. Let us quote from a letter of his to a friend in the Sandwich Islands⁹ written February 14, 1861: "The unsettled condition of the country has in fact led me to defer writing in the hope of having at least some pleasant information to convey in relation to the disposition of the agitating questions which are convulsing the country. But whilst I have great faith in the good sense of my countrymen I cannot but apprehend disastrous consequences from the violent and aggressive disposition of party leaders in and out of power."¹⁰ This was ten days after the representatives of the Lower South had met at Montgomery and two months before the fateful firing on Fort Sumpter which precipitated the War Between the States.

His dire prophecy was to be tragically fulfilled.

9. These Islands named in honor of Lord Sandwich are now known as the Hawaiian Islands.

10. Brooke in Washington, D. C., to Wylie in the Sandwich Islands, February 14, 1861.

CHAPTER III.

THE FIRST YEAR OF WAR

The fateful firing on Fort Sumter plunged the country into war and made it impossible for any state to remain neutral longer. Virginia, tied to the Confederate States by a common heritage and an agricultural economy, was forced to abandon her hopes of peace and enter the war on the Southern side. This action posed a tremendous decision before Virginia's sons who had heretofore served in the Army or Navy of the United States. Was their loyalty to the Union or their loyalty to their native state the stronger? Each man would have to decide for himself.

On April 20, 1861, three days after Virginia had so decisively cut her ties with the United States, Brooke resigned his commission as a lieutenant in the United States Navy and offered his services to the "Old Dominion". On the 23rd he was commissioned as a lieutenant in the Virginia Navy by Governor Letcher and on the 26th ordered to report to General Robert E. Lee for duty. Upon reporting to General Lee in Richmond Brooke was appointed acting naval aide-de-camp. One of the first duties to which Lee assigned his new assistant was the finding of percussion cap machine makers. In his diary Brooke states that: "At one time great fears were entertained as we were without a sufficient number of caps for one good fight." This boded ill

fight".¹ This boded ill for the future, and was graphic evidence of the South's lack of preparedness. At this time "the State had a few rifles, about one thousand revolvers, twenty-five hundred sabres, and forty-seven thousand old flintlock muskets of inferior make, thirty-seven new brass six-pounders without carriages, twelve Parrott rifle cannon mounted."² The ammunition supply was not much better, and it was only by tremendous efforts that a fair quantity could be obtained. This shortage in ammunition was not confined to the Richmond area nor just to the first couple of months of war. An officer writing from Gloucester Point laments the fact, in December of 1861, that he does not have more ammunition, so that he can instill confidence in his men and give them the benefit to be derived from a little actual handling of projectiles.³ The lack of ammunition made it impossible to give the untrained men the practical training needed. However, it was during the first month of war that the situation was most critical, and at this very time the press was clamoring for an attack on Washington, much to the exasperation of the harassed leaders.⁴

1. Brooke's Diary kept during the first year of war.
2. Ibid.
3. T. J. Page to Brooke, December 13, 1861.
4. Brooke's Diary.

The day after Brooke reported to General Lee for duty, he applied to the Confederate States Government for a commission in the Confederate Navy. His application was accepted and his commission as a lieutenant, signed by Mallory, Secretary of the Navy, was effective May 1st. However, for a few weeks Brooke remained as naval aide-de-camp to General Lee.

While serving under that great leader, Brooke was given various duties to perform. With Colonel Talcott of the army engineers, Brooke was ordered to select a site along the James River for an effective gun position. The officers chose a location at Kennon as best. This choice was not satisfactory from everyone's viewpoint, however, for the owner in the greatest consternation said, that if the guns were placed there, he would lose some of the plum trees in his yard⁵. The good farmer's wishes were respected until February of the following year when the danger of an enemy dash up the James became imminent.⁶

5. Ibid.

6. At that time as it was deemed more advantageous to protect the river by batteries than by obstructions, the army had to locate more battery positions along the James. As the property at Kennon's was the best location near Lower Brandon, the army had to disregard the desires of the farmer and place four heavy guns in his front yard. At this particular point the channel was so narrow that not more than one or two vessels could attack the battery simultaneously.

Towards the end of May General Lee, anticipating that an enterprising enemy force might cut the Petersburg to Norfolk Railroad and thereby severing his communications with the vital Norfolk area, ordered Lt. Brooke to contact the Confederate forces near Lini on Blackwater Creek and to see that the bridges along the railroad were adequately protected. This mission was executed and then, to make sure the defending forces would be able to hold the bridges against any attack, Brooke proceeded to Norfolk where he met General Huger. That officer agreed to dispatch reinforcements from Suffolk immediately, to protect the bridges, should it prove necessary.

At this time rifled ordnance was still in its infancy and was not favorably regarded by many conservative artillerists. Brooke, though, seems early to have understood its value and to have foreseen that it would almost entirely supplant the smooth-bore in the next few years. We find that by May he had already formed a decided opinion as to the merits of this type of cannon. At that time Brooke noticed that the Federal fire upon the Confederate batteries at Aquia Creek was unsuccessful. However, he feared that the enemy would soon remedy this condition by substituting a heavy rifled gun for the smooth-bore whose fire was so ineffective. That the Confederates might be prepared for such a change of tactics, Brooke suggested that the Quia Creek emplacements be shielded by railroad iron. General Lee directed Brooke to write to

General Holmes, commanding the troops involved, to that effect. With such an attitude we are not surprised to see that the young naval officer later put great faith in this type of cannon when he was in charge of the Bureau of Ordnance and Hydrography. Another interesting reference in the statement given above pertains to protection by railroad iron of the gun emplacements. A couple of months later Brooke was given an opportunity to study the efficacy of armor protection when he began work on the "Virginia".

On June 20th Brooke was ordered to report to Secretary Mallory, in person, for special duty. This transfer ended his service on General Lee's Staff. Upon reporting to Secretary Mallory he was assigned to the Naval Ordnance Bureau. His work at the Naval Observatory in the 'fifties and his inventive turn of mind qualified him admirably for work in this bureau. His first task was to design a projectile to be used with smooth-bore cannon. Upon perfecting the design, the shell was turned over to Sampson and Pays Foundry for casting. The work on these shells progressed very slowly---presumably because the foundry was so overworked.

While the shell was being cast Brooke had other duties assigned to him. Early in June the Secretary of the Navy had asked him to design an ironclad vessel, as the Secretary was fully aware of the possibilities of that type of ship.

7, Official Records, Series II, Vol. II, 175.

The plan submitted by Brooke, in compliance with the Secretary's request, was accepted by Mr. Mallory. The details of the conversion of the U. S. S. "Merrimac" into an ironclad will be dealt with in a later chapter. However, from the time his plan was adopted in June 1861 until the "Virginia" steamed out of Gosport Navy Yard the following spring, Brooke was occupied with the construction and armament of this ship. "To Mr. Brooke were assigned the duties of attending to and preparing the iron and forwarding it from the Tredegar Works, the experiments necessary to test the plates and determine their thickness, and devising heavy rifled ordnance for the ship, with the details pertaining to ordnance"⁸. In discussing Brooke's other activities during this period we must not lose sight of the fact that the construction of the "Virginia" was his most important duty.

Richmond was a hub of activity which was accentuated by the influx of a war population. Consequently, as is true in the present conflict, many officers, who were called to Richmond for duty, found it necessary to leave their families in some safe place and proceed to the metropolis alone. While occupied with their war duties they occasionally took time off to go house hunting. Thus, on June 15, 1861, Brooke who had left his wife with her uncle in Lexington wrote to her describing a

8. Ibid.

house and lot which he thought would be a good buy. He was especially impressed with the yard which would have given his young daughter, Anna, a place in which to play. The purchase price of the house was \$4500 and it could be rented for \$360 a year. However, intervening circumstances caused a change of mind apparently and Mrs. Brooke remained in Lexington. ⁹

This forced separation from his family must have been hard to endure. In September of 1862 Brooke, hoping to get away to Lexington for a visit with his family wrote to his wife: "As soon as I can start I will certainly let you know. I may perhaps be forced to pay but a very short visit, there is so much to do and the state of the country is so critical that every man should be at work. But I hope we shall soon be together for the winter; I dislike separation so much." ¹⁰

He further asks his wife to tell his daughter, Anna, that he hoped to save enough money one of these days to buy a cottage. ¹¹

It would seem that it had been a lack of funds that had prevented him from buying the house referred to earlier.

Besides house hunting Brooke had other personal matters to attend to. In June of 1861 he went to the War Department at his wife's request to see if a commission could be obtained for a young relative of hers. The result of his visit

9. Brooke to his wife, June 15, 1861.

10. Brooke to his wife, September 21, 1862.

11. Ibid.

is interesting as a commentary on the military views of Jefferson Davis: ¹² "Yesterday", he wrote, "I went to the War Department and saw Col. Bledsoe. He told me that Davis has determined not to appoint any Lieutenants from civil life and that he had refused to appoint Beauregard's ¹³ son on that ground." ¹¹⁴

This same letter gives a little additional information of interest: "Everything is going up in price. If you want anything let me know.

"Tell Willie Williamson he need be in no hurry to go to the war. There will be ample opportunity---before it closes."

So after just two months of war we can see that at least some men held the view that it would be a long hard war. The light optimism of the South was not shared by all in responsible positions.

When work on the "Virginia" was progressing satisfactorily, Brooke devoted his talents to further experiments. Frequently his efforts were aimed at improvement of projectiles. At one time he proposed that the navy adopt a design of his

12. Davis was a West Point graduate and had served with distinction during the Mexican War. Later he served as a brilliant Secretary of War during the Pierce Administration and instituted many needed reforms. Consequently his interest in military affairs while he served as President of the Confederate States was shetted by a technical knowledge of the subject. By many critics he has been condemned for interference in military affairs.

13. On August 31, 1861 P. G. T. Beauregard received his commission as a full general and was at the same time designated as fifth ranking general officer in the Confederate Army. He was, therefore, a man of great influence.

14. Brooke to his wife, June 15, 1861.

for conical or cylindrical wrought iron solid shot to be used in rifled cannon and fired while red hot. It was his belief that this shot would be highly effective when used against iron-clad vessels.¹⁵

Another excellent suggestion was made during these early months that was adopted later. He proposed that the Navy Department adopt a uniform rifling for cannon and also a uniform form and dimensions for the various shells and shot.¹⁶ The logic of this suggestion is obvious.

While attached to the Ordnance Bureau Brooke had been consulted frequently by the Secretary of the Navy on all sorts of technical problems. Secretary Mallory had formed a high opinion of the young officer's judgment and ability and on November 4, 1861 issued a general order making this manifest. The order declared that henceforth all improvements in ordnance submitted to the Department would be subject to examination by Lt. Brooke and that officer would furnish any hydrographic¹⁷ information that might be needed to complete the examination. This meant that the decision as to whether or not a proposed improvement or invention was feasible would be left entirely up to him. By this action Secretary Mallory demonstrates the

15. Brooke's diary.

16. Ibid.

17. Ibid.

implicit confidence he had in Brooke.

Two days after this order was issued Brooke suggested to the Secretary that a record and register of all guns cast for the navy be kept.¹⁸ This suggestion was prompted by two factors. In the first place, such statistics would enable the Department to derive the full benefit of all reports on guns that had burst and make it easier to determine the causes. With this knowlege the Department could take the proper steps to avoid a repétition of the accident in the future by an improvement of guns to be cast. In the second place the idea was prompted by the scarcity of ammunition. To conserve it, Brooke deemed it expedient to curtail experiments by the Bureau, so that more ammunition would be available for practice in the field. This suggestion was used and Brooke kept a record of all the guns cast.

The difficulties encountered in improving ordnance and ammunition in a naval ordnance bureau are complex enough even in peace time. Endless patience, experimentation, and study are required. The exigencies presented by war, such as the great need of speed and the limited supply of skilled labor and adequate materièl, vastly increase the complexities of the job. One little example will illustrate this point.

18. Ibid.

While Brooke was working on an improved type of shell, to be used with the seven inch rifled gun of his design for the "Virginia", he was advised that a design for the gun's shell had been prepared in Norfolk. This was good news and Brooke determined to use both this shell and that of his own design. However, the optimism which the development of the Norfolk shell produced was short-lived. Subsequent experiments proved abortive and as a result production was thrown behind schedule.

