

DR. JOSEPHUS REQUA CIVIL WAR DENTIST and The Billinghurst-Requa Volley Gun

by John M. Hyson, Jr., D.D.S., M.S.
& Margaret Requa DeFrancisco, B.S., M.S.



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MUSEUM RESTORATION SERVICE
Alexandria Bay, N.Y. Bloomfield, Ont.

Cover Illustrations: "Section of Requa Battery Commanded by Lieutenants Wheeler and Kingsbury, Thirty-Ninth Illinois, Morris Island, S.C. 1863" from *The History of the Thirty-Ninth Regiment Illinois Volunteer Veteran Infantry (Yates Phalanx) in the War of the Rebellion 1861-1865* by Charles M. Clark, 1889, and the distinctive Requa cartridge.

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P.O. Box 390
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Canada, K0K 1G0

Phone: (613) 393-2980 Fax: (613) 393-3378

THE REQUA BATTERY GUN

INTRODUCTION

Although the concept of a rapid-firing, multi-barrel gun dates back to the 15th century *orgue des bombardes*, or so called organ gun, it was not until the American Civil War that ordnance technology had developed to the point that workable machine guns would serve in any quantity on the battlefield. Various inventors such as Wilson Ager, Ezra Ripley, Richard Jordan Gatling, and Josephus Requa, a Rochester dentist and former apprentice of William Billinghamurst, a Rochester gunsmith, all offered their weapons to President Lincoln. Although the Gatling gun (patented 4 November 1862) proved to be the superior weapon, the Billinghamurst-Requa battery (patented 16 September 1862) predates the Gatling and for this reason has been referred to as the first "practical" machine gun to be used during the war.¹

Dr. Josephus Requa – The Rochester Dentist

Dr. Josephus Requa (1833-1910) was born in Ulster County, New York, on 7 January 1833. In 1847, he moved to Rochester and from 1849 to 1853 was apprenticed to William Billinghamurst (1807-80), a very skilled gunmaker whose shop was located in the Curtis Block. With this mechanical background, in 1853, he began a dental preceptorship with the Drs. T.A. Proctor and Newell Allen and in 1855 he started practicing dentistry in Springwater,

Livingston County. He returned to Rochester in 1858 where he practiced for the next fifty years.²

Rather than dentistry, Dr. Requa is best known as the inventor of the "first practical rapid-fire" gun to be used during the Civil War. Hutchison (1938) called it the "First Rapid-fire Gun." Simons (1934) referred to it as the first machine gun "with metallic cartridges used in actual combat." Although the latter is correct, the former was not aware of the Chambers Gun used during the War of 1812 which fired 150 shots from seven barrels in less than two minutes. This .52 caliber gun, known as the "Requa battery," was designed by Dr. Requa and built by the William Billinghamurst Company in Rochester late in 1861. In the hope of attracting private investors for an army contract, it was demonstrated in front of the New York City Stock Exchange Building. President Lincoln reportedly was enthusiastic about its potential and recommended that it be adopted by the army. Governor Edwin D. Morgan of New York endorsed the rifle battery as "an efficient weapon of great power," and recommended to Secretary of War Stanton that it be "purchased without delay." Colonel Richard Delafield, Corps of Engineers, U.S. Army, the former West Point Superintendent (1856-61), examined the rifle battery and viewed it as "a substitute for a six-pounder field gun, whenever grape and canister" was needed. He felt that its mobility gave it



Fig. 1. Dr. Josephus Requa
from the Requa family album

an advantage over the field gun for infantry support and recommended that the gun be given a field trial as soon as possible.³

A Mitrailleuse —The “Requa Battery”

The “Requa rifle battery” was a type of mitrailleuse or volley gun consisting of twenty-five .52 caliber rifled barrels, each 24 inches long. They were mounted horizontally, side-by-side, on a wrought iron frame attached to a light two-wheeled field carriage. In the rear of the barrels’ breech was fitted a breech mechanism consisting of a sliding bar operated by two levers (one at each side).

Contemporary reports described the original cartridges as made of copper but all of those known to arms historians have cases of brass. They are $2\frac{2}{8}$ inches overall with a .582 inch diameter case, two inches in length and a conical lead bullet. There is a thin rim with an oval, flanged-base which had a hole in the center for ignition. The Volley Gun purchased by the State of Kentucky was supplied with 5,000 seamless skin cartridges for reloading.

The cartridges were placed in a special quick-loading, twenty-five round, hinged, steel clip, $3\frac{7}{8}$ inches in length with 25 holes so spaced that they lined up with the open breech of the barrels. When the breech was closed, the cartridges (held in the 25-round, hinged clip) were forced forward into the the chambers, each cartridge lining up with its opening aligned to a longitudinal channel in the breech-bar. A single nipple and percussion cap ignited a powder train which passed the hole in each cartridge, and fired all twenty-five barrels more or less simultaneously. The firing mechanism was a single hammer, manually cocked and released by a lanyard, which struck a single percussion cap.

A lever under the frame allowed the barrels to be elevated or depressed or diverged laterally and fan-shaped (3.30 inches at the muzzle), in order to spread the bullets over a 120 yard field at a distance of 1,000 yards. The front sight was fixed to the middle gun barrel and the rear sight consisted of a “graduated cylinder” which moved “vertically to the plane formed by the axes of the muskets.” A gunner’s quadrant could be applied to the cylindrical portion of the barrels to get the elevation.

The “battery” weighed 1,382 pounds and required a two-horse team. The cartridges were preloaded in 25-round clips and stored in the caisson for rapid firing. The ball weighed 414.2 grains and used 64.5 grains of loose powder. The case weighed 296.4 grains, making each loaded cartridge weigh 775.1 grains. If the patented skin powder cartridges were used, each cartridge weighed 864 grains. The caisson held 96 clips (2,400 cartridges).⁴

Two men were required for efficient firing of the weapon. When served by three men, it could fire off seven volleys, or 175 shots per minute at an effective range of 1,300 yards.

During the Civil War, the “Requa battery,” also became known as the “Mosquito Battery” or “covered bridge gun.” As practically all important stream crossings had the long and narrow wooden covered

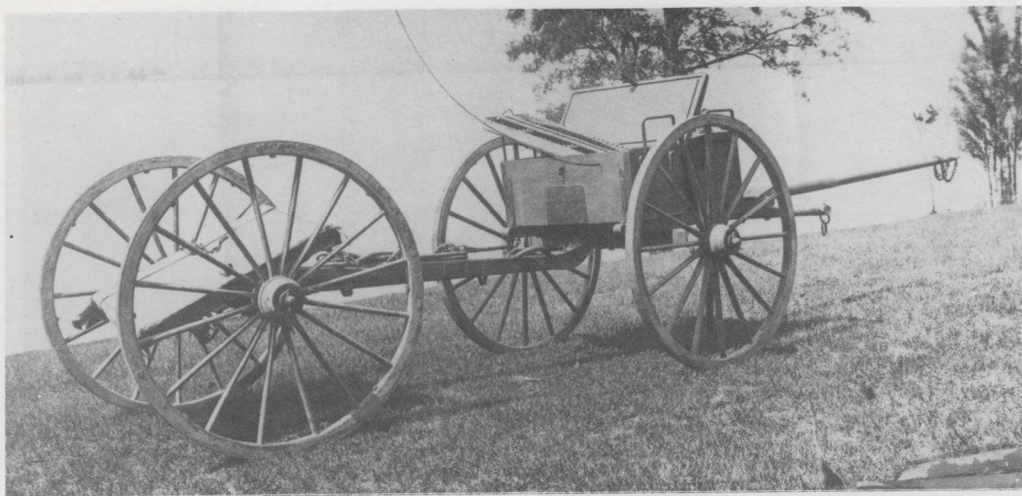


Fig. 2. The .52 caliber Requa Battery Gun and Limber. This photo was probably taken in 1862 at the Army trials at Fort DeKalb, Virginia. *National Archives.*

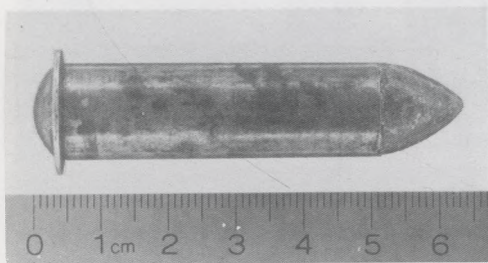


Fig. 3. The Billingham-Requa cartridge had an overall length of $2\frac{5}{8}$ inches and a case diameter of .582 inch. The fired cases could be reloaded with either loose powder or "the patent skin cartridge."

bridges, a Requa gun strategically placed at one end could easily break up a charge by foot troops or cavalry. With an effective range of 1,300 yards and the twenty-five barrels adjusted to the proper height and spread, a crew of three could produce a withering fire.⁵

Origin of the Design – 1861: A "Battery of Terrible Power"

On 29 June 1861, the *Rochester Daily Union & Advertiser* reported:

There is now at the office of Dr. Requa, in the Masonic Hall Block, a model of a newly invented rifle battery ... It was planned by Mr. [Albert G.] Mack, an ingenious citizen, ... and

has been brought to its present state of perfection by the assistance of Dr. Requa, who has a mechanical turn of mind.⁶

At the beginning of the Civil War, Mack was working at the Monroe County Penitentiary in charge of some of the mechanical work. After his rejection by the military for physical reasons, Mack supposedly came upon the idea of a rapid-firing gun. However, according to the *Rochester Herald* version, Mack met Dr. Requa on the street and the following conversation ensued:

"You are somewhat of a mechanic, I understand."