To say that all the troubles which beset the Navy Department were of a technical and economic nature beyond its control is an overstatement, however. Some of the difficulties encountered were of its own making and the South had to suffer for these mistakes. A letter from New Orleans dated March 19, 1862 gives us a picture of the lack of coordination by the Confederate Navy in that great seaport which controlled the vital commerce of the Mississippi River: "The credit of the navy is bad. No bills have been paid until lately and the consequence is the army can purchase at one third of the price we do, because they have always paid promptly. If a merchant has to wait for his money he puts on the interest at a high rate. We have money now but our reputation is gone."¹⁹ Though the evidence is not conclusive, it seems that this sad state of affairs

19. D. P. McCorkle to Brooke, March 19, 1862.

was caused by poor management on the part of ranking naval officers in New Orleans rather than through negligence on the part of the Navy Department in Richmond. The importance of New Orleans to the Confederacy made this instance of laxity particularly harmful to the Southern cause and undoubtedly was a major reason why the Confederate naval forces were so ill prepared to defend that port when the long expected Federal attack was launched.

During this period the Ordnance Bureau was straining every muscle to get the ironclads "Mississippi" and "Louisiana" completed and armed in time. Yet, here too, we see its efforts partially neutralized by complacency and indifference:

"McIntosh has arrived to take command of the "Louisiana"; he does not believe in rifle guns, or rifle shells or anything else that is new. The "Louisiana" draws five and a half feet and is being completed fast. We have no guns for her. You will have to send fourteen-inch guns to us. I am driving ahead as well as I can. I found everything behind hand. I am getting ahead slowly, I wish you would send all the information about seven-inch guns. You know I have to combat old fogies. Also strengthn me in the position I have taken here, not only by my own conviction, but by authority of the Bureau, that no rifle guns should be without bands."²⁰

20. Ibid.

This aversion to and lack of confidence in rifle guns was quite widespread, mainly because their great effectiveness had never been demonstrated in naval warfare. Rifled ²¹ cannon were something new to the navies of the world.

Secretary Mallory, though, realized the odds with which he was confronted and shrewdly decided to experiment with rifle cannon as a weapon of war. In the first month of war he reported to President Davis that he proposed to introduce this ²² type of cannon into the Confederate Navy.

The letter from New Orleans, quoted above, stated, ²³ also, that there was a sentiment against the banding of guns. This feeling was not confined to New Orleans naval officers. In fact the Army Ordnance Department was opposed to the banding of guns. Events, however, sustained the position taken by Brooke and Mallory. By reinforcing the breech end of a cannon with one or more iron bands, it was possible to employ heavier charges and thus augment the firepower of the gun. The ranges and destructive force attained by the Brooke Gun could not have been achieved without banding. By ingenuity

²¹. In small arms rifling had been used for many years, but until two decades before the Civil War ordnance experts had been unable to apply the principle successfully to cannon.

²². Official Records, Series II, Vol. II, 53.

²³. D. P. McCorkle to Brooke, March 19, 1862.

and a willingness to gamble on things new, the progressive Confederate Navy greatly increased the efficiency of its war effort.

While the "Merrimac" was being converted into the ironclad "Virginia" Brooke served on many different boards and gave advice in many instances. Among the boards which he was requested to serve on was one which designed the Confederate naval uniform. This was a task which Brooke did not in the least relish. The Board was told to decide between sky blue and grey but somehow, neither of these colors seems to be in keeping with the navy tradition. Yet with the Federal Navy bedecked in dark blue that traditional color was automatically eliminated. Finally the President decreed that grey should be used. This was a color universally disliked in the navy according to Brooke.²⁴ Brooke designed the button to the uniform and writes that it was much admired. The button showed a ship under sail surrounded by an arch of stars over the sea.²⁵

The uniform as adopted, however, did not please everyone and evoked some rather amusing comments. In December of 1863 one officer wrote from Atlanta: "I wish to gracious you would have shoulder straps abolished in the navy. Our

24. Brooke's Diary.

25. Brooke always admired the beauty of sailing ships and painted some of them on canvas.

men holler "Yankee" at us. Uniform troubles me but little.
I only hate to be taken for a Yankee by my uniform."²⁶

Uniforms---or the lack of them---were the subject of much correspondence during the Civil War. In the early winter of 1861 Brooke received a letter from his cousin, Richard Garnett,²⁷ asking that Brooke purchase for him a pair of stout sky blue pantaloons, with the word "stout" underscored. If sky blue cloth could not be obtained, then Brooke was to buy a pair of thick grey pants. Garnett was almost ragged at the time and so asked that the pants be shipped by express. This same letter gives us a sidelight on slang expressions of that day, which don't sound very different from some we use today. Garnett asked that the tailor "build" the pants and that Brooke let him know the "swindle".²⁸

While in command of a brigade in the Army of Northern Virginia Garnett wrote from near Winchester on October 12, 1862 asking that his cousin procure a grew sack coat for him---the official buttons not being necessary.²⁹ In this letter Garnett noted the morale of Lee's Army had improved since the

26. D. P. McCorkle to Brooke, December 24, 1863.

27. Garnett later fell at the head of his brigade during Pickett's famous Charge at the Battle of Gettysburg.

28. Garnett to Brooke, October 7, 1861.

29. Garnett to Brooke, October 12, 1862.

return to Virginia from Maryland. He did not feel the army was in a condition to undertake a successful invasion of the North again.

In all his letters to Brooke Garnett seems to have been in the best of spirits. His infectious good humor, doubtless, furnished Brooke occasional respite during those busy and trying days. In September of 1861 Garnett sent his cousin forty dollars. Twenty dollars were to be kept by Brooke as a contingency fund to purchase any incidentals. Garnett might need. The remaining twenty dollars was to be changed into one ten dollar note, five fifty cent notes, and thirty twenty-five cent notes, which Garnett called "shinplasters". This money was to be sent to Garnett. The first purchase to be made out of the contingency fund was a subscription to the "Richmond Examiner", which was to be sent to General Garnett at his field headquarters.
30

At times the Army Ordnance Department and Navy Bureau of Ordnance cooperated closely to further the common cause. Such was the case in June of 1862 when General Lee asked for a railroad gun battery. General Lee wrote to Col. Gorgas, who was in charge of the Army Ordnance Department, asking that Gorgas contact George Minor and Brooke, so that the three of

30. Garnett to Brooke, September 18, 1861.

31. Commander George Minor was in charge of the Bureau of Naval Ordnance during the first year of the War.

them could collaborate in constructing the battery with all speed. Until something better could be made up Lee suggested that a Dahlgren or Calumbiad Gun be erected on a ship's carriage and the carriage in turn mounted on a railroad flat car with iron aprons for protection of the men and the gun.³²

As a result of the conference between Col. Gorgas, George Minor, and Brooke it was decided that the latter officer should be entrusted with the task and exercise immediate supervision over it. Consequently Brooke took sole charge of the job and worked night and day to accomplish the task. On June 21st General Lee wrote to Secretary of the Navy Mallory that: "I have been informed by Col. Gorgas that the railroad gun will be ready for service tomorrow. Inasmuch as this battery has been constructed by the Navy, I would be pleased if you assigned an officer and a requisite number of men to take charge and operate it.----I am very much obliged to you for your kindness as well as promptness in its construction".³³

Three days later the gun was ready. The battery, of Brooke's design, was a rifled and banded thirty-two pounder of fifty-seven hundredweight. It had been mounted and equipped by Lt. R. D. Minor of the Navy and with two hundred rounds of ammunition, including fifteen rounds of solid bolt shot, was ready

³². R. E. Lee to George Minor, June 5, 1862.

³³. R. E. Lee to Stephen R. Mallory, June 21, 1862.

for transfer to the Army.³⁴ The battery later was subjected to severe tests in engagements with the enemy and held up very well.

We now turn to the story of the "Virginia".

34. George Minor to R. E. Lee, June 24, 1862.

CHAPTER IV

BUILDING THE "VIRGINIA"

We have seen earlier that five great contributions to ship construction and naval ordnance revolutionized naval warfare in the 19th Century.¹ The South fully exploited all of these developments and in the utilization of three of them: armor, shell projectiles, and rifle ordnance, Brooke played a distinguished part.

The historic battle between the "Virginia"² and the "Monitor" in Hampton Roads in the spring of 1862 elicited much vociferous comment at that time, and the echoes of some of the claims and counterclaims then set forth have not yet died away. Whenever a debate is hotly contested with no limitations set on the participants exaggeration is bound to occur. Such claims become firmly entrenched in the public mind and are handed down as a legacy to succeeding generations. All of this tends to obscure the facts and the diligent historian is often confused in an attempt to sift truth from fiction. Consequently we find that many assertions about the "Virginia"

1. Steam, the screw propellor, shell projectile, armor, and rifle cannon.

2. The ship as a wooden frigate of the United States Navy was known as the "Merrimac"; when that ship was converted into an ironclad by the Confederates, its name was changed to "Virginia".

are wholly without foundation and others are downright absurd. In the former category falls the persistent claim that the "Virginia" was the first ironclad. No pretense to that was ever claimed by authority. The real significance of this engagement was that it was the first battle between iron ships and was one of the first of consequence between steam warships. It demonstrated clearly that ironclads were vastly superior to wooden ships, as were steamships to sailing vessels, and in so doing also proved that two ships possessing these attributes when engaged as antagonists would offset one another.

To properly evaluate the importance of the "Virginia" to naval warfare it is expedient that we trace briefly the development of ironclads. It cannot be categorically stated when or by whom the first ironclad was invented. We do know, however, that sometime between 1834-1844 while Henry a Wise was Chairman of the Committee on Naval Affairs of the United States House of Representatives the illustrious Commodore James Barron presented to the Committee the model of an iron-clad vessel which he urged that the Congress adopt. This³ the pre-occupied Congress declined to do.

In 1845 a Mr. Stevens of New York conducted a

3. Henry a Wise, Seven Decades of the Union.

series of experiments to determine the ability of iron plates to withstand gunfire.⁴ He discovered that when fastened to a firm support a wrought iron plate of one inch thickness could not be penetrated by shells or hollow shot and that plates of six inches could not be breeched by solid shot. These significant experiments aroused much comment across the Atlantic in England and France, the great naval powers, and influenced those governments in carrying out experiments on their own initiative. As a result of these experiments France launched six iron-plated vessels. These vessels, termed batteries, were necessarily crude by modern standards, but they looked formidable in that day. Three of these vessels were given an actual test in the Crimean War and they emerged from the conflict unscathed. We can imagine the excited discussion which followed this test. A crack British wooden fleet had been repulsed by the Russian guns at Fort Constantine. Yet the three iron warships of the French overcame the Russian resistance in a similar engagement at Fort Kinburn in forty minutes and took possession of the fort. What is more it was reported that sixty-three shots had bounced off one of the iron batteries without effecting damage.⁵

4. O. R., Series II, Vol. II, p. 67 (Report of Hon. Stephen R. Mallory, Secretary of the Navy to the Hon. C. M. Conrad, Chairman of Committee on Naval Affairs, Confederate House of Representatives, May 10, 1861). These experiments were the result undoubtedly of efforts to find some way to lessen the terrible destructive effect of the Paixhans shell which had been introduced in 1837.

5. Ibid.

The French and British were not slow in taking this lesson to heart. The French Government in 1857 decided to construct ten great ironclads; the first of these to be completed was the famous "Gloine". The British Admiralty was not far behind and in 1859 began construction of four
6
ironclads.

In this country, however, a different attitude prevailed and apparently the suggestions of Bulloch and Stevens had been completely ignored during the ensuing twenty years. The American Government was busy debating the sectional questions of slavery and states' rights and so turned a deaf ear to the conversation going on across the sea. As a result, when war came the United States Government had a great fleet of wooden ships, but not a single ironclad!

The far-sighted Mallory showed his acute perception of the North's weak position by despatching a naval officer to Europe to see if the Confederacy could obtain ironclads abroad. He had quickly determined what the "Achilles Heel" of the North was. It would, of course, have been preferable to have purchased one or more ironclads outright. This, however, was not possible as the only ironclad war vessels in Europe were government owned. The French and British governments, engaged in a jealous naval rivalry, were not

6. Ibid.

disposed to part with such vital units of their fleets.

The task of having ships constructed abroad, also, was a difficult one, as a belligerent could not have ships of war constructed for its account without the consent of the respective governments.⁷ This could not be readily obtained. It appeared that if the Confederacy were to have ships built abroad at all, it would have to wait.

Delay was a luxury the South could ill afford, so it was thrown back on its own meager resources. The paucity of raw materials and war supplies in the South prohibited the construction of an expensive vessel of the "Glaire" type in the Confederacy. The "Glaire" had cost \$2,000,000.,⁸ which was a tremendous sum in 1861. Yet speed was essential, if the initiative was to be obtained. Consequently, on June 10, 1861 the Secretary called in Lt. Brooke for a consultation on ironclads. As a result of the interview Brooke was asked to design an ironclad and this he immediately proceeded to do.

By securing a small number of ironclad ships Secretary Mallory hoped to destroy the Federal Fleet blockading

7.O. R., Series II, Vol. II, p. 151 (Report of Secretary Mallory to President Davis, February 27, 1862). Later a legal expert in England stated that it would probably be possible to have a Confederate warship built in England, so long as it was not armed in British territorial waters. Strong representations by Charles Francis Adams, United States Minister to London, later caused the British Government to overlook this technicality.

8. The new battleship, "Alabama," which slid down the ways in February of 1942 cost \$80,000,000 !

the Southern ports and once again open up those ports to the trade which was so important to the South. The South was far from self-sufficient and so was quite dependent on its imports if its standard of living was not to be drastically reduced.⁹

Brooke perfected his plan and presented it to Secretary Mallory who adopted it. After some delay, the Secretary, at Brooke's request, sent to Norfolk for Naval Constructor Porter and Chief Engineer Williamson, who were to assist Brooke in making a practical application of the plan. They reported as ordered and the plan was explained to them. The question of a hull, upon which the ironclad superstructure could be erected, then arose and Williamson suggested the U. S. S. "Merrimac" which had recently been raised from the bottom of Gosport Navy Yard at a cost of \$6,000.¹⁰ Porter and Brooke agreed that this hull would serve the purpose for it had been burned only to the water line. To utilize this hull would save both time and money. As Mallory concurred in this opinion work was commenced to apply Brooke's plan¹¹ to the hull.

9. Further, the South wanted to ship the cotton piled on its wharves to England and France as security for purchases. During the first year of the war, the textile mills of England and northern France suffered hardly at all from a shortage of cotton, because the bumper crops of the preceding years had filled their warehouses.

10. Trexler, The Confederate Ironclad, p. 11.

11. Brooke, The "Virginia" or "Merrimac", Her Real Projector, p. 5.

The story of the "Virginia" is an interesting one. It is the tale of how one of the largest and proudest of United States frigates was sunk by the Federal forces evacuating Norfolk, salvaged by enterprising Southern engineers, and then converted into a formidable ironclad which was to strike terror into the heart of official Washington. This ship had been launched at the Boston Navy Yard in 1855 and had cost nearly \$700,000. The ship was 275 feet long and weighed 3200 tons. Her speed was between nine and twelve knots an hour with the aid of auxiliary engines which she had in addition to sails. Her armament consisted of forty smooth-bore guns with bores eight to ten inches in diameter.¹²

After she was commissioned, the "Merrimac" made a cruise to the West Indies and later served for two and one-half years as flagship of the Pacific Squadron. Shortly before the war the ship was sent to the Gosport Navy Yard for repairs; she was still there when Virginia seceded.

Faced with the problem of trying to hold Norfolk Gideon Welles, United States Secretary of the Navy appealed to General Winfield Scott, Commanding General of the Union Army, for aid. However, old "Fuss and Feathers", hard pressed to hold many other vulnerable positions could not give the help requested. In consequence Gideon Welles ordered the Commander at Norfolk to evacuate---destroying stores and ships so they would be of no use to the enemy. He hoped the

"Merrimac" could be taken to Philadelphia before the evacuation,¹³ but this was not to be. The "Merrimac" was burned to her water line and sunk in the Elizabeth River which runs into Chesapeake Bay.

This charred hull was what the ingenious Confederates proposed to convert into an ironclad warship. We have seen that a ship of the "Gloire" type would have cost \$2,000,000., even if the South could have built one. Yet careful estimates showed that it would cost but \$172,523 to transform the hull¹⁴ of the "Merrimac" into an ironclad according to Brooke's plan. Moreover, there would be a great saving in time and it would not require nearly so many men. It was figured that the "Virginia" would take only one-third the time to construct as would a vessel such as the "Gloire". With time so supremely important a factor, this consideration alone dictated that the transformation should be attempted. It took 1500 men nine months to build the Confederate ironclad. With skilled workmen so scarce and iron production so limited, the hard pressed Confederacy had no alternative.¹⁵ Necessity is truly the mother of invention.

Construction of the ironclad commenced forthwith.

13. Ibid., p. 4.

14. O. R., Series II, Vol. II, p. 90 (Estimates of Navy Department).

15. O. R., Series II, Vol. II, p. 151 (Report of Mallory to Davis, February 27, 1862.)

Whereas, Brooke had been assigned the duty of procuring the iron plates and designing and obtaining the guns to be used, Constructor Porter was assigned the duty of actually supervising the construction, according to Brooke's plan, and Engineer Williamson was given the job of repairing the rusty and worn engines so that they would operate. As the ship was to be actually constructed in Norfolk, Porter and Williamson were located there so they could best carry out their tasks. Brooke, however, remained in Richmond so that he could actively supervise the casting of the guns and iron plates at the great Tredegar Works. During this period Brooke was, as we have seen, on the staff of the Naval Ordnance Bureau. He, of course, kept in constant touch with Porter and Williamson and made frequent trips to Norfolk to see that work was progressing satisfactorily. As speed was of the essence Brooke spent most of his time at the Tredegar Works urging that the guns and plates be cast with all speed.

The task raised perplexing problems. In mid-August Brooke noted: "The "Mobile Register" contains information in relation to the "Merrimac" of much value to the enemy. Editors are doing infinite harm in that way. I shall begin to think that even the South cannot tolerate a free press".¹⁶ The effectiveness of Brooke's experiment was

largely dependent on the surprise element, so the chagrin shown in the notation is easily understood. It would appear that in war time some form of press censorship is always essential.

Besides his trips to the Tredegar Works and Norfolk, Brooke went frequently to Jamestown Island where he was conducting a series of experiments to determine how thick the iron plates of the "Merrimac" should be. When the plan of the ironclad was adopted, it was believed that the Confederacy would be unable to produce plates more than one inch thick because of inadequate facilities. Subsequently, it developed that plates two inches in thickness could be obtained, so the original plan was changed to that extent. By the second of November two hundred tons of iron plates had been shipped to Norfolk by railroad and were being fastened to the ship. With the limited means at hand progress was as satisfactory as could be expected.¹⁷

By the time these plates had been sent to Norfolk definite progress had been made in preparing the ship's ordnance. At the order of Secretary Mallory Brooke had designed two seven-inch rifle cannon, to be used on the "Merrimac". He had further invented a 6.4 inch rifle; an order for twelve

17. Ibid.

of these was immediately placed with the Tredegar Works. Aside from the two seven-inch cannon to be used on the iron-clad, it was decided that four more should be cast for use on the Mississippi River boats.

On the sixth of November Brooke made two trips to the Tredegar Works to urge all speed in the production of the iron plates. At that time there was a serious delay in the transportation of the plates to Norfolk. Although both the Danville and Petersburg Railroads were used, the delay occurred. The inadequate supply of rolling stock and the inability to keep its overworked railroads in repair were primary causes of the collapse of the Southern Confederacy. The above is just one example of the deplorable condition which existed.

During November the first seven-inch Brooke Rifle was sent to Norfolk for the "Merrimac". The first 6.4-inch Brooke Rifle was cast by the Tredegar Works that same month. About this time it was suggested that the seven-inch Brooke Rifle be so bored that it would have a bore of eight inches instead. This, of course, would augment the fire power of the piece. It was thought that the greater strain to which the gun would be subjected could be withstood if an extra band were shrunk around the breech of the gun. Brooke decided the idea was not feasible as the strain which the gun would be forced to undergo would be disproportionate to its size.

Lt. Catesby Jones, later to serve as ordnance officer on the "Virginia", conducted experiments with the seven-inch Brooke Rifle and in this way assisted Brooke in preparing the ordnance for the naval ship. In addition to helping with the guns Jones also assisted in testing the iron plates at Jamestown Island. Brooke would have preferred to conduct the tests in Richmond, but there was no suitable place and, furthermore, he was afraid of the publicity the news hungry newspapers might give the experiments. Jamestown Island was quiet and secluded.¹⁸ An interesting commentary on these experiments is made by Admiral Franklin Buchanan, the first commander of the "Virginia", to Catesby Jones: "The experiments made at Jamestown Island by you three gentlemen (Brooke, Jones and R. D. Minor) on targets, early in the late war, to determine the thickness of iron and angle of inclination best suited for the "Virginia" and other iron-clad vessels, were approved and adopted by the government which was complimentary to you all."¹⁹

Finally, after months of assiduous labor, the great ship neared completion. On February 24, 1862 Admiral Buchanan, the ranking officer in the Confederate Navy, was ordered by Secretary Mallory to take charge of the naval defenses of the

18. Brooke to his wife, August 14, 1861.

19. Admiral Franklin Buchanan to Captain Catesby and P.R. Jones, January 16, 1867.

James River. These defenses were vital at this time for General George B. McClellan had reversed the plan of McDowell---to strike at Richmond from the North---and had adopted the stratagem of marching on Richmond from the southeast, up the Peninsula between the York and James Rivers. The deliberate and slow-moving McClellan had been preparing his forces all winter and was at last on the verge of attacking.

Buchanan was an able officer who at sixty-one had spent forty-six years of his life in the navy. This veteran during his colorful career had seen service throughout the world and had been, among other things, the first superintendent at the United States Naval Academy in Annapolis. In his letter to Buchanan, ordering him to take command of the "Virginia", Secretary Mallory wrote: "The 'Virginia' is a novelty in naval construction, is untried, and her powers unknown, and the Department will not give specific orders as to her attack upon the enemy. Her powers as a ram are regarded as very formidable, and it is hoped that you may be able to test them. Like the bayonet charge of infantry, this mode of attack, while the most destructive will commend itself to you in the present scarcity of ammunition. It is one also that may be rendered destructive at night against the enemy at anchor."

" 20

Lt. Jones, whom we have mentioned before, had been designated executive officer. This officer later was to render valuable service by operating the iron foundry at Selma, Alabama, which, next to the Tredegar Works in Richmond, was the largest in the South. There were in all about thirty officers and 320 men aboard the "Virginia" when she steamed forth into Hampton Roads to do battle on March 8, 1862, but Brooke was not among them.

Brooke had hoped all along that he might be given a place on the ship. Having designed it and worked over it for months he had more knowledge of its construction and confidence in its abilities than any other officer. Brooke, too, liked sea duty and was only satisfied while working in the Ordnance Bureau by the thought that he was rendering greater service to the cause in that capacity than he could in any other. Consequently, it was a bitter pill when the Secretary informed him on February 15th, that he could not be spared at that time for service on the "Virginia". In this interview Brooke stated that he would much prefer to go, but if the Secretary thought it best that he should stay in Richmond he would do so. Brooke wrote in his diary the following day: "I regret exceedingly this condition of affairs, but leave it to Providence hoping for the best".²¹ In an earlier interview

21. Brooke's Diary.

Brooke had told the Secretary that he would like to be detailed on the "Virginia", as he realized that it was officers who distinguished themselves in battle who were most frequently promoted.

Commodore Maury was at this time organizing a fleet of gun boats for river defense. He constantly urged Brooke to help him organize the fleet and possibly take command of one division consisting of ten gunboats. When Brooke replied that his duties with the "Virginia" did not allow him the time, Maury stated that Admiral Buchanan had "too many good officers".²³ This is a tribute to the officers of the "Virginia" who were to make her victories possible.

At last the stage was set and as the curtain was drawn the strange looking craft emerged to answer the questions which her construction had raised in a curious and expectant land.

22. Ibid.

23. Ibid.

CHAPTER V.

AN UNGAINLY MONSTER

Buchanan and his subordinates did not take command of a ship completed and ready for action. In fact as the Commander began to organize his staff and crew, the activity aboard the "Virginia" reached a new pitch of intensity. In the closing weeks the feverish activity of the workmen was still further augmented by the fear that they might be too late and all their efforts would be in vain. It was a fearful race against time and the sands were rapidly running out.