"I was a gun maker in my earlier days," replied the doctor.

"Then why don't you make a gun that can be fired faster than anything now used in the armies of the North?"

"I'll think it over," said Dr. Requa and walked away, an idea already taking shape in his mind.⁷

Despite his busy dental practice, Dr. Requa devoted what spare time he had to thoughts of a completely new weapon, a multi-barreled gun. First, he took twenty-five wooden sticks and made them into the shape of gun barrels. He then mounted them together on a base and worked out the details for a breech mechanism. At this point, he consulted with his old gunsmith mentor,

W. Billinghamurst & J. Requa
Machine Gun.

No 36448.

Patented Sept 16, 1862

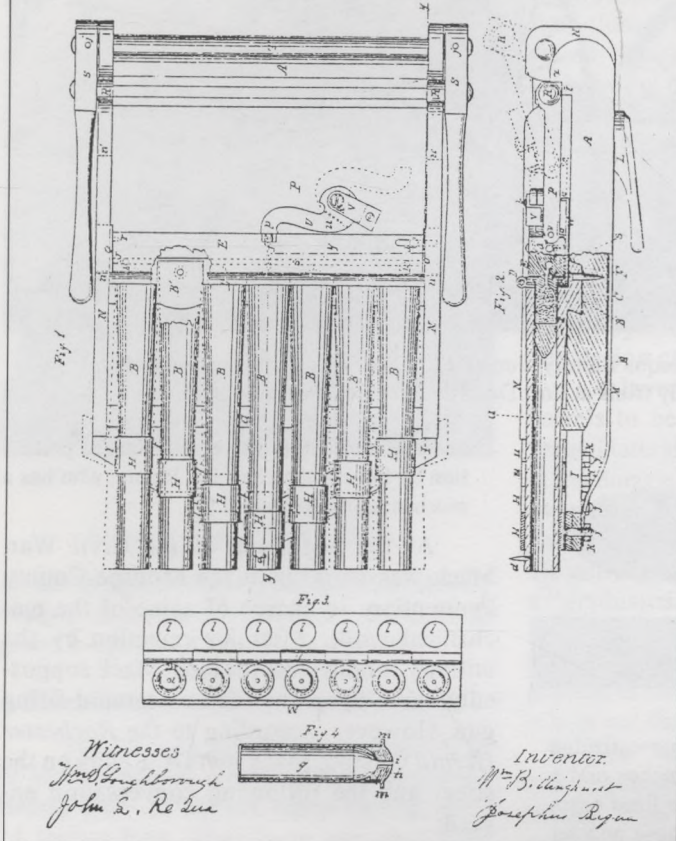


Fig. 4. The Billinghamurst and Requa patent, No. 36,448 dated 16 September, 1862, was described as an "Improvement in Platoon-Batteries."

William Billinghamurst, whose factory was then located at Main Street East, at the corner of North Water Street. Billinghamurst liked the idea, suggested some modifications, and offered to help Requa make a small working model. By 11 July 1861, Requa had completed a scale model of the rifle battery. That evening a dozen or more Rochester citizens, including military, technical, and political personages, inspected the prototype at his dental office. All were impressed at the weapon's potential as a "deadly instrument of warfare." It was estimated that the gun would fire from "two hundred to three hundred balls per minute" with three or four men operating

it. It would cost about \$500 to construct and weigh six or eight hundred pounds. An iron-plate shield could be made to protect its crew. Unanimously, all agreed that a full-size battery should be constructed. The *Union & Advertiser* referred to the new weapon as a "complete battery of terrible power."⁸

The prototype of the Billinghamurst & Requa battery was a miniature-size, working model made of iron and steel with a wooden carriage with twelve inch wheels on a ten inch wheel base. The gun itself, without its carriage, was twelve inches long and seven inches wide, with five octagonal pistol barrels, each six and three-

Witnesses
Herb S. Loughborough
John E. Requa

Inventor
W. Billinghamurst
Josephus Requa

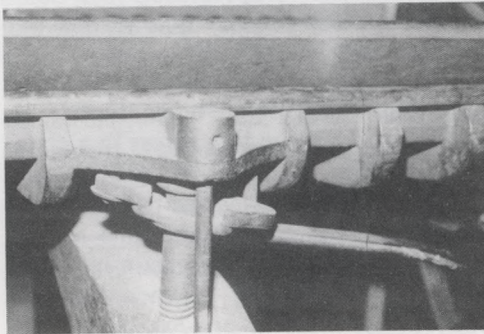
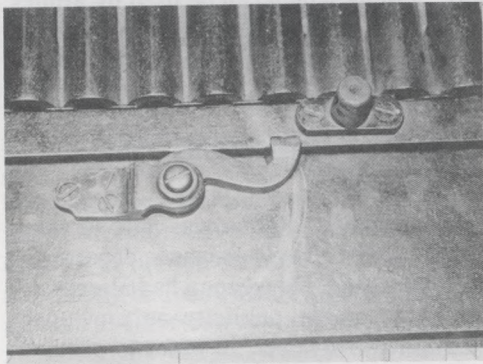
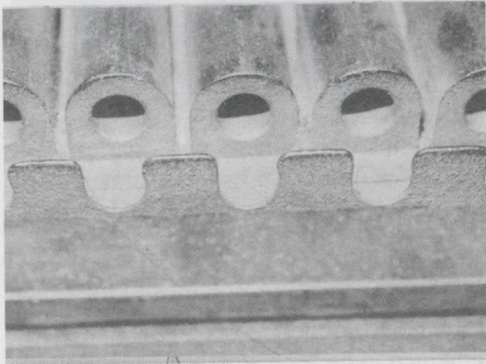
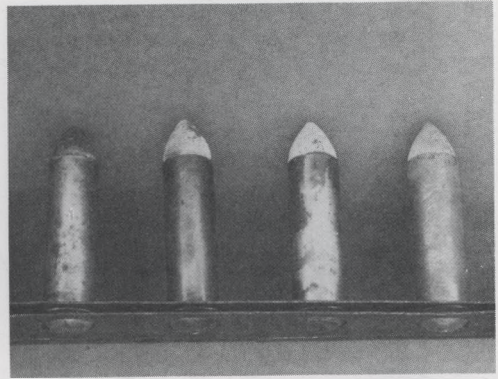
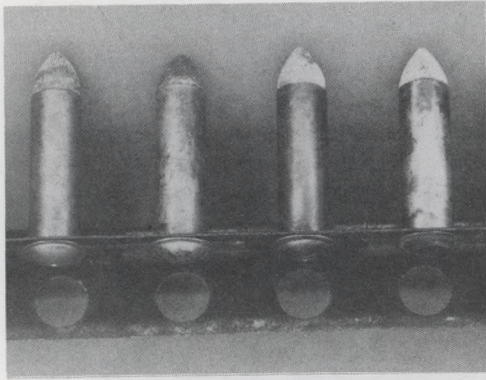


Fig. 5-10. *Top:* The "cartridge holder," open and closed, with cartridges in place. *Left:* The "scalloped rest" to guide the cartridges "into its respective chamber or barrel" and which "also serves to withdraw the empty cases." *Center & Right:* The hammer, "operated by a lanyard in the usual way." *Bottom:* The upper section of the elevating screw which penetrates the trail just under the area behind the hammer. Turning the handle beneath the trail raises or lowers the screw which raises or lowers the barrels. N.B. terms in quotation marks are those used in the patent description. Photographs courtesy Thomas W. Fugate, *Kentucky Military History Museum.*

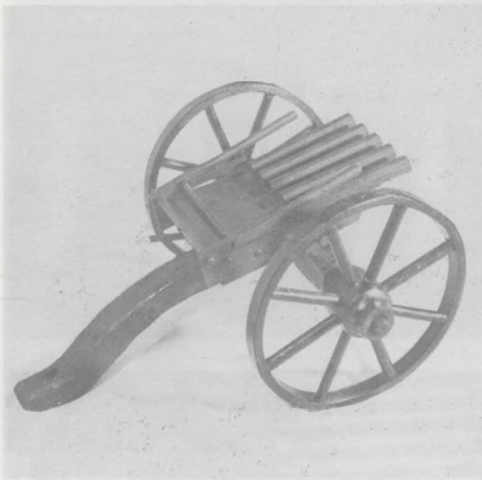


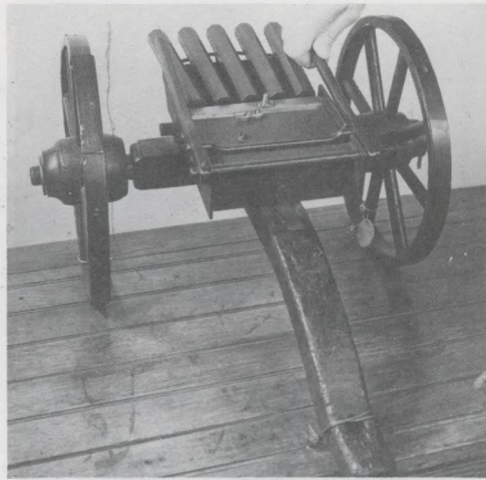
Fig. 11-12. This model, now in the West Point Museum, was found in the Rochester shop of William Billinghamurst. It is probably a prototype or a duplicate of the patent model.

quarters inches in length, mounted on the main frame. The divergence of the barrels was adjusted by a small lever underneath the model, while a double lever operated a sliding breechlock to secure the rear of the chambers after the gun was loaded. The model was reportedly displayed in the Billinghamurst store window for many years after the war. Currently, the patent model of the Billinghamurst & Requa Battery is in the collections of the West Point Museum. After the tests of the model were successful, a full-size gun was manufactured at the Billinghamurst shop at a cost of \$500.⁹

On 16 December 1861, the *Union & Advertiser* reported:

The rifle battery ... a Rochester invention, has been perfected, and a battery of full size has been constructed and experimented with... [by] Dr. Requa and Mr. Billinghamurst, the well-known gunsmith,....Improvements have been made in the machine since the first model was produced and it is now quite a different machine.¹⁰

Requa and Billinghamurst had taken the weapon to the East Side Flats that week for testing. Firing experiments were carried



out at both short range and quarter-of-a-mile or more distances. The battery was reported to have done well and demonstrated that "it was a success." The fouling which frequently occurred in breech-loading rifles was not apparent. The *Union & Advertiser* prophetically commented that it remained to be seen whether a rifle battery was "a thing which can be used by armies to advantage." Further testing was necessary before it could be demonstrated to the U.S. military.¹¹

Dr. Requa in Washington – 1862: "A Big Job"

Before Dr. Requa was able to show his gun to the army's ordnance department in Washington, his weapon had already received favorable publicity as previously mentioned. However, in order to promote his invention, Dr. Requa decided to personally demonstrate the battery to the war department. On 22 April 1862, he arrived in Washington, D.C. and rented a "pleasant little room" in a private home. Earlier, he had shipped his gun by express in a crate. The next day, 23 April, he wrote to his fiancée, Mary Groat, that he had spent the day putting the gun together and had no idea how long he would remain in Washington. He remarked, "I knew before I started that I had a *big job* before me.

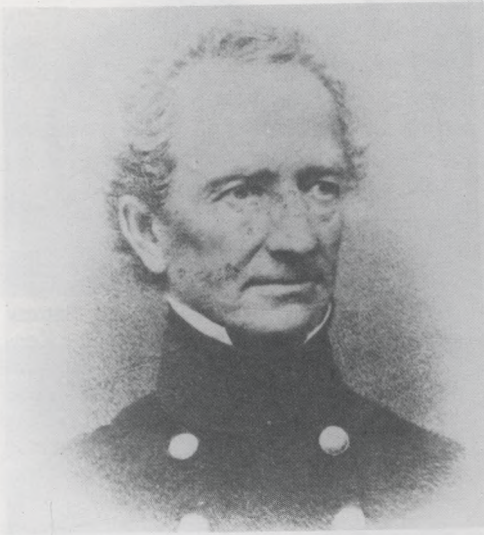


Fig. 13. Brig-Gen. James W. Ripley

apparently given the brush-off by the war department and unable to get an appointment with the chief of ordnance, Brigadier General James W. Ripley. With persistence, he finally managed to see General Ripley, who dismissed him with the following remark: "That is a good gun and undoubtedly will work all right,... but the soldiers can fire fast enough and waste too much ammunition." Dr. Requa, after his initial rebuff, decided to see President Lincoln. One source states that Dr. Edward Maynard, the Washington dentist and ordnance inventor, gave him a letter of introduction to the president. On 1 May 1862, after many hours of waiting, he finally was granted an interview and allowed to tell the president his tale of frustration. Lincoln asked what General Ripley said. Dr. Requa told him he said "that the soldiers could shoot fast enough now." Lincoln, no stranger to inventors, jotted a few words on one of his cards, "Gen. Ripley, please see Mr. Requa," and signed it, "A. Lincoln." Unfortunately, Ripley, one of the few senior Civil War officers born in the eighteenth century, was not impressed with the idea of a newfangled gun requiring special ammunition; therefore, he refused to schedule a test for the weapon. Again, Lin-

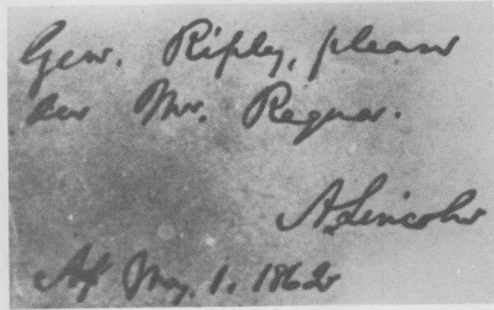


Fig. 14. President Lincoln's note which precipitated the Army trials in 1862. From the Requa family archives.

coln intervened and recommended that a test be scheduled. He promised to be there "to see it work."¹²

The First Trial – 1862: "Every Charge Exploded"

On 12 May 1862, Dr. Requa's gun was given its first trial under the direction of Lieutenant W. Mitchell, U.S.N., at the Naval Ordnance Yard, Washington, D.C. Reportedly, Lincoln was there for this test; however, there was a man next to Dr. Requa with a new breech-loading cannon. Unfortunately, a shell got stuck in the barrel of the cannon during the trial which made Lincoln very nervous; therefore, he left before Dr. Requa's gun was tested. Lieutenant Mitchell reported that the battery was tested as follows:

101 shots were fired for range. Elevation 9° 30', obtained by placing the quadrant on that part of the barrel which is parallel to the bore. The only volley that was seen to strike from the station made a range (by plane table) of 1,578 yards. Two volleys were seen to strike from the battery beyond the 1,300 yard target.

200 shots, or eight volleys, were then fired for time in 1 m. 18 sec., 4.

The range of these was 1,115 yards, elevated at random. 126 shots were then fired, to ascertain the penetration, at a target six feet square, made of twelve thicknesses of pine boards one inch thick, with a space between each layer of one inch, at a distance of 73 yards.

124 shots hit the target mostly below the middle.