In the construction of an experimental ship such as the "Virginia", upon which so many hopes were pinned, secrecy was an element of prime importance. Naturally, if the North became aware of the efforts of the Confederacy to construct an ironclad warship to pierce the blockade, she would retaliate by building ironclads of her own to reinforce it. Should this awful possibility materialize, the ring of wood surrounding the various Southern ports would give way to a much stronger one of iron. Furthermore, the industrial North could construct such ships far faster than the agricultural South. It was a distinct possibility that the North, hearing of the plans for the "Virginia", would commence work and blockade the port of Norfolk with ironclads before the "Virginia" was ready. Such fears haunted Brooke and the other men building the

"Virginia" constantly and spurred them on to more and more haste. It was what we call in modern parlance an "all out" effort.

These fears were not idle fancy for in an earlier chapter I have alluded to the harmful publicity given to the construction of the "Virginia" by the "Mobile Register". On August 11, 1861 this Mobile paper committed the grievous fault of publishing details of construction in its effort to get all the news before the people. When this article came to Brooke's attention he wrote a letter to the editor of the paper condemning the action, but this was never sent, because as the damage had been done already, it would have been a use-¹less gesture.

At all events, whether through foresight or forewarning, Gideon Welles, United States Secretary of the Navy early in the war, contacted John Ericsson,² the Swedish inventor, and entered into a contract with him for the construction of an armored vessel; this was to be the "Monitor". The building of the "Monitor" was pushed forward with all speed in an effort to launch the ship before the "Virginia" was completed.

With such a frenzy of excitement marking the final weeks of preparation, it will not be amiss to note in what

1. Brooke's Diary, August 17, 1861.

2. The same Ericsson who invented the screw propellor.

condition the "Virginia" was, when she went into action, and to record what spirit prevailed among the officers and men aboard. On February 20, 1862, less than two weeks before the first engagement, Catesby Jones, the executive officer, wrote from the "Virginia": "We are living aboard, and are as uncomfortable as possible---there has not been a dry spot aboard of her, leaks everywhere. Mechanics are at work at a thousand things which should have been done months ago."³

He then goes on to say that they are busy coaling, receiving stores, and drilling the men. The fact that the men were doing some drilling together as a unit is especially interesting, as some books state the men had done no drilling together at all before the ship weighed anchor.

Five days later Jones writes again: "The water is now just above the eaves, we have yet to take our powder, and most of the shell, and 150 tons of coal which it is thought will bring us down a foot more. I should feel much better satisfied if the hull had six inches of iron where it now has but one, 'tis our most vulnerable part, and unfortunately for us, where a shell can easily penetrate. From some strange neglect, there is not coal here for us, I never saw anything so mismanaged. Powder is wanting to fill the shell(s), or we might take them aboard. What of the VII

³. Lt. C. ap R. Jones aboard the "Virginia" to Brooke, February 20, 1862. Jones was well qualified to serve as Executive Officer of the "Virginia" because he had served as Ordnance Officer aboard the U. S. Frigate "Merrimack" in 1856. The smooth bore guns aboard the "Virginia" had been under Jones' supervision when she was a wooden vessel.

inch shell? and the IX inch with the X inch core? Do let us have those finished. The ship is filled with mechanics, which prevents us from drilling, and keeps the crew in a disorganized condition. We are fifty short of the complement."⁴

The fact that the hull was so exposed was exceedingly serious. Brooke's plan had called for the eaves of the casemate and the ends of the ship to be submerged two feet.⁵ This was imperative so that a shot fired at the "Virginia" just below the water line would not strike an unprotected hull, nor would such a shot have much chance of piercing the roof, at either end of the hull, where it projected beyond the casemate. The two feet of water would so reduce the velocity of a shot, aimed at the vital zone, that its penetrating power would be greatly diminished by the time it reached the hull.

We get our first inkling that Porter, the constructor, might have made a mistake by this entry in Brooke's Diary on November 30, 1861: "I must write to Mr. Porter for the calculated position of the Merrimac's center of gravity, which I fear Mr. Porter has placed too high in the construction of the ship. He has always told me she would easily carry the shield."⁶ However, as a precaution to protect the ship in the

4. Jones to Brooke, February 25, 1862.

5. O. R., II, II, 175 (Report of Mallory to Bocoek).

6. Brooke's Diary, November 30, 1861. The shield refers to the armor plates which protected the superstructure.

event the hull should be too near the surface of the water, Brooke had suggested to Porter that the iron plating at the ends of the hull should be made six inches thick rather than just one. This was not done as Porter maintained the ship could not carry the additional load.⁷ Apparently Porter was in error, for when the ship was floated in dock, it was found she drew less water than had been anticipated. Consequently, to submerge the ship further and afford greater protection, additional plating was applied on the submerged deck---forward and aft.⁸ If Brooke's suggestion had been followed the plating could have been completed earlier. Four days later Jones wrote: "The ship went out of dock yesterday, and took on board six broadside guns---she has most of her anthracite coal aboard and about 100 tons of bituminous, and will take 250 tons more, all the stores and some of the shell---and she floats about a foot below the eaves of the roof---there will be trouble to bring her down."⁹

It was a difficult situation which could not be remedied, for if the ship were weighed down with ballast sufficient to bring the eaves two feet below the water, then

7. The "Virginia", Her Real Projector, Page 15.

8. Brooke's Diary, February 13, 1862.

9. Jones to Brooke, February 17, 1862.

the draft would be increased by the same amount; this could not be done as the draft was already several feet more than was desirable and a still further increase would have magnified the danger of grounding and further restricted the area in which the ship could operate. Three days before the vessel went into action Jones wrote: "The ship will be too light or I should say she is not sufficiently protected below the water. Our draft will be a foot less than was first intended, yet this morning I was ordered not to put any more ballast in, fear of the bottom. The eaves of the roof will not be more than six inches immersed, which in smooth water would not be enough---a slight ripple would leave it bare except the one inch iron that extends some feet below. We are least protected where we most need it, and may receive a shot that would sink us, a 32 pounder would do it. The constructor should have put on six inches where we now have one. We have taken on board a large quantity of ballast. The ship has been in possession of the mechanics; they are still at work.----- The crew and officers are nearly all sick with colds. Our reliance is upon the intelligence of the officers, as the crew are very green; we will have a lieutenant or midshipman at each gun. Buchanan hoisted his flad yesterday. I think he

10. The flag which designated the "Virginia" as flagship of the James River naval forces.

prefers close quarters and has faith in the ram. It is unfortunate that so much is expected from the ship---as we know that she may fail completely, either from receiving a shot between wind and water, or from grounding---to speak nothing¹¹ of the devices rumor says they have in store for us."

This letter indicates clearly the uneasiness caused by the fact that the eaves were not submerged enough. This must be attributed to Porter's mistake in computing the center of gravity of the ship. Brooke's plan called for eaves and ends to be submerged two feet, but they were through error submerged six inches.

Jones's letters have given us a fairly comprehensive description of the novel ship and her crew on the eve of battle. We may complete the description by quoting from a letter of R. D. Minor, another lieutenant aboard the ship: "The edges of our plates are only five inches below the water. The ship is exceedingly formidable and I believe she will be a success on which you may be most heartily congratulated."¹²

Buchanan, with his green crew, new type guns, and made over engines, realized the tremendous importance of time and, therefore, rather than experiment further with the guns or give the crew more time to drill, he resolved to set

11. Jones to Brooke, March 5, 1862.

12. R. D. Minor to Brooke, March 7, 1862.

out at the earliest practicable moment. Mechanics worked up until the last minute and, as soon as they had completed the most necessary work, Buchanan ventured into Hampton Roads. He did not even wait to get all the shutters to protect the portholes, nor take the time to go on a trial trip to test the ship and crew.¹³ It was truly a remarkable feat to take such a revolutionary type of ship from the dock straight to the battle area. Subsequent events prove the correctness of his action, for delay would have been fatal. As it was, the "Monitor" was there to oppose him just nine hours later! It had been a close race. The initial voyage of the "Virginia" is a tribute to the valor of the officers and men and to the faith they had in their ship. The glorious victory of the first day of battle was a just reward.

Before describing the Battle of Hampton Roads and its significance in naval history we would do well to try to visualize the "Virginia". What kind of ship was this upon which the Confederacy gambled so much? The hull of the "Merrimac" had been cut down to the old berth-deck and upon this as a foundation an iron superstructure was built. One of the best descriptions of the vessel, as completed, is given by one of the gallant officers who served aboard her:¹⁴ "Both ends

13. Brooke's Diary, March 6, 1862.

14. John Taylor Wood, Lt. C. S. N., was an ordnance officer on board the "Virginia", in charge of a pivot gun.

for seventy feet were covered over, and when the ship was in fighting trim were just awash. On the midship section, 170 feet in length, was built at an angle of 45^o a roof of pitch pine and oak 24 inches thick, extending from the water line to a height over the gun deck of seven feet. Both ends of the shield were rounded so that the pivot guns could be used as bow and stern chases or quartering. Over the gun deck was a high grating, making a promenade about twenty feet wide. The wood backing was covered with iron plates, rolled at the Tredegar Works, two inches thick and eight wide. The first tier was put on horizontally, the second up and down---in all to a thickness of four inches, bolted through the iron work and clinched. The prow was of cast iron projecting four feet and badly secured, as events proved. The rudder and propellor were entirely unprotected. The pilot-house was forward of the smoke stack, and covered with the same thickness of iron as the sides. The motive power was the same that had always been in the ship. Both the engines and boilers had been condemned on her return from her last cruise. Of course the fire and sinking had not improved them. We could not depend upon them for six hours at a time. A more ill-contrived or unreliable pair of engines could only be found in some of the vessels of the United States Navy."¹⁵

15. Trexler, The Confederate Ironclad "Virginia", p. 13.

The armor was pierced so as to provide openings for the guns: one bow, one stern, and four each on the port and starboard sides. The armament of the "Virginia" consisted of two seven-inch Brooke Rifles, two 6.4 inch Brooke Rifles, and six nine inch Dahlgren smoothbores. The two seven-inch guns were placed in the bow and stern, as pivot guns, where they could be used most effectively---the others, broadside.¹⁶ The Brooke Guns were all reinforced by iron bands. In having six smoothbores placed on the ship, we see that Brooke is fully aware of the peculiar attributes of that type of gun. With a lower muzzle velocity a smoothbore lends itself better to the fire of grape and canister.¹⁷ In a slow traveling shell there will be a greater dispersion when the shell bursts, and, consequently, the radius of destruction will be increased. For this reason Brooke thought the army should retain a large number of smoothbores, so that the cannoneers could defend themselves against direct attack.¹⁸ The same principle applies at sea, where there is a possibility of the ships engaging in

16. Charles Lee Lewis, Admiral Franklin Buchanan, (Norman Remington Company, Baltimore, 1929), p. 177.

17. This is explained by the fact that elongated projectiles cannot be used accurately in smoothbores, whereas they can in rifled cannon. Consequently, the caliber of the guns being equal, a heavier charge is used in the rifled gun than in the smoothbore to give sufficient impetus to the heavier projectile. As a result a higher velocity is obtained. The additional strain is taken care of by banding.

18. Brooke's Diary.

19
close action. Against another ironclad the greater penetrating power of the rifled gun would make it far superior to the smoothbore.

On the "Virginia" Brooke's solid shot and shell were used, as well as the red hot or incendiary shot which he had developed. It was the latter which made it possible for the guns of the ironclad to set the U. S. S. "Congress" aflame.

The draft of the "Virginia" was over twenty-two feet. It was much regretted that it was so great, but as that had been the draft of the old "Merrimac" there was little that could be done about it. This excessive draft led eventually to the scuttling of the "Virginia" by its crew when the Confederates evacuated Norfolk, so the vessel would not fall into the hands of the advancing Federals.²⁰

Earlier, reference was made to the sad condition of the "Virginia's" engines. Bad as they were the South had to put her faith in them as she had neither the time or immediate facilities to design and build new ones. Time waits on no man. Commander Tatnall, who commanded the vessel after the battles of the first two days has something significant to say

19. In Civil War days this was a distinct possibility. However, with the tremendous developments in range since that day this is now only a theoretical possibility.