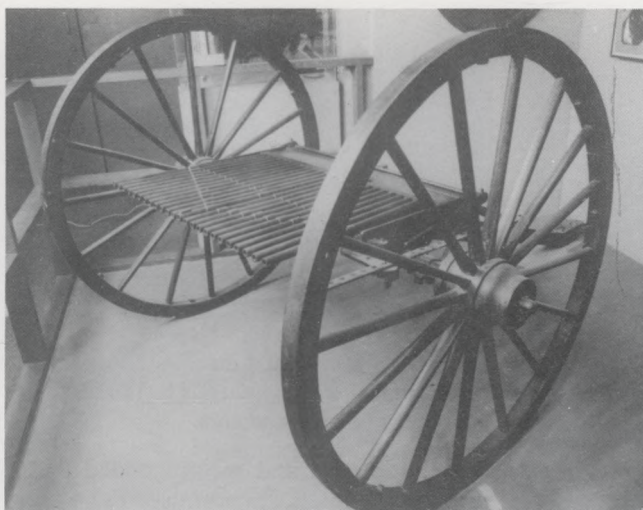


Fig. 15-16. The Requa Battery Gun in the collection of the Kentucky Military History Museum and the nameplate of its maker, Parmenter & Bramwell of Troy, New York. *Courtesy Kentucky Military History Museum collection.*

124	penetrated	the first board.
123	" "	2d, 3d, 4th and 5th boards.
127	" "	6th board [<i>sic</i>].
119	" "	7th do.
108	" "	8th do.
84	" "	9th do.
29	" "	10th do.
2	" "	11th and 12th boards.

Only two balls went entirely through the target.

The recoil of the piece was very slight; every charge exploded upon the first fall of the hammer.

The arrangement is simple, and cannot easily get out of order, and may be worked by men of ordinary intelligence with little or no instruction.

Its accuracy and penetration compare favorably with the arms in general use.

With it, under favorable circumstance, four men may do the work of eighty armed in the usual manner.¹³

On 15 May 1862, Mitchell's report was forwarded to Captain Andrew A. Harwood, the chief of the Bureau of Ordnance and Hydrography.¹⁴

The U.S. Army Trial - 1862 "No Difficulty from Fouling"

On Saturday afternoon, 24 May 1862, Dr. Requa had another trial of his "Rifle Battery" before Brigadier General Amiel Weeks Whipple, the commander of the Military Defenses Southwest of the Potomac, at Fort DeKalb, Virginia. The test was under the direction of Lieutenant Colonel

Henry H. Hall of the 4th Regiment, New York Heavy Artillery. Dr. Requa reported that both the general and his staff were pleased with the weapon and requested that, as the hour had grown late, he leave it for a further demonstration of its shooting ability the following Tuesday. The next day, Sunday, Requa walked the four miles "in the boiling hot sun" to the fort in order to clean up the gun and check the cartridges for the Tuesday morning trial. When Dr. Requa arrived back in Washington, he stopped at Willard's Hotel and found the city "in a stew." Reports had come in that General Banks' forces had been attacked and driven to Harpers Ferry; McClelland had been "whipped in front of Richmond;" the New York militia was on its way to Baltimore; and the rebels were within thirty miles of Washington "driving the union forces before them." Seeing an opportunity to test his gun in actual combat, Requa decided "to get up early and get bullets and powder and load up all my cartridges at Fort Cocoran [Arlington Heights, Virginia] in case these reports are true and the fort is attacked, they will get a warm reception from one quarter."¹⁵

On 28 May, Lieutenant Colonel Hall sent his official report of the trial to General Whipple:

The battery was fired from the glacis at Fort

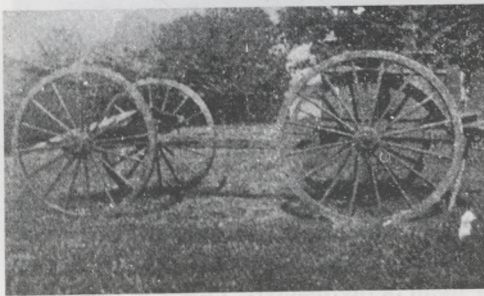
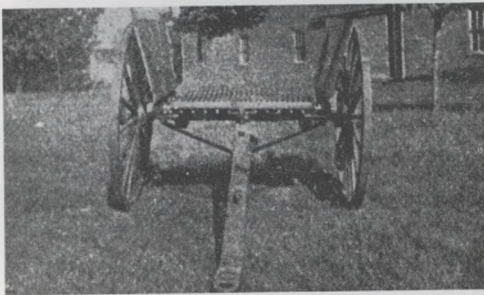
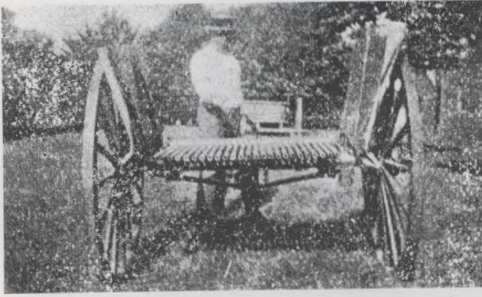


Fig. 17-19. This group of photographs which have been somewhat enlarged, was first published in *The Third New Hampshire and All About It* by D. Eldredge in 1893. It is possible that the figure in the top photo is Dr. Requa.

DeKalb, at three targets, respectively distant 150, 475 and 750 yards.

Nine successive volleys, 225 shots, were fired at a target 6 feet high by 30 feet long, distant 475 yards, in 1 minute and 15 seconds. Out of these, 225 fired without correcting the sighting after the first discharge; 27 balls struck the target, the others striking to the left.

Four shots were fired from a single turret of the battery at a target 12 feet high by 6 feet wide, one of which struck the target, distant 750 yards.

At a distance of 150 yards, a target 28 inches by

20 inches, two volleys were fired, four balls striking the target from second volley, and two from the first.

Two volleys were then fired into the bank, at same distance, with barrels diverged, the balls striking nearly on a line horizontally extending about fifty feet from right to left.

A further trial was made with the battery, firing from the Aqueduct bridge into the river.

First shot with a single barrel, elevation 8°, struck the water at a distance of 1,100 yards.

Second shot, with a single barrel, slope 9°, 1,200 yards.

Third volley, 25 balls, slope 8°, 1,000 yards, spreading about 6 yards.

Fourth volley, 25 balls, nearly point-blank, 600 yards; barrels diverged; the spread was about 75.

Fifth. — Six volleys, 150 balls, were fired in 50 seconds, at 600 yards; spread and effect the same as above.

Sixth volley diverged; elevation 9°. The shot were well scattered in an effective line at 1,200 yards distance.

The air circulates through the barrels at the intervals of loading, keeping them cool, and there seemed to be no difficulty from fouling.

The battery can apparently be fired for many hours without cleaning or becoming heated.

An iron screen might easily be attached to the battery to screen it and the men from the rifle or musket balls of an enemy.¹⁶

General Whipple endorsed Hall's report on 31 May 1862 and added "one of these batteries attached to each fort would add greatly to the efficiency of this command."¹⁷

Billinghurst & Requa — 1862-63 "Improvement in Platoon Batteries"

Undoubtedly, the expenses incurred in promoting his gun and the travel which necessarily took him away from his dental practice, all contributed toward a financial drain for Dr. Requa. On 25 July 1862, desperate for funds, Requa and his manufacturing partner, William Billinghurst, were forced to enter into a financial contract with a David Smith and a Cyrus Bradley of New York. The weapon was demonstrated on 12 August 1862 at Rochester before a crowd of over a hundred concerned citi-

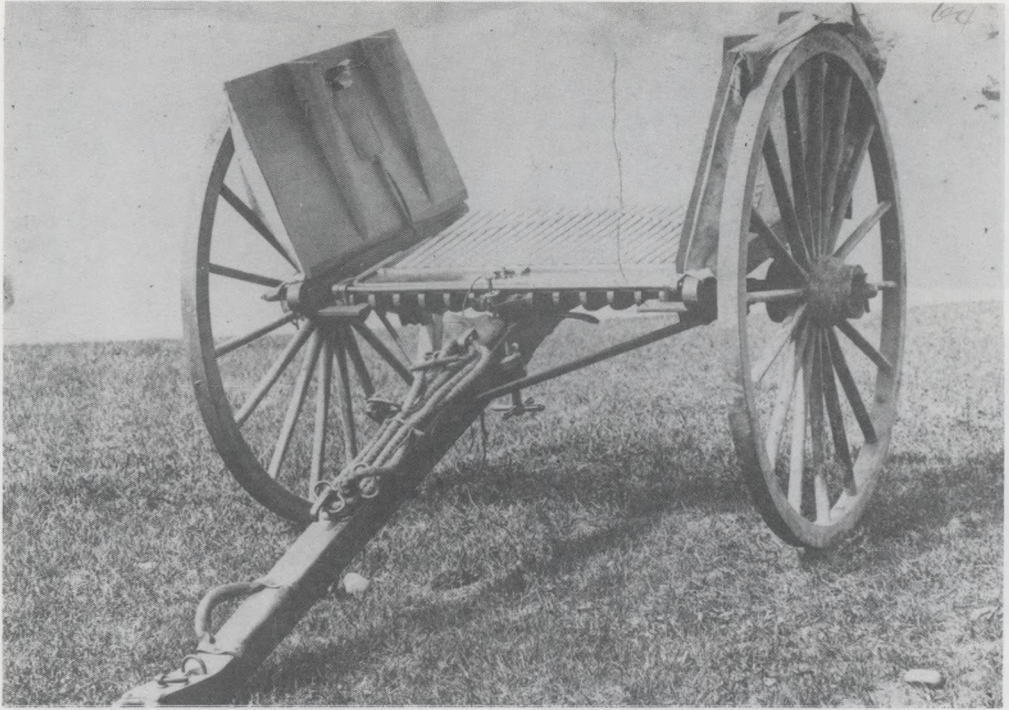


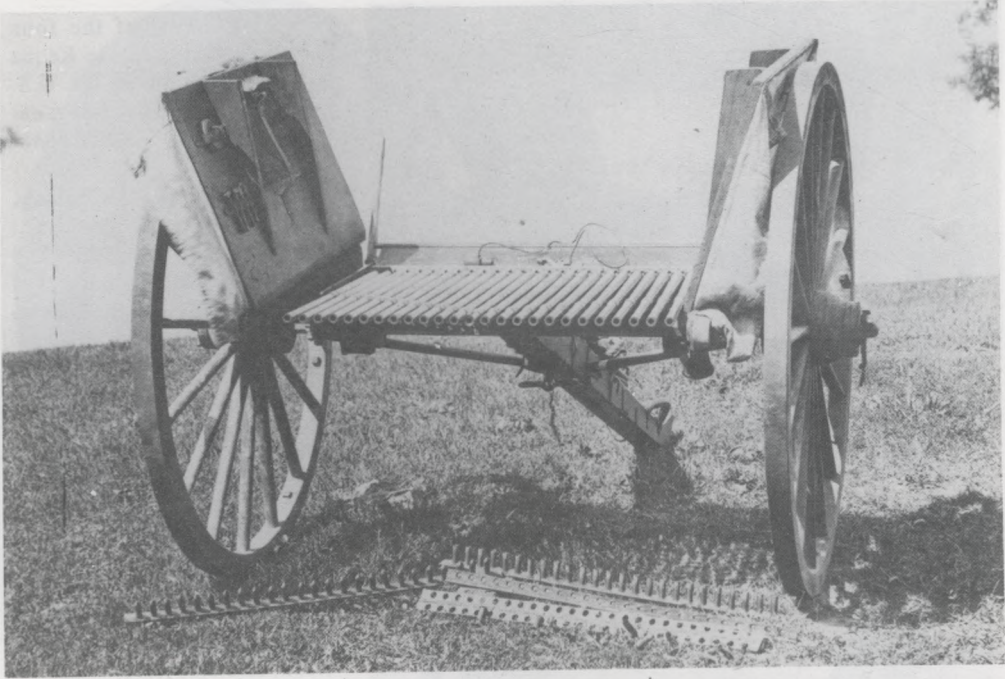
Fig. 20-21 The illustration above and on the facing page appears to be the Billingham-Requa Battery Gun submitted for trials in 1862. Note the loaded clips on the ground. National Archives photo.

zens. At a distance of 600 yards and then at a mile, the battery fired at a wooden keg anchored in the middle of the Genesee River. The center barrel was fired in single shots to test the accuracy. Eight seconds elapsed for a volley to hit the target, rapid firing kept two balls in the air at the same time. The demonstration was quite effective as the majority of the bullets found their mark and riddled the keg. Needless to say, the crowd was impressed with the destructive power of the new weapon.¹⁸

Acting on the impetus of this successful trial, the weapon was put into production. In August 1862, the *Union & Advertiser* reported, "a number of the batteries are being made — the rifle barrels by Remington, the celebrated rifle maker at Illion, the cartridges at Troy and other parts of the work in Connecticut." Another source states that "twenty of these guns [Requa batteries] were made at Rochester

for the United States Army and thirty at Troy [New York]." The *Herald* stated that the government ordered fifty guns, "thirty of them being made in Troy and twenty in Rochester." Presumably, one company, Parmenter & Bramwell, was the sole manufacturer at Troy. Assemblage was apparently completed at the Billingham shop in Rochester. Meanwhile, on 26 August 1862, Dr. Requa impressively exhibited the weapon at Albion before a crowd of 5,000 people. Already, Orleans County was recruiting a company of men to man five or ten batteries. Half the volunteers were already enrolled and more were joining daily.¹⁹

On 16 September 1862, the day before the battle of Antietam, Requa and Billingham were granted a patent (36,448) for the rifle battery by the U.S. Patent Office, listed as an "Improvement in Platoon-Batteries." The Requa Battery in the collec-



tions of the Springfield Armory is inscribed on the breech block, "Billingshurst & Requa/ Rochester, N.Y. Pat'd. Sept 16, '62." Also, the numeral "1" (presumed to be the serial number) is stamped in various locations and the barrels numbered from 1 through 25 at the breech. The bores measure about .52 caliber.²⁰

**18th Independent Battery – 1862:
The "Black Horse Artillery"**

Meanwhile, the aforementioned Albert G. Mack, now age twenty-six, managed to get the authority to recruit and organize a company of volunteers at Rochester known as "Mack's Black Horse Battery, or Rifle Battery," or the "Billingshurst Battery," a component of the 108th Regiment, New York Volunteers. Subsequently, his unit became the 18th Independent Battery, New York Light Artillery. Naturally, it was to be armed with some of the first guns to be assembled at the Rochester shop. The Requa batteries were to be pulled by matched teams of coal-black horses.²¹

On 13 August 1862, the *Union & Ad-*

vertiser first posted Captain Mack's advertisement for volunteers for the "Rochester Rifle Battery" to be attached to Colonel Palmer's Monroe County Regiment. Mack offered as an inducement exemption from picket duty ("the most disagreeable part of the service"), all the pay and benefits of an artillery company, extra incentives for sharpshooters, and a \$150 bounty (\$90 when mustered in and balance at end of war). The ad appealed to the civic pride of the Monroe County men, since the battery was a "Rochester invention." The Requa guns were advertised as "something entirely new" that could "throw 200 balls per minute, with the accuracy of a Target Rifle." The ad ran in the *Advertiser* until 29 August. A similar ad also ran in the *Daily Democrat* through 6 September 1862. Mack, himself, had been enrolled on 14 August 1862 and on 30 August was commissioned as the battery's captain. The volunteers were to report to the recruiting office at 31 Arcade Gallery (west side), Rochester. The battery was mustered into U.S. service on 13 September for three years.²²

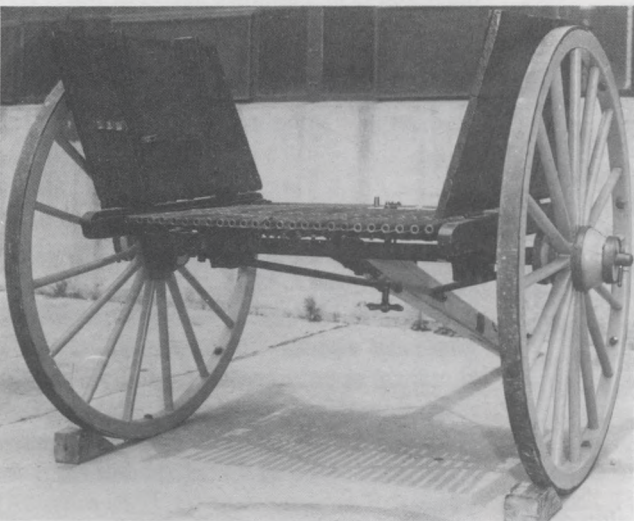
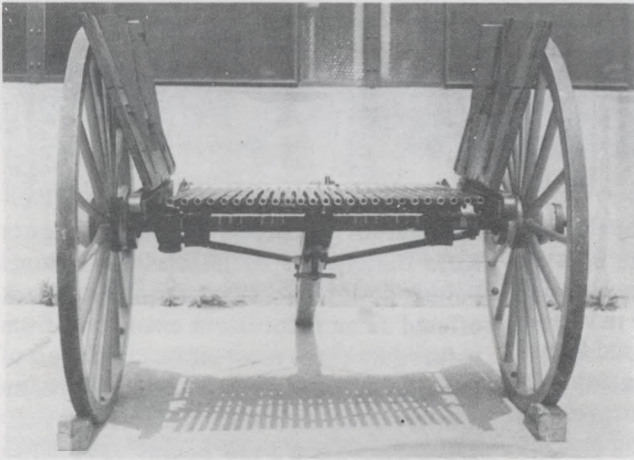
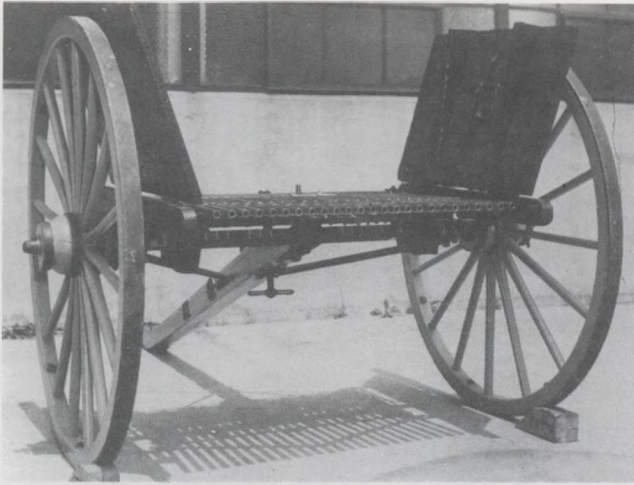