20. Trexler, The Confederate Ironclad, "Virginia", p. 67.

on the deplorable condition of the engines: "Moreover, it is in evidence that on the five trips made from Norfolk to Hampton, a distance of but ten miles, the engines failed twice obligating me on one occasion to return to Norfolk to repair them, and on another making it necessary to work one of her engines at high pressure."²¹ With her great draft and faulty engines it is no wonder that the ship could make but six knots²² an hour.

The unwieldy craft took thirty or forty minutes to turn around.²³ Such a ship would naturally have very definite limitations. A small foe could easily outmaneuver her, especially where there was danger of the "Virginia" running aground. Yet, the design of the "Virginia" precluded voyages in the open sea. If she had ventured out of harbors or inland waters, she would have capsized quickly when exposed to the waves of a heavy sea. This explains why the ship did not run the blockade and storm the Northern ports.

Allusion was made to the vessel's ram in the preceding chapter. The idea of using a ram was not original as rams had been used for centuries; this weapon had been used on ancient galleys. However, the use of a ram on the "Virginia"

21. Ibid---p. 65.

22. Lewis, Admiral Franklin Buchanan, p. 177. Contrast this with our fleet destroyers of today which make thirty-five knots an hour!

23. Ibid.

was in the nature of a restoration of an outmoded weapon; steam had again returned it to favor. However, events proved its successful operation was conditioned upon several factors,²⁴ consequently, after a time, it became obsolete again.

There was one feature of the "Virginia" which distinguished her from all previous ironclads; it was that part of Brooke's design which was entirely original. "The novel plan of submerging the ends of the ship and the eaves of the casemate,-----, is the peculiar and distinctive feature of the "Virginia". It was never before adopted"²⁵. Brooke had not evolved this idea in its entirety at the very beginning. He had first thought of building his iron shield over a hull of equal length and submerging the shield all around to protect the hull. However, reflection showed him that such a vessel would be very slow and would offer a great deal of resistance to the water, and furthermore, the spray and waves would interfere with the operation of the bow gun. To overcome these obstacles, in his design, Brooke provided for a hull of much greater length than the shield, such hull to be covered with iron and submerged. Thus fineness of line, bouyancy, and protection of hull could all be obtained simultaneously.

24. In the first place it was extremely difficult to get in the proper place to ram a vessel unless it were at anchor. Secondly, the ship with the ram often suffered severe damage from the force of the impact. Nevertheless, it was not until the turn of the century that some master minds were willing to concede that its use was no longer feasible.

25. O. R., II, II, 175. (Report of Secretary Mallory to the Honorable Thomas Bocoock, Speaker of the House of Representatives, on March 29, 1862.)

Brooke applied to the Confederate Patent Office for a patent on the principle of the submerged ends and the patent rights were obtained on July 29, 1862 by virtue of patent number one hundred.

I should like to proceed at this point to the battles in Hampton Roads, but an ugly controversy concerning the design of the "Virginia" must first be disposed of. After the "Virginia" had by her feats received acclaim around the world Constructor Porter and his friends advanced the idea that Porter had designed the "Virginia". This dispute raged for many years between Porter and his cohorts and the supporters of Brooke in many leading newspapers of the South. Brooke, himself, held aloof from the dispute until 1891 when he was forced to declare his position because of some erroneous statements made by Thomas Scharf in his book, The Confederate States Navy which had just recently been published. In 1891 Brooke wrote an article for the Southern Historical Society entitled, "The "Virginia" or "Merrimac" Her Real Projector". This logical account refutes effectively, to my way of thinking, all the claims which had been set forth by Porter's adherents in the three decades since 1862.

Porter based his claim on the fact that he had brought with him from Norfolk when summoned to Richmond by Secretary Mallory a model, which he states he used in constructing the "Virginia". This model was similar to Brooke's plan except

that it did not have submerged ends. Therefore, as Porter's model did not have submerged ends the constructor has no claim to originality as that was, as we have seen, the only original feature of Brooke's plan. To further refute Porter's claim to the design we have but to remember that the "Virginia", when completed, did have submerged ends.

I have stated frequently that Brooke's plan was adopted by Mallory. Let us go to the record to prove it beyond all doubt. I quote from the report of the Honorable Stephen R. Mallory to the Honorable Thomas S. Bocoock, Speaker of the House of Representatives on March 29, 1862: "Lt. John M. Brooke, C. S. N., was directed to aid the department in designing an ironclad war vessel, and framing the necessary specifications, he entered upon this duty at once, and a few days thereafter submitted to the Department, as the result of his investigations, rough drawings of a casemated vessel, with submerged ends and inclined ironplated sides. The ends of the vessel, and the eaves of the casemate, according to his plan, were to be submerged two feet; and a light bulwark, or false bow was designed to divide the water and prevent it from banking up on the forward part of the shield with the vessel in motion, and also to serve as a tank to regulate the ship's draft. His design was approved by the Department, and a practical mechanic was brought from Norfolk to aid in preparing the drawings and specifications."²⁶

26. Ibid.

Concerning Porter's model Secretary Mallory made the following statement: "Constructor brought and submitted (to the Navy Department) the model of a flat-bottomed, light-draft, propeller casemated battery, with widened iron-covered sides and ends, which is deposited in the Department."²⁷ Mallory further states that Engineer Williamson and Constructor Porter consulted with Brooke and concluded that the submerged ends should be adopted.²⁸

Jefferson Davis in his Rise and Fall of the Confederate Government, gives the credit of the "Virginia's" design to Brooke, as do Lts. Catesby ap R. Jones and R. D. Minor, officers of the ship. All in all history seems to have set aside the claim of Porter and fully substantiated that of Brooke.

27. Ibid.

28. Ibid.

CHAPTER VI.

THE BATTLES OF HAMPTON ROADS

To properly evaluate the place of the "Virginia" in naval history some description of her famous engagements must be given. Lacking this, any claims made in this paper might seem without adequate foundation.

The famous engagement between the "Virginia" and the "Monitor" has gone down in history as the battle which revolutionized naval warfare. The fight of the preceding day in which the "Virginia" destroyed the proud wooden ships, "Cumberland" and "Congress", enjoys almost equal fame. It is not my purpose to paint in lurid colors a picture of these battles and deal with all the fine points incidental thereto. My objective in this paper is to tell of John M. Brooke and his contributions to the Confederate Navy. The battles will be dealt with, briefly, because, as Brooke was the inventor of the "Virginia", a large part of the ship's success or failure must be attributed to him. By a description of the battles we may learn just how successful the "Virginia" was, as a unit of war, and what her limitations were.

When the intrepid Buchanan weighed anchor on March 8, 1862 he had under his command, in addition to the "Virginia", six ships. Three of these were little gunboats, the "Teaser",

"Beaufort", and "Raleigh", with one gun each, so they must be virtually discounted as supporting units. The other vessels were the steamer "Patrick Henry", which had twelve guns, the "Yorktown" with two thirty-two pounder rifled guns, three eight inch and one ten inch smooth bore, and finally the "Jamestown", which was merely a steamer armed with two guns. In all, Buchanan had at his disposal twenty-seven guns. The "Patrick Henry", the strongest ship next to the "Virginia", was a sidewheel steamer which made her far more open to attack than a screw propellor steamer would have been. Such was Captain Buchanan's fleet.

The blockading force of the Federals was far stronger and was reinforced by land batteries at Newport News, Fortress Monroe, and the Rip Raps. The first two stood like grim watchdogs holding open the James and York Rivers and assuring a bridgehead on the Peninsula to McClellan's expected army. The Federal fleet was composed of eleven ships armed with two hundred and twenty guns---more than eight times as many as Buchanan had! Just across Hampton Roads from the Gosport Navy Yard the "Cumberland" and "Congress" rested at anchor in front of Newport News. The "Cumberland" had twenty-four guns (almost as many as the whole Confederate force) and the "Congress" fifty. A little further from Gosport, in front of Fortress Monroe on the York River side of the Peninsula, were the "Minnesota" and "Roanoke". The first of these

had forty-seven guns and the second forty-six. These two ships were screw frigates and regarded as among the most formidable in the Federal Navy, whereas the "Cumberland" and "Congress" were sailing vessels. There were in addition to these four the sailing vessel, "Lt. Lawrence" with fifty-two guns, and six gunboats.

This then was the line-up when Buchanan cast off and with the gunboats "Raleigh" and Beaufort", as escorts steamed down the Elizabeth River to Sewell's Point where a Confederate Battery was located. This point was directly across Hampton Roads from the Peninsula and about equidistant from Fortress Monroe and Newport News. From Sewell's Point the "Virginia" veered to the left and went straight for the "Cumberland" and "Congress". Buchanan's plans soon became obvious---he was going to ram the "Cumberland", just as Jones had predicted, before she could get up sail and escape. After an exchange of fire between the vessels the "Virginia" made straight for the starboard side of the "Cumberland" and rammed her solidly amidships. A tremendous hole was torn in the victim's side and the ship sank rapidly with many hands still on board.

In the meantime the other Confederate ships, joining the "Virginia", as she carried the fight to the enemy, were under the intensive fire of the Union shore batteries. It took about thirty minutes to turn the "Virginia" around so

she could attack the "Congress". That ship, meanwhile, had gone inshore where she could not be rammed. It so happened that this was an unnecessary precaution as the ram of the "Virginia" had been broken off in the engagement with the "Cumberland. The "Minnesota", "Roanoke", and "St. Lawrence" hurried over to assist the imperiled "Congress". The former, however, in her haste, ran aground and the other two after being fired upon retreated to Fortress Monroe.

After a courageous stand against the withering fire of her opponents the "Congress" hoisted the white flag. Two Confederate gunboats were ordered by Buchanan to pull alongside the "Congress" to accept the surrender of that ship. This they proceeded to do. However, while they were transferring wounded Federal sailors from the "Congress", troops of the United States forces onshore opened fire upon them. This fire made a withdrawal of the Confederate gunboats imperative. Lt. R. D. Minor then volunteered to go in a small boat from the "Virginia" to the "Congress" and set fire to the latter so she could not be further utilized by the Federals. When fifty yards away, the guns of the "Congress" in violation of the surrender agreement, opened fire upon him. He was wounded and Captain Buchanan signaled him to return to the "Virginia". This breach of faith so enraged the Confederate commander that he ordered the gunners of the "Virginia" to fire upon the "Congress" with incendiary shell

and destroy her. Thus by her treacherous act the Federal ship was subjected to a holocaust of fire. During the firing on the "Congress" the indomitable Buchanan, affectionately called "Old Buck" by his junior officers, was wounded by a mini ball. He was taken below and the command devolved upon Lt. Catesby ap R. Jones.

Under Jones, after the "Congress" was set aflame, the "Virginia" and the other Confederate ships concentrated their fire upon the mighty steam frigate, "Minnesota". As she was well inshore the "Virginia" could not approach near her, but had to rely upon long range fire. As the tide was fast ebbing and daylight was turning to dusk, Jones resolved to cease firing before he grounded and return to Sewell's Point. Arrived at that point Buchanan and Minor (who had been wounded, too) were sent ashore, while the "Virginia" rested for a resumption of her fight with the "Minnesota" on the morrow.

Brooke was taking a nap on the afternoon of the battle and was awakened by a cousin who told him the "Cumberland" had been sunk and the "Congress" was ashore. He immediately went in search of the Secretary to get the latest news and when he found him was given all the details of the latest telegram from Norfolk which described the momentous events of the day. Brooke exultantly recorded his feelings in his diary: "That is glorious news. All honor to the

brave and skillful officers and men who achieved the victory." ¹

It had been a splendid day in Dixie and was just the stimulus needed to fill the discouraged people with new hope after the loss of Forts Henry and Donelson in the West. Momentarily it seemed that the projected invasion of McClellan could be prevented and that the "Virginia", singlehanded, could storm the Northern ports. In the engagement the Federals had lost two ships and 299 men, whereas the Confederates had lost not more than sixty men killed and wounded---a ratio of five to one. Aboard the ironclad only two had been killed and nineteen wounded. The "Virginia" had been damaged in the fray, though not severely: "No serious damages to the hull of the ironclad had been received; but the prow was somewhat twisted when the ram was broken off in the "Cumberland", and the anchors and flag-staffs were shot away, the smokestack and steam pipe were riddled, and the juzzles of two of the guns were broken off as port covers had not been provided for all the guns. Practically all inuuries and most of the casualties had been received from the "Cumberland". ² Lt.