Fig. 22-24. One of the four known survivors of the Requa Battery gun, now in the U.S. Marine Corps Historical Center, Washington. *U.S.M.C. photographs.*

The Report on Rifle Battery, Navy Yard, by Lieutenant Mitchell dated January 21, 1863 to Capt. J.A. Dahlgren, Chief of Ordnance, provided the following statistics:

DIMENSIONS	
	Inches
Length of barrels	24
Dia. at butt	1.21
Dia. at muzzle95
Cal. of bore52
Cal. of chamber60
Length of chamber	1.82
No. of grooves	6
Width of grooves14
Depth of grooves01
Width of bands (<i>sic</i>)12

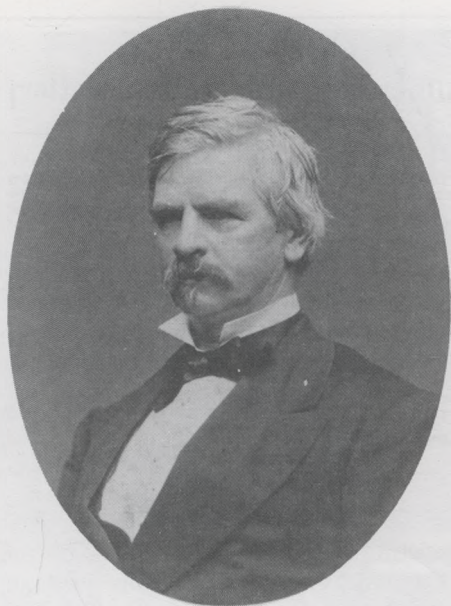


Fig. 25. Maj-Gen. Nathaniel P. Banks

into U.S. service on 13 September for three years.²²

**26th Independent Battery – 1862:
The “Barnes Rifle Battery”**

On 5 September 1862, a new advertisement was published in the *Union & Advertiser* for another Billinghamst and Requa Rifle Battery Company being formed by Captain J. Warren Barnes and First Lieutenant Herman M. Lillie. It was designated the 26th Independent Battery Light Artillery or “Barnes’ Rifle Battery.” Barnes offered a bounty of \$152 and his ad read:

The undersigned, under the patronage of the Military Committees of Monroe and Ontario counties, having received from Gov. Morgan authority to raise a company for another

RIFLE BATTERY!

Call upon young men of these and adjoining counties to enlist into a popular branch of the service.

This Battery has 10 guns of 250 barrels and throws 2,000 balls per minute! The range is one and a half miles. No army can stand before its terribly destructive force.

Our motto is “Death to this infamous rebellion.”

YOUNG MEN your patriotism, your loyalty,

your manhood, calls upon you to enter your country’s service.

THE ENEMY IS BEFORE YOUR CAPITOL: we will meet him, and “may God defend the right.”²³

A similar ad appeared in the *Daily Democrat*. The recruiting office was the one formerly occupied by Mack’s Battery at 31 Reynolds Arcade, with branch offices at Canandaigua and Geneva.²⁴

**Banks’ Expedition to the Gulf – 1862:
“The Opinion of the Ordnance Officer”**

On 17 November 1862, the Rochester mayor and aldermen held a “special meeting” of the “Common Council.” They passed a resolution: “That the City of Rochester do agree to pay for the six batteries manufactured for Captain Mack’s Company by Smith & Bradley, if approved by Major General Banks, at a cost of not exceeding \$650 each; in all \$3,900 provided the said batteries are delivered at once to said Company—to be paid for on presentation of a certificate of approval from Major General Banks.” The vote was nine to six in favor of the expenditure.²⁵

Apparently, the Rochester Military Committee had previously contacted Major General Nathaniel P. Banks on 16 November about official authorization for ordering the six guns for Mack’s Battery. On 17 November 1862, General Banks from his New York Headquarters wrote to John C. Chumasero, the chairman of Rochester’s military committee, as follows:

In answer to your letter of the 14th inst[ant], received yesterday afternoon, I would say that the orders you desire for the purchase of Requa & Billinghamst’s guns must depend on the opinion of the Ordnance Officer of the expedition, and the necessity for purchasing them, in case we cannot get others of the regularly constituted pattern.

Should we need the guns I will order them and have them paid for.²⁶

The *Union & Advertiser* surmised from the above letter, that the acceptance of the batteries depended upon “too many contingencies;” the “opinion of the ordnance

Rochester Rifle Battery,
TO BE ATTACHED TO COL. PALMER'S
MONROE CO. REGIMENT.

This is something entirely new and the most desirable of anything now offered for the War. These Guns will throw

200 Balls per Minute,

With the accuracy of a Target Rifle. Soldiers belonging to this Company will be exempt from PROXY DUTY, the most disagreeable part of the service, and receive all the pay and perquisites of Artilleryists. This is a Rochester invention, and the Company should be filled immediately by brave and able-bodied citizens of Monroe County.

Recruits will receive \$150 Bounty—\$25 when mustered into the service, and the balance at the close of the War.

Extra inducements will be offered for a few Sharpshooters.

The undersigned have been authorized by the Government to recruit a Company.

Recruiting Office, No. 31 ARCADE GALLERY
west side, Rochester, N. Y.

4113dtf

Capt. A. G. MACK,
Lieut. GEO. G. OURLIS.

Fig. 26-27. Advertisement from the Rochester Union & Advertiser, soliciting recruits for Mack's Rifle Battery and for Barnes' Rifle Battery.

officer" and the failure to get guns of the regular pattern. It was the Advertiser's opinion that Requa batteries would not be taken on the Banks' expedition and that the Common Council "... might just as well thrown \$4000 into the fire as to have appropriated that sum for these batteries."²⁷

The next day, on 18 November, Mack's battery with its guns left Rochester and on 2 December sailed from New York with General Banks' expedition bound for New Orleans, Louisiana, to serve in Sherman's Division, Department of the Gulf. Unfortunately, its ammunition and special clips were sent by another route. The battery subsequently served in the 2nd and 1st Division, 19th Corps; in the defenses of New Orleans; in the operations in Western Louisiana, including the siege of Port Hudson; the campaign against Mobile, Alabama; the march to Montgomery, Alabama; and in the siege artillery, General Canby's forces. Mack, himself, was among the casualties, being wounded on 5 July 1863 during the siege at Port Hudson, Louisiana.²⁸

On the same evening, 18 November 1862, that Mack's battery left Rochester, another Requa Rifle Battery company, the 25th Independent Battery Light Artillery,

ANOTHER
Billinghamst & Requa Rifle Battery
BOUNTY \$152.

The undersigned, under the patronage of the Military Committee of Monroe and Ontario counties, having received from Gov. Morgan authority to raise a company for another

RIFLE BATTERY

Call upon young men of these and adjoining counties to enlist in this popular branch of the service.

This Battery has 10 guns, of 50-barrels, and throws 2000 balls per minute! The range is one and a half miles. No army can stand before is terribly destructive force.

Our motto is "Death to this infamous rebellion!"