R. D. Minor wrote to Brooke from the Naval Hospital in Norfolk on the 11th describing the battle and he mentions in the letter that "the shot fell like hail stones on our roof" ³

1. Brooke's Diary, March 8, 1862.

2. Lewis, Admiral Franklin Buchanan, p. 192.

3. R. D. Minor to Brooke, March 11, 1862.

guard by the "Minnesota" was the long awaited "Monitor". This much heralded iron ship had made a mad dash from New York and had arrived at Hampton Roads the night before. It was only half as long as the "Virginia" and in appearance resembled a "cheesebox on a raft". Her draft was less than twelve feet so she could maneuver in much shallower water than her adversary. The ship itself protruded two feet above the water and except for the turret and pilot house was perfectly smooth. Her engines were new and much more powerful than those of the "Virginia". The turret, in the center of the ship, was cylindrical in form and made of iron eight inches thick. The ship's only two guns projected from this turret. These eleven inch Dahlgrens lay side by side and were as powerful as any guns in the navy. One thing that made the turret particularly effective was that it could be revolved. Thus the guns could be aimed at its antagonist and as soon as they had been discharged the turret would revolve away from the enemy to protect the guns until they were ready to be fired again. This principle of the revolving turret is still used in our modern battleships. The pilot house was a small house in the forward part of the ship. It was sheeted with iron and contained an aperture so that the captain could observe his foe. This then was the "Monitor" which had just finished a hurried trip from New York and had never before engaged in naval combat.

In the ensuing engagement the "Virginia" was forced

If joy reigned supreme in Dixie, just as surely did the deepest gloom pervade the North. Of all Northern statesmen Secretary of War Stanton seems to have been the most affected. In an emergency cabinet meeting called by President Lincoln the War Secretary is said to have been extremely nervous and pessimistic and to have gloomily forecast that the "Virginia" would destroy all the Northern ports! He regarded an attack on Washington by the vessel as imminent and went to the window constantly to see if the iron monster was not already approaching the capitol.

In England and on the Continent the encounter was discussed with avid interest. The significance of the battle was clear to all: "The success of the 'Virginia' has caused great excitement here. The admiralty have taken the subject in hand and are determined to have an ironclad Navy as soon as possible. Many, many questions are asked about the 'Virginia'".⁵ So wrote the Confederate naval agent in London. The wooden ship and the sailing vessel were doomed.

Let us return to the fray. As Buchanan had been wounded Lt. Jones was in command of the "Virginia" when she sallied forth the next day in quest of new laurels. However, as she approached the "Minnesota" she saw that, overnight, the situation had been altered radically. There standing

5. O. R., II, II, p. 181. James H. North in London to Mallory, April 6, 1862.

The "Virginia" had taken the heaviest blows the great wooden ships and strong shore batteries of the Federals could deal without serious damage. Her armor plating was intact. It was obvious, then, to the thousands of spectators lining the shore and to people and governments everywhere that in America the day of the wooden ship was over. It was the beginning of a new era. The foresight of Stephen Mallory was bearing fruit already, for a little less than ten months earlier he had said: "If to cope with them (the North) upon the sea we follow their example and build wooden ships, we shall have to construct several at one time; for one or two ships would fall an easy prey to her comparatively numerous steam frigates. But inequality of numbers may be compensated by invulnerability; and thus not only economy but naval success dictate the wisdom and expediency of fighting with iron against wood, without regard to first cost.

"Naval engagements between wooden frigates, as they are now built and armed, will prove to be the forlorn hopes of the sea, simply contests in which the question, not of victory, but who shall go to the bottom first, is to be solved.

"Should the committee deem it expedient to begin at once the construction of such a ship, not a moment should be lost."⁴ The prediction had proved remarkably accurate.

4. O. R., II, II, p. 69.---Mallory to the Honorable C. M. Conrad, Chairman of the Committee on Naval Affairs, Confederate Congress, May 10, 1861.

to fight without the benefit of the two guns it had lost the day before and with its ram sadly broken from the concussion with the "Cumberland".

The "Monitor" advanced at the approach of the "Virginia" to protect the "Minnesota". The two ships drew near one another like two ancient knights in armor, each the champion of his side. To the thousands lining the shore to witness the crucial battle and straining every eye so as not to miss a move, it must have seemed that time stood still. The very fate of the war seemed to hang in the balance. It was a battle of titans which might change the course of history. The wary antagonists fired again and again without apparent effect. The iron proved impregnable to the most powerful guns of that day. Truly, the defense outweighed the offense. In order to avert a stalemate the "Virginia" rammed ineffectively the "Monitor" with her twisted prow.

For four hours the battle raged and finally a shell exploded near the aperture of the "Monitor's" pilot house. Captain Worden was standing nearby and was dazed temporarily by the impact. The top of the pilot house had been blown off and in his dazed condition Worden thought his ship had been dangerously hit so he gave the command: "Sheer off". By the time the second officer had taken command the ship was in shallow water. The "Virginia" in the meantime misconstrued the motive of the "Monitor" and thought she had gone into

shallow water, where the "Virginia" could not follow, in order to avoid fighting any longer. Therefore, Jones ordered his pilot to put back to Gosport for repairs. Thus each captain misunderstood the action of the other and each thought he had won. The "Virginia" had hit the "Monitor" twenty-three times and had been hit in return twenty times. It was proved on this day that the present guns could not penetrate thick armor plate just as conclusively as the battle the day before had shown the impotence of wooden ships to stand against iron. However, it is pertinent to observe here that Brooke frequently remarked in later years that if the "Virginia" had had the wrought iron solid shot he was then perfecting, her rifled guns could have pierced the turret of the "Monitor".⁶

The battle with the "Monitor" was the "Virginia's" last. When the "Virginia" had returned to Gosport Navy Yard for repairs and improvements the Confederate authorities were confronted with the problem of deciding what to do with her. Fond hopes, they had earlier cherished, of having her tun the blockade and lay waste to Washington, New York and Boston were short lived. On March 14th, five days after the battle with the "Monitor", Secretary Mallory requested Brooke, Porter, and Williamson to report on the feasibility of sending the

6. These remarks were made to his son, Col. George M. Brooke.

"Virginia" to New York. They stated that she could not be made seaworthy without entailing such sacrifices as would make her unfit as a unit of war.⁷ This decision explains why the ironclad never left Hampton Roads. With a theater of operations so limited the question then arose as to what disposition should be made of her. It was finally decided that she should be utilized to protect Norfolk against attack. In the meantime Brooke was occupied with securing his new wrought iron solid shot for his seven inch and 6.4 inch rifles at the Tredegar Works.

The Federals in the interim slowly strengthened their naval forces in Hampton Roads and played the waiting game of the Confederates. They kept the "Monitor" well protected, not caring to risk a battle with the "Virginia" until they had an overpowering force. In this way Fortress Monroe and Newport News were safeguarded for the North and during April General McClellan was able to land his large army on the Peninsula. He began to advance up it in a northwesterly direction and finally met General Magruder in front of Yorktown.

When the "Virginia" returned to Gosport Navy Yard Captain Josiah Tatnall superseded the able Lt. Jones and became the Commander of the ship until she was abandoned. Tatnall was one of the most experienced officers who had come over from the "Old Navy". Tatnall on a few occasions ventured

7. Brooke's Diary, March 14, 1862.

out from the dock and once steamed all the way to Hampton Roads, but the cautious Federals avoided his challenge. This attempt to engage the enemy was made on April 11, 1862.⁸

Finally, as McClellan began to press relentlessly on Richmond, the Confederates were compelled to mass all possible troops before their capital. This required the withdrawal of the Confederate forces protecting Norfolk. Without land forces the protection of that city became hopeless with the arrival of General Wool's Federal Army early in May. This evacuation of Norfolk and the loss of the South's greatest navy yard made a profound impression on Lt. Brooke in Richmond. On May 4th he wrote: "Today I heard with astonishment that orders had been issued to evacuate Norfolk without the slightest effort to save ordnance or indispensable tools. The loss of Norfolk is bad enough but worse is the management. I suppose that our leaders are trying to bring on the condition which it is said must eventually occur---concentration of troops in the interior, the whole coast being in the hands of the enemy. Without ordnance I don't clearly see how we can defend Richmond."⁹

With Norfolk unprotected the question arose as to what Tatnall should do with the "Virginia". His first instructions had been to ascend immediately the James and take

8. Trexler, The Confederate Ironclad, "Virginia", p. 61.

9. Brooke's Diary, May 4, 1862.

up a defensive position as far up that river as possible. However, before he had departed for James River, General Huger explained that if the "Virginia" left Hampton Roads, the Confederate batteries at Croney Island and Sewell's Point would be without protection and the Confederate ordnance and supplies there would have to be given up. Consequently, Tatnall's instructions were modified and he was ordered to protect both Norfolk and the James. The "Virginia" took up a position off Sewell's Point.

However, with the fall of Norfolk Tatnall's position became untenable and he resolved to ascend the James. His pilots had informed him that if the ship were so lightened that her draft amounted to only eighteen feet, the vessel could go to within forty miles of Richmond. To put the ship in this condition would render her defenseless, nevertheless Tatnall determined to do it. After the ship had been lightened according to his instructions, he was informed by his pilots that the vessel could not go as far up the James as originally anticipated. The pilots defended their questionable action by averring that a change in the wind's direction made the ascent impossible. The pilots said the ship could ascend no further than Jamestown Flats---and the Federals already controlled the river on both sides beyond that point.

The captain, without alternative, was forced to issue a tragic order. The ship was now defenseless and the enemy was closing in, so to save his crew and prevent the ship from falling into the hands of the enemy Tatnall ordered the ship scuttled. This was done on May 11, 1862, hardly more than two months after the epic struggle in Hampton Roads. The "Virginia's" crew was ordered to Drewry's Bluff and there under the indefatigable Catesby Jones they served nobly in the defense of Richmond.

The fate reserved for the "Monitor" was hardly better than that of her foe. She went down some months later in a heavy sea off the coast of North Carolina.

Buchanan's gallant conduct in the battle against the "Cumberland" and "Congress" resulted in his promotion to the rank of admiral. As he was the only officer in the Confederate Navy holding that rank, he became automatically the South's top ranking sailor.

This ends the story of the South's famous ironclad, but only begins that of the remarkable developments in naval construction and warfare which her exploits had set in motion.

After the duel with the "Monitor" the Confederate agent in Liverpool wrote: "The engagement between the "Virginia" and the "Monitor" has changed the entire plan of iron ship building in the British Navy."¹¹

¹¹ Il. O. R., II, II, p. 184---James D. Bulloch, Liverpool, to Mallory, April 21, 1862.

In 1870 the United States Navy sent Constructor L. D. Wilson to England to see what advances had been made in the construction of armored ships. In a conversation with Sir Edward Reed, Chief Constructor of the British Navy, that officer remarked to Wilson that: "Your war showed us how weak we were for offensive and defensive warfare. The fight between the "Monitor" and the "Merrimac" had, in fact shown all the nations of the earth, how utterly weak they were in naval force. From that instant our aim was to get rid of the wooden vessel and the only question was how heavy we could build our iron armored ships. We have gladly followed in your foot-¹²steps."

Of course, the South and the North hastened to build as many ironclads as they could. New developments were produced, but the plans of Brooke and Ericsson were closely adhered to in many instances by their respective governments. The British used Brooke's plan in several of their great vessels: the "Inflexible" (1874), the "Ajax" (1876), and the "Agamemnon" (1879). From March 8, 1862 armored vessels were regarded as a necessity rather than a novelty.

It was not long before ironclads were being used to attack land fortifications. The attack of the Federal iron-clad fleet on Fort Sumter, April 7, 1863 elicited this comment:

12. "New York Herald", October 17, 1886.

"In the conclusion I am impressed with the opinion that iron-clads are most formidable vessels if used as means of defense for harbors, etc., but do not think they will answer for offensive operations against forts. The deepest penetration of the fifteen inch shot or shell in Fort Sumter was thirty-two inches except when it struck the face of the embrasure, where its crushing effect was great." ¹³ By the very nature of things it would still be deemed practically impossible for warships to take a strongly fortified land position, alone. For one thing a ship is on a rolling sea which greatly increases the difficulty of accurate aiming. The advent of the airplane has helped even the scales since then, but the balance still weighs in favor of the land fortification. There is another explanation for the failure of the Federal attack: The Federals employed nine ironclads manned with thirty guns. They were opposed by seventy-six Confederate guns firing from five different forts. These shore batteries fired the most improved Brooke Guns with his latest bolts and also huge eleven inch guns firing solid shot, and English guns which had been brought in through the blockade. "The attack was repulsed. It was a fair fight and proved no ironclad could be made impregnable-----." ¹⁴ Some of the ironclads sank." In the course

¹³. Report of Col. Joseph A. Yates from Georgetown, S. C., to Brooke, April 21, 1863.