YOUNG MEN your patriotism, your loyalty, your manhood, calls upon you to enter your country's service.

THE ENEMY IS BEFORE YOUR GARRISON; we will meet him, and "may God defend the right!"

Headquarters, 31 REYNOLDS' ARCADE, formerly occupied by Mack's Battery.

Branch offices at Canandaigua and Geneva,
J. W. BARNES, Capt.
HENRY M. LITTLE, 1st Lieut.

sep5

consisting of 146 men under the command of Captain John A. Grow, from Hartland, Niagara County, which had been training at Camp Church at Lockport, arrived in Rochester on the 5:30 p.m. train. Guards were placed to prevent the men from straggling. The unit left shortly after 9:00 p.m. The company's destination was supposedly secret; however, it was assumed that the unit was to be assigned to General Banks' expedition.²⁹

On 23 December 1862, Captain Silas Crispin of the ordnance department purchased 600 cartridge holders ("piano hinges") at \$50.00 per hundred and 15,000 unloaded cartridge cases from the company to meet the needs of the guns already in service.³⁰

Mack's Battery in the Gulf—1863-64:
"The Men Are in Good Spirits"

On 3 February 1863, Captain Mack reported from New Orleans: "The men are in good spirits and are drilling every day, three or four hours, with twenty-pound Parrott guns as light artillery. They have already become so expert in this drill as to elicit the praise of Generals in command. And they are eager to participate in the attack on Vicksburg, when the order shall be given, as it will be," Mack explained the reason for the substitution of the Parrott guns for the Requa guns. Because of the



Fig. 28. Brig-Gen. George D. Ramsey

loss or "non-arrival" of the ammunition for the Requa batteries and the "incomplete manner" in which the guns were fitted out, it was deemed prudent to switch to the Parrotts. The manufacturer had not supplied replacement parts or tools to repair the Requa guns if they were damaged. Meanwhile, the drivers and the cannoneers drilled in handling their new caissons and guns. "Awkward riders now and then kiss mother earth, but as yet without serious accident."³¹

On 21 February 1863, a member of the Battery reported on the expedition up the Mississippi as follows:

The First section received marching orders Tuesday, the 10th, to be ready to march next morning at daybreak, with ten days' rations. The section not being complete as concerned men, the Captain asked for volunteers to fill the vacancies. Just two offered out of the celebrated Rifle Battery company, said to be the best that ever left Rochester. Everything being in readiness, we started the next morning for Carrollton, where the boat was supposed to be waiting for us. As we drove out of the park, the aforesaid com-

pany gave us three rousing cheers, and good luck to you, boys. Arriving at Carrollton, instead of the boat waiting for us, we had to wait for the boat till 12 o'clock, when we got aboard, and were quickly followed by the 38th Massachusetts Volunteers, who had so much baggage and provisions to load on, that it was dusk when we got started. Wednesday evening, at 7 o'clock, we arrived at the village of Plaquemine, and here waited for the rest of the fleet, which was composed of the following boats: Morning Light (our boat); then came the Kepper; next arrived were the Algerine and the Bee; next, Time and Tide; then the flag-ship Louisiana Belle; and finally, the gunboat 291.

We were expected to go down the bayou at this place, and up the Chapalia and into the Red River, and so around in the rear of Port Hudson. The gunboat started down, and of course we all expected to follow; but no--the gunboat and two launches must reconnoiter first. They went down to Indian Village, and three miles below, the bayou was stopped with logs of drift wood. For a mile below this the rebels had a battery of sixteen guns to dispute our passage, had the gunboat been able to move the raft. But you might as well talk of moving the Mississippi River; so back came the gunboat and back to New Orleans came the expedition.

So ended the great trial of cutting off the rebel supplies by Red River; but "it will never do to give it up so, Mr. Brown," and General Emory is to try it by another route.

We arrived in the city just after the exchange of rebel prisoners, how many I do not know, but the streets and levees were a perfect jam of rebel sympathizers, mostly women, wearing secession badges and flags on their breasts, which the Union soldiers had the kindness to relieve them of, to the great displeasure of the ladies. Talk about Union feeling in New Orleans! It is very scarce, and were it not for the gunboats in the river, they would show it in plainer terms than talk.³²

The Battery even had its own song, "Song of the Black Horse Battery." The first two stanzas read:

*Our men are prompt when the bugle calls,
And our guns can pour a storm of balls;
In the ranks of war the fiercest blaze
Will be where the "Black Horse Battery"
plays.*



Fig. 29 BG Quincy A. Gillmore

*On dusky steeds, with their clattering heels,
Keep time to the roll of the cannon
wheels;*

*And our Captain, loved by his gallant men,
Will the tiger tame in Secession's den.³³*

From August-December 1863, Mack was on recruiting duty (detached service) in New York to procure conscripts for his battery. Apparently, no men were available from the draft; therefore, he proposed putting up posters which read, "200 first class Recruits Wanted for Mack's Battalion of Artillery." On 20 October 1863, Mack wrote to Second Lieutenant Elijah R. Craft, the Assistant Chief of Artillery, Department of the Gulf, stationed at New Orleans, requesting a copy of the "Report of the Billinghamst & Requa Gun" and inquiring if the ammunition for the battery had arrived. He said that 100,000 cartridges had been sent from Rochester. Unfortunately, the vessel carrying the special cartridges and clips was sunk off the Florida Keys. Mack rejoined his battery on 12 February 1864.³⁴

On 8 March 1864, Mack sent in a requisition to the ordnance office at Baton

Rogue, Louisiana, for replacement of "worn out" sabers, revolvers, and accouterments for the ninety-three members of his command. As its last assignment, the battery served in the District of Alabama had the distinction of firing the signal for the last infantry charge of the war on a fortified place at Fort Blakely, at 6:30 p.m., on 9 April 1865. The Battery had been under fire on the battlefield for a total of sixty-four days during the war; it was mustered out on 20 July 1865.³⁵

A search of the ordnance department's summary statements of quarterly returns of ordnance and ordnance stores failed to identify any Requa Batteries on hand for the 18th New York Light Artillery although "Billinghamst and Requa Guns" were listed under the columns of ordnance headings. It can be speculated that without the proper ammunition, the battery left its Requa guns behind in New Orleans and used other ordnance for its operations in the Gulf. The 1904 Rochester *Herald* article supports this supposition as it stated: "The guns reached New Orleans all right but the vessel carrying the ammunition was wrecked and the guns could not be used." Another source mentions a ship carrying the guns being sunk at Flying Pan Shoals near Charleston, South Carolina. In addition, as late as August-September 1863, the 18th Battery was listed as a four-gun battery with four 20-pounder Parrott guns with eight horses to each cannon and caisson.³⁶

However, another source does mention two Requa battery's being used during the operations against Port Hudson, Louisiana, in 1863. The 18th Independent Battery was in action at Port Hudson from 23 May to 8 July. On 31 May 1863, Lawrence Van Alstyn of Company "B," 128th New York Infantry Regiment, which was also in the field, stated in his diary: "A new style of a fighting machine has just gone from here, on its way to the right wing. There were two light carriages, upon each of which were mounted twenty-four rifle barrels, all made to be loaded and fired

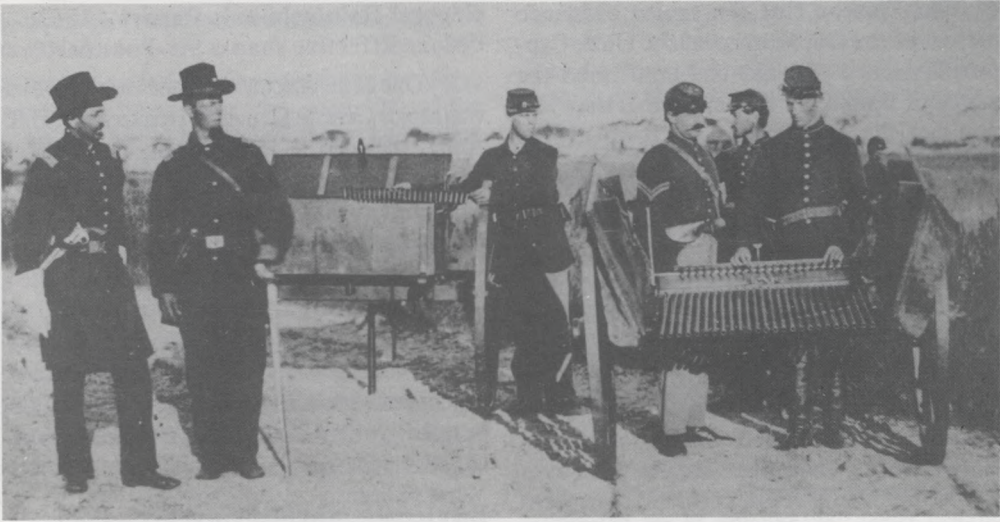


Fig. 30. "Section of Requa Battery Commanded by Lieutenants Wheeler and Kingsbury, Thirty-Ninth Illinois, Morris Island, S.C. 1863" from *The History of the Thirty-Ninth Regiment Illinois Volunteer Veteran Infantry (Yates Phalanx) in the War of the Rebellion 1861-1865* by Charles M. Clark, 1889.

by one operation of a lever. Good-bye Johnnies when they get at you."³⁷

Cunningham speculated that the guns Van Alstyne referred to were Ellsworth guns not Requas. The Ellsworth gun was a breech-loading, 300-pound, one and one-half inch bore cannon, two of which had been issued to Ellsworth's Zouaves (11th New York Infantry) in 1861. It is difficult to see how it could have been confused with the Requa battery.³⁸

General Banks – 1863-64: A "Serviceability" Report

On 27 January 1863, General Ripley advised the secretary of war to "call for a report as to the serviceability" of General Banks' Requa batteries in the field before purchasing more of them for the department. Obviously, Captain Mack was also concerned over the delay. On 3 February 1863, he intimated that he would write the Rochester mayor as soon as he received receipts from the department's ordnance officer that the guns were not as yet issued to the battery. He felt that the city of Rochester should not pay for the guns if they were not to be used.³⁹

By January 1864, the company had still not been paid by the government for General Banks' six guns. In response to David Smith's badgering, Brigadier General George D. Ramsey, Chief of Ordnance, on 11 January, reported to the Secretary of War, Edwin M. Stanton, that the reason for non-payment of the claim was that "the conditions upon which Gen[eral] Banks had agreed to receive these Batteries had not been complied with;" namely, official acceptance by the ordnance department. What Smith referred to as an acceptance by an ordnance officer was merely Lieutenant Richard M. Hill's receipt for the batteries when he turned them in. General Banks had stipulated:

I will accept the 10 in. Rifle Battery with the Billingham & Requa gun for service in my expedition, but not to bind the government to indemnify the city of Rochester for its cost, unless the arm upon trial shall be approved by the Ordnance officer.⁴⁰

Therefore, under the circumstances, the account had never been paid.

Upon Smith's appeal, on 23 February 1864, General Ramsey notified Secretary

of War Stanton that the senior ordnance officer of the Department of the Gulf, Captain Francis J. Shunk, had confirmed the status of Banks' batteries, eg. that they had not met the stipulations set forth by the general.⁴¹

By September 1864, the status of payment for General Banks' guns was still unresolved. Apparently, the batteries that were sent never reached General Banks while he was in the field in the Department of the Gulf. The new Chief of Ordnance, Brigadier General Alexander B. Dyer, on 15 September, reported that he had ordered Captain Shunk, the ordnance officer at New Orleans, to turn the six batteries over to the quartermaster department for return to the company's New York City office.⁴²

The U.S. Army Trial – 1863: “Extremely Serviceable”

Again, in January 1863, Requa was back in Washington to lobby his battery. This time, he stayed at Markham's Hotel next door to Willard's. On 14 January, he reported that he had been “hard at work today loading cartridges and putting together a Battery,” which had arrived by express that day at a cost of \$63.00. He was scheduled to demonstrate it the next day at the Navy Yard for Brigadier General William F. Barry, the Chief of Artillery. He expressed his worst fear, “I am afraid it will rain it has the appearance of it.” Bradley was also in town for the occasion.⁴³

On 15 January 1863, Requa demonstrated the weapon to General Barry and other army officers. He reported that the trial was “very successful.” In his words,

“we fired fourteen hundred cartridges and only missed fire twice. A little accident happened twice from two imperfect cases sticking in the Barrell but it did not amount to much as we got them out in a minute. What it will result in I don't know but I think something favorable for every body was well pleased with it. We will probably go over the river to fort Tyler [Fairfax, Virginia] and shoot and consequently I will not be able to get away from here until next week.”⁴⁴

General Heintzelman's Report – 1863: “More Effective than a Six-Pounder”

One of the spectators at the Navy Yard trial was Major General Samuel P. Heintzelman, U.S. Army, stationed at Headquarters, Defenses of Washington. On 22 January 1863, he filed a report on the battery to Secretary of War Stanton: “It is easily managed, and does not readily get out of order. One is more effective than a six-pounder, where grape or canister are needed; is much lighter and more easily handled. I have no doubt it would prove a valuable aid in the defenses of forts and rifle breastworks.” Lieutenant Colonel B. L. Alexander, General Heintzelman's aide, also concurred with the general's opinion.⁴⁵

Lieutenant Mitchell's Report – 1863: Accuracy “Very Good”

Lieutenant Mitchell reported the results of this trial to Captain John A.B. Dahlgren, the new Chief of the Naval Ordnance Bureau, on 21 January:

Two hundred and fifty shots, or ten volleys, were fired at 4°, 5° and 5°30'. Elevation range estimated at from 800 to 1,300 yards.

One volley was fired with the barrels one-third diverged, the balls spreading about 120 feet.

One volley was then fired with the barrels one-half diverged, the balls spreading about 180 yards.

One hundred and seventy-five shots, or seven volleys, were then fired for time in one minute. Some slight delay occasioned at the sixth round by the cap slipping off.

Two volleys were fired with the barrels fully diverged, the balls spreading about 360 feet.

Three barrels were loaded and fired with a friction primer at the centre. One of the charges failed to explode.

Eighteen barrels were then loaded at one side and fired with primer at the other side. All exploded.

Fifteen barrels were loaded and fired in the same manner. All exploded.

Ten barrels were loaded and fired in the same manner. All exploded.

All the barrels were then loaded and fired with a cap at the centre and a friction primer at each end. All exploded.

Four volleys were fired with the cases loaded

with the skin cartridges and percussion-cap. All exploded.

Several single shots were fired for accuracy, which was found to be very good. One of the cartridges had to be pricked, three caps having failed to explode it.⁴⁶

Mitchell reported a new alteration in the weapon which allowed it to be fired with a primer at the center or at each end of the row of barrels in addition to using a percussion cap.⁴⁷

As a result of the naval yard test, on 28 January 1863, Captain J.A. Dahlgren, the Chief of the Bureau of Ordnance, U.S. Navy, stated that he would be willing to order "a small number" of the rifle batteries for the western flotilla, provided Rear Admiral David D. Porter wanted them. By June 1863, Captain Dahlgren had ordered two batteries for Admiral Porter.⁴⁸

General Barry – 1863: The Second Trial, "Extremely Serviceable"

On 19 January 1863, another test of the battery was conducted at the Washington Naval Yard for General Barry. On 22 January, Barry reported:

This practice was designed to illustrate—
1st. *Accuracy of Aim.* Volleys were fired at different distances, from 150 yards to about 1,300 yards, with the barrels parallel [*sic*] and at different degrees of divergence. The flight of the projectiles was noiseless and remarkably true, even at the extreme range of 1,300 yards, and compared favorably with the heavier projectiles of rifled field guns.

2d. *Range.* With 5½ degrees elevation an extreme range of about 1,300 yards was obtained; 2,000 yards is claimed as the extreme effective range of the battery. I doubt much if, at longer range than 1,300 or 1,200 yards, it can be made effective.

Much difference was observed in the range, and, to some extent, in the accuracy in the two kinds of cartridges which were used.

3d. *Rapidity of Fire.* Without any extraordinary exertion, three men — viz., one to serve ammunition, one to load and one to fire — readily discharged seven volleys, or 175 per minute. I saw no reason why this rate of fire might not have been maintained by the same men for five minutes, without much fatigue. This would give for three men a fire of 1,075 balls in five minutes.

In this experiment but little care or time was given to "pointing" the battery; but as so rapid a fire would only be resorted to at short range, careful pointing would not be necessary.

4th. *Mobility.* Three men were found quite sufficient to serve, and, under ordinary exigencies of field service, to move by hand the battery when unlimbered and in battery. The entire weight of the battery, when limbered up and packed with tools, implements and ammunition, (of which latter each gun carries in two chests 96 rounds or 2,400 projectiles