¹⁴. "The Times-Democrat", November 5, 1882.

of a single year the odds had once again shifted in favor of the offense, because of the tremendous developments in ordnance.

England was not long in determining the relative merits of armor and heavy ordnance. Even before the attack on Fort Sumter in 1863 Lt. Hamilton wrote from London that the British already held the view that wrought iron could not be carried in sufficient thickness to keep out the new steel shot and shell. They predicted it would take steel plates to¹⁵ make armored ships impregnable.

From the Battle of Hampton Roads there was a constant competition between ordnance and armor. As the armor plates were made thicker and thicker the guns were built larger and larger. Finally, when the iron was so thick that the ships became extremely cumbersome, steel was developed for armor plates. The guns were improved by lengthening their barrels, perfecting their projectiles, and improving their accuracy.

In the year 1882 a milestone was reached, for in that year steel and compound armor were developed. It had taken twenty years to fulfill the British prophecy. The development of steel reshaped the whole policy of naval ordnance and made the production of even larger guns essential.

15. Lt. J. R. Hamilton, Liverpool, to Brooke, January 22, 1863.

It was deemed expedient that, henceforth, guns should be designed so that they could throw a projectile large enough to crush a ship's side from the force of impact, for moderate size guns could no longer expect to pierce armored ships.

The race between the offense and defense still rages. Truly, the inventions of Brooke and Ericsson changed the whole course of naval history and the effects of their work reached far beyond the fratricidal strife then in progress.

CHAPTER VII.

BROOKE AS CHIEF OF ORDNANCE

In the months following the Battle of Hampton Roads, Brooke was kept busy in the Bureau of Ordnance and also serving as a member of various boards to handle special problems. Thus, on May 23, 1862 he was appointed by Secretary Mallory as a member of the board "to test and report upon the condition, and assess the value of Mr. Charles E. Stuart's¹ instrument for adjusting cannon sights." This was a joint army and navy board which shows the cooperation between the two branches of the service in ordnance design. This is just one of several examples of collaboration; others will be explained later.

On September 17, 1862 Secretary Mallory wrote to Brooke stating: "You are hereby informed that the President has by and with the consent of the Senate, appointed you a Commander for the War, in the Navy of the Confederate States, to rank as such from the 13th instant."² This was not a "jump promotion" as the Confederate States Navy did not have the rank of lieutenant-commander. Commander for the War was the next rank above first lieutenant, but below that of

1. Mallory to Brooke, May 23, 1862.

2. Mallory to Brooke, September 17, 1862.

permanent commander; nevertheless the promotion raised a furore. Brooke and R. B. Pegram had been singled out and raised over their seniors which ran counter to the old rule of seniority. In this war of 1942 seniority has again given way to ability, as the latter quality becomes the only criterion for promotion. There was another reason why Brooke's promotion was resented: he had not won renown as a famous leader in battle---his achievements had been in the more prosaic field of ordnance improvement. It is quite evident that bitter jealousy and rivalry were not unknown traits among the South's naval leaders. The following quotation from Brooke to Catesby Jones throws light on the attitude of some: "Today I met _____ who declined shaking hands with me. On asking an explanation he at length informed me to my great surprise it was in consequence of my having accepted promotion over my seniors, he could not consider me as a friend, etc. I regretted the difference in views and although at first disposed to be angry told him that I should not permit his refusal to alter my feelings towards him as I know he felt what he said. We had some conversation in which he spoke very candidly of the little worth of my services and abilities.

"I suppose you know that Pegram and myself were promoted on the 13th instant. Neither of us knew of the nominations until they had been made, I supposed there were many and was surprised to learn subsequently that only the two had

been sent in."³

Lt. J. N. Moffit seems to have been a little more reasonable, when he wrote: "On my advent in Mobile---I found officers much concerned by recent promotions---bitter feeling and inevitable resentment annoyed me sadly,----- the Secretary made a serious mistake when he failed, to first consider the claims of those, who had won their spurs in battle-----and made you as it were an isolated promotion. You have earned the consideration of the gov't and could have received it without exciting antagonistic sentiment, if Mr. M(allory) had not neglected to nominate officers who had exhibited marked gallantry in battles with the enemy."⁴

Whether or not the Navy Department acted wisely in singling out but two men for promotion does not concern us here; it does seem manifest, however, that Brooke's promotion was well deserved.

In March of 1863 Brooke was ordered to "report to Commander R. B. Pegram for duty, in preparing a code of signals for the Navy."⁵ This code was prepared at Drewry's Bluff.

Since the summer of 1861 Brooke had been serving in the Bureau of Ordnance. Finally on March 30, 1863 Brooke was ordered to report to Commander George Minor and relieve him as

3. Brooke to Catesby ap R. Jones, September 21, 1862.

4. J. N. Moffit, aboard the "Florida" to Brooke, October 24, 1862.

5. Mallory to Brooke, March 16, 1863.

6

Chief of the Bureau of Ordnance and Hydrography. As ordered Brooke reported and on the 31st took over full charge of the bureau. As head of the Bureau of Ordnance Brooke was given the ultimate responsibility for the success or failure of ordnance developments in the Confederate Navy. However, the new title did not confer as much new responsibility as one might infer, for since the first winter of the war Brooke had held authority to consider and pass on all improvements and inventions adopted by the Navy. He had long held the power; he was now given the title that goes with it.

We might well ask at this point what the responsibilities and duties of a naval artillerist are, and even more so the duties of the department which determines the ordnance policy. Eminent authority states: " A knowledge of the principles of gunnery is more essential to a naval artillerist than to an officer in any other branch of the service;----to him it may indeed be said to be absolutely necessary----and it cannot be doubted that he ought to avail himself of every opportunity in his power to study theory which should form the ground of his practice. It is true that the construction of a gun and the regulation of its equipment depend not always on an individual officer, but are determined by the authorities in the proper department; it is also true that tables of the ranges of shot, with different charges of powder and different elevations of the 'arm' have been formed from experiments, and

published by authority, for the guidance of the artillerist in like circumstances; but these tables, are, even now, not sufficiently extensive to meet the vast variety of cases in which, afloat or on shore, the officers of our navy may be called upon to act; and the charge, the elevation and even the windages remaining the same, the ranges continually differ in consequence of variations in the quality of powder, the state of the atmosphere, the figure of the shot, and many other circumstances."⁷ So wrote the seer of gunnery experts of Great Britain, which country had the greatest navy afloat. To understand how these same problems affected a new country, born in war and without the advantages of previous experimentation with the weapons it was to develop, we would have to multiply the above cited complexities many times.

A study of Brooke's diary discloses that he kept in constant touch with Confederate naval agents in Europe, notably Lt. John R. Hamilton and Commander Matthew Fontaine Maury in Liverpool and London, respectively. These officers tried to post their government on all the latest improvements by sending long letters and newspaper clippings. Through them Brooke corresponded with Armstrong, Blakeley, Whitworth, and other leading armament makers in Great Britain. When possible guns

7. Sir Howard Douglas, A Treatise on Naval Gunnery, (Fifth Edition, Revised, John Murray, London, England, 1860), p. 28. Douglas was the great expert on naval ordnance for the Royal Navy for the first half of the 19th Century.

were shipped to the Confederacy by its agents, but the number of these guns was not large, because of the growing effectiveness of the Federal blockade. These letters deal with the utility of the air-space in cannon, the resistance of armor plate, the causes of bursting in gun barrels, and related subjects. Although Brooke and his associates kept up with the latest developments as much as possible, they were in large measure thrown back on their own ingenuity and the natural materials the South offered.

The South could not accept without investigation the doctrines dogmatically laid down by foreign naval authorities. For there was not a unanimity of opinion on many important subjects. The South would have to weigh the various doctrines and adopt those which augured best for Southern success. This was the responsibility of the Bureau of Ordnance. These diverse beliefs and prejudices determined the respective building programs of the great naval powers. We find, for example, that the British had placed such confidence in shells as contrasted with solid shot, that the heaviest solid shot guns they had were thirty-two pounders.⁸ These guns have a bore of little over six inches and are far smaller than some of those the Confederates used. Events proved the Confederacy was farsighted not to adopt this British policy. On the "Virginia" smooth-

8. Douglas, A Treatise on Naval Gunnery, p. 269.

bores of much greater size than that were used.

The Russians did not use percussion or contact fuses at all; ⁹ they believed time fuses superior. The Confederacy, however, experimented with and used both. History has sustained the Southern position as both types are used in modern projectiles.

Before 1860 the United States Navy had frequently been shortsighted in policy. It was cautious in the adoption of shells, but once it had determined they were superior in all around utility to solid shot, it complacently adopted the attitude of the ostrich and relied on shell projectiles exclusively. The bigwigs in Washington were blind to the importance of ironclads and consequently did not foresee the value of solid shot for penetrating armor plate. From the first, however, the Confederate Ordnance Bureau adopted a progressive attitude on this subject and produced as much solid shot as its resources would permit.

In addition to what she could obtain from abroad, the South had to rely even more on what she could construct at home. The principal guns used by the Confederate Navy were Brooke Guns which John M. Brooke designed. These included: the 6.40 inch Rifle, 7 inch Rifle, 8 inch Rifle, 10 inch smooth-bore, and 11 inch smooth-bore. Shot and shell

9. Ibid., p. 276.

10

patterns to suit each of these guns were developed also. Guns of all these types were made at the Tredegar Works in Richmond and later when Lt. Catesby Jones took over the iron works in Selma, Alabama, for the navy, most of these guns were made there, too. Some of the Brooke Guns had a single jacket covering the breech, while others were made double and treble banded. The increase in the number of bands or jackets permitted the use of a greater charge of powder.

During the war, the Tredegar Works cast the following number of Brooke Guns between May 25, 1862 and February 20, 1865: ¹¹ ten 32 pounders, thirteen 6.4 inch Rifles, thirty-nine 7 inch Rifles, one 8 inch Rifle, two 11 inch Smooth-bores. Five of the 7 inch Rifles were double-banded and three of the ¹² 10 inch Smooth-bores were.

10. Edward Archer, Engineer to Gen. J. R. Anderson, President of the Tredegar Works in Richmond, to Brooke, May 2, 1867.

11. Guns were sometimes named according to the weight of the projectile fired and sometimes by the calibre, or diameter of the bore, of the gun. This is confusing to the layman. When a gun is designated by the weight of the shot, such as a 32 pounder, it means the gun fired solid shot weighing that much. If the calibre designation is employed, we denote that the bore is that many inches in diameter. Some guns were so designed that they could fire either solid shot or shell. However, as a solid shot is heavier than a shell of the same size it takes a greater powder charge to obtain the same range. With the heavier shot greater penetrating power is achieved. The use of a heavier charge increases the strain on the gun and led to the banding of some guns which were intended to be used with solid shot.

12. Archer to Brooke, October 29, 1887.

The various types of Brooke Gun were not strikingly different from other guns of the day. They did not embody any radical departures from the established principles of gun making. The Ordnance Bureau, however, studied all the latest developments assiduously and sought to combine them in the most effective way possible. Consequently the Brooke Gun was as formidable a cannon as any of that day.

"The invention of guns may be said to date from the first quarter of the 14th Century."¹³ The development of gunpowder, as a propellant, at this time, gave the necessary incentive.¹⁴ Guns were used aboard English warships in the Battle of Sluys in 1340. For five hundred years the evolution was gradual and not many improvements were adopted, although extensive experiments were sporadically carried out. This has been called the "Smooth-bore Era."

A new era commenced about 1845 in which vast improvements were made. Experiments were conducted in a number of countries and the tempo of progress was accelerated by the Crimean War. In the 'fifties two powerful guns were developed in Great Britain: the Armstrong Gun and the Whitworth Gun. They embodied all the latest improvements of ordnance. They

13. Encyclopedia of Britannica under "Ordnance".

14. Ibid.

were both rifled,¹⁵ built-up,¹⁶ breech-loading,¹⁷ cannon
made of wrought iron.¹⁸ The Armstrong Gun could fire either
solid shot or shell. It could be fired two times every min-
ute and had a range of five and one quarter miles. The Whit-
worth Gun had a small bore and forced a long bolt at enormous
velocity which gave it unusual penetrating power. However,
the shape of the bolt precluded the use of shell projectiles
and limited the missions which the Whitworth Gun could accom-
plish.

The Brooke Guns made use of the various improvements. Some were rifled and some were not; some were banded and others were not; however, all of them apparently were breech-loaders and were made of wrought iron. Solid shot, shell, and

15. Rifling, or the impressing of spiral grooves in the bore of the gun to impart spin to the projectile, was not new. It had long been used in small arms, but the difficulty of loading a heavy elongated shot into the muzzle of a cannon long retarded the adaptation of the principle to cannon. This prevented the adoption of rifling in cannon for one hundred years--- until 1846 when a Sardinian, Major Cavalli, and a Swede, Baron Wahrendorff, independently of one another, solved the problem and introduced breech-loading, rifled cannon.

16. Built-up guns had developed because of the limitations of cast-iron. Cast-iron has no elasticity and consequently it was found necessary to use metal bands around the breech to reinforce it. Credit for this invention is given to Sir William Congreve.

17. Breech-loading was not an innovation of either Cavalli or Wahrendorff. However, the principle had long before their time fallen into disuse. The most ancient example of breech-loading extant is found in the gun recovered from the wreck of the "Mary Rose", sunk at Spithead in an action with the French in 1545.

18. Cast-iron was decidedly inferior to wrought iron for gun construction and by 1861 had been almost completely superseded.

incendiary shell were all successfully used. Many letters written by Confederate Naval officers attest to the accuracy, power, and general effectiveness of the Brooke Gun. A few examples prove this point. "The extraordinary effects of the "Virginia's" (Merrimac's) battery, in her combat in Hampton Roads, were, in a great measure, due to the 'Brooke Gun' of your own design."¹⁹ The following is a quotation from Major Francis Smith describing the effectiveness of a double banded seven inch Brooke Rifle: "On the 22nd June this battery engaged the enemy's fleet of four ironclad monitors. A very high wind prevailed, the vessels lying about 2400yds. from the battery. We commenced with cast iron bolts, and when we had attained the range, made use of the wrought iron projectile. The accuracy of the gun with this latter bolt was remarked by all, and deserters report that one of the turrets was struck, an indentation several inches deep was made and the turret was cracked some three feet above and below the indentation. They add that a board of survey condemned the vessel and that she was ordered to the Gosport Navy Yd. for repairs.-----

"In conclusion I would remark that the gun is the best heavy piece of ordnance that I have ever seen used. It is worked more rapidly than a ten inch Columbiad."²⁰ Lt. Col.

19. Open letter from Stephen R. Mallory, Pensacola, Florida to Brooke, January 20, 1867.

20. Maj. Francis W. Smith, Battery Dantzler to Brooke, September 11, 1864.

Joseph A. Yates of the Confederate Artillery wrote: "I consider the Brooke Gun decidedly the most efficient gun in use for operating against ironclad vessels, owing principally to the fact, that its great strength admits of much heavier charges, and projectiles than ordinary guns of the same calibre, also to the fact²¹ that the projectile is of wrought iron." The following gives information concerning the range of the seven inch Brooke Rifle: "The treble banded Brooke on Sullivan's Island has become a great pet with the troops on that island. They say they 'can hit a barrel at the distance of a mile every pop'.-----I am satisfied that your Rifles, VII Inch, if fired at 35% elevation will give a range of 4 $\frac{1}{2}$ miles with 12²² lbs. or 14 lbs. of powder."

The examples cited above could be multiplied many times, but it would be fatuous to do so. The main point is that the Brooke Gun was used widely by the Confederate land and naval forces and compared most favorably with Armstrons, Whitworths, and Blakeleys run in through the blockade and with Dahlgrens and Parrotts captured from the enemy. These Brooke Guns were used on ships and as harbor defense batteries throughout the South. To make sure that the cannon were fired in the most effective manner, Brooke made up a chart or table giving the weights of shot and shell of all types to be used with the

21. Lt. Col. Joseph A. Yates, Hdqts. of the 4th Military District, Georgetown, To Brooke April 21, 1863.

22. Lt. H. H. Vanzandt, Charleston, S. C. to Brooke, January 28, 1864.

different Brooke Guns. This table was distributed among the officers of the navy and was the result of experiments carried on by the Bureau of Ordnance in Richmond and among the troops in the field. Whenever a gun burst an investigation was ordered to determine the cause. Very few Brooke Guns burst and almost without exception it was proved that where a Brooke Gun had burst it was the result of improper loading.

The Brooke Gun could stand a charge which was double the usual charge without apparent injury. This is as much as the celebrated Armstrong Gun could stand. When a board of officers was appointed to decide why a gun had burst, many facts had to be correlated by the members. While he was head of the Ordnance Bureau, Brooke gave to such boards an outline of procedure. This comprehensive analysis included many factors: the number of times the gun had been fired; the charges of powder and kind of projectile used; the degree of elevation; the windage of cartridge allowed; whether or not the cartridge was rammed home; whether the projectile was lubricated; whether the gun was heated by rapid firing; whether it was definitely determined the gun was not cracked before firing; what range was obtained; whether the gun was worked under careful supervision; and others of a more technical nature. ²³ From this mass of data it could generally be determined where the fault lay. If it appeared to demonstrate some weakness

23. Various instructions sent out by Brooke to investigating boards.

inherent in the gun's design, immediate steps would be taken to rectify the mistake.

When the Brooke Gun was used by the army its operation was not altogether the same. Consequently, Brooke wrote to General Beauregard that: "As the Navy Rifles are being used by the Army to some extent, I desire to call your attention to several points, which have an important bearing upon the character of the results to be obtained.

"The treble banded and other heavy Naval Rifles were designed to be used against ironclads at effective ranges which are obtained at lower elevations than the ports alluded to in your telegram admit of. The long range of the rifle is inseparable from the power of penetration, but the results of distant firing are generally so meagre, that this feature was considered valuable only as enabling the artillerist to throw an occasional shell at some distant object, perhaps a wooden vessel. The contest between ships are generally decided by few shots. It is not possible with the materials at our disposal to make rifles capable of enduring many rounds with such charges as are required to penetrate armor. For this reason it is anticipated that the higher charges will only be employed when the prospect of hitting is good and the effect would be decisive. The superior power of penetration which is given by high charges compares more favorably with that of inferior charges as the distance of the object decreases. If then these

guns are to be used for siege purposes or continued firing at long ranges, it will not be expedient to use such charges as are employed on board ship, as was the case with a 6.4 inch Rifle, which burst recently in a land battery at Charleston." ²⁴

Brooke did make one important contribution to the principles of gunnery, when he definitely established the utility of the air space. In doing this he disproved a principle which had long been accepted among ordnance experts as a basic law. Late in 1863 the Confederate Army managed to bring in through the blockade two powerful Blakeley Rifles with a diameter of about thirteen inches. General Gorgas, head of the Army Ordnance Department, decided to allot these guns to General Beauregard in Charleston. The guns were designed to withstand a charge of fifty pounds when firing a solid rifle shot of 450 pounds. However, during a trial firing, one of the great guns cracked----and that with a weak charge which was far less than fifty pounds. The army authorities were thrown into a quandary. "The guns were built up of a wrought iron cylinder, closed at the breech with a brass screw plug, some thirty inches long and chambered to seven inches." ²⁵ In loading the gun the army artillerists had cut down the cartridge bag so that it would conform to this chamber and had rammed the powder into it.

24. Brooke to General Gustave L. Beauregard, Commanding at Charleston, S. S., August 3, 1863.

25. General Gorgas, "Confederate Ordnance Department", (Southern Historical Society Papers), January-February 1884), p. 94.

The bursting was reported by the army authorities in Charleston to Captain Blakeley in England. Supposedly all the circumstances were set forth, although that cannot be proved. Blakeley attributed the cracking to the high elevation used in the trial firing. As the greatest elevation was only about 15⁰ General Gorgas thought Blakeley's conclusion²⁶ impotent.

The drawings of the gun were forwarded to General Gorgas, and he and Brooke studied them. From the drawings²⁷ Brooke evolved the idea of the air chamber. Brooke's theory was that the seven inch chamber in the brass plug had been designed as an air chamber. This ran directly counter to the accepted principle that any air space in the powder chamber was extremely harmful and would cause the gun to burst. However, Brooke's recommendations were followed and the remaining gun was fired rather effectively using the chamber as an air chamber. The cracked gun was repaired and also was operated later.

The army was a bit downcast as a result of having to rely on the navy to solve its ordnance problems. Lt. Vanzandt of the navy wrote from Charleston on the subject: "Your suggestion or opinion, with regard to the gas chamber has quite upset all their (army's) preconceived notions and I must confess that I made the most of it for the navy."²⁸ The Confederate agent in Liverpool, I. R. Hamilton, wrote to Brooke, that he

26. Ibid.

27. Ibid.

28. Lt. Vanzandt to Brooke, September 18, 1863.

believed the idea of the "utility of the air space" was original with him. Hamilton had seen the two Blakeley Rifles before they were shipped to America and had talked with Blakeley on numerous occasions. At no time did Blakeley ever state that he had left an air chamber in the guns to be sent to the Confederacy. If he had intended that this chamber be used to afford an air-space it seems strange that he never mentioned the fact to the Confederate representative. Hamilton concluded that Blakeley had intended to fill the entire space with powder, and had miscalculated the resistance of the breech to such a large charge. Later, when the "utility of the air space" became an accepted principle, Blakeley claimed to have been the first to appreciate it. However, all the evidence points to Brooke. Why should Blakeley have kept it such a secret?

In the late seventies the famous Thunderer Gun explosion occurred aboard an English warship. Exhaustive tests were conducted and it was definitely proved that the presence of an air space could not possibly have caused the explosion. Even at this late date there had been some British artillerists who clung to the outworn principle. Brooke, then a professor at V. M. I., wrote an article at that time stating that the presence of an air space could not have caused the gun to burst. His position was sustained.

There is one other service which Brooke rendered the Confederacy which was quite different from any before alluded

to. Brooke drew up the plan for the cruise of the public cruiser, "Shenandoah", which proved so successful. This famous ship circumnavigated the globe and its flag waved in every ocean but the Antarctic. No other Southern ship enjoyed such a distinction. The ship roamed the seas for a year and seventeen days and during her historic voyage captured thirty-eight vessels. The "Alabama" was the only ship which captured more ships for the Confederacy. The most amazing fact concerned with the entire voyage of 60,000 miles was that the ship did not learn of the surrender at Appomattox until three months after it had occurred. Even then it only chanced to learn the information from an English bark met in mid-passage. Advised that Federal ships were looking for it, the ship decided to put in at a neutral port.

Brooke had conceived of this voyage in anticipation of later making it. However, the duties in the Bureau of Ordnance precluded such an undertaking, so the plan was sent by the Secretary of the Navy to Captain Bulloch. The significance of the voyage lies in the fact that it called for a raid on the great United States whaling fleet which, heretofore, had been ignored by Confederate cruisers. The plan was the direct result of Brooke's experience in the "Vincennes" in 1855. According to Brooke: "The plan of the Shenandoah's cruise was based on the knowledge that in winter a portion of the Pacific whaling fleet cruised in the vicinity of the Caroline Islands for

sperm whales, that in spring they went north passing the Bonins and up along the coast of Japan to Kamchatka for night whiles and thence on to Bering Straits and the Arctic. After which they refreshed at the Sandwich Isles until October and November. The plan was, therefore, to leave the Cape of Good Hope about the first of January for Australia arriving about the middle of February. There after a short stay through the Carolines, visiting Ascension-----²⁹."

This voyage which began in October, 1864 and ended with the hauling down of the "Stars and Bars" in Liverpool on November 6, 1865 seems to consummate the other achievements of Brooke and give to those other less dramatic but more important accomplishments a more colorful touch.

The Civil War ended Brooke's days in the service. After receiving a pardon from President Johnson he spent the remainder of his years in Lexington, Virginia where he taught at the Virginia Military Institute.

29. Brooke to J. Russell Soley, February 14, 1883.

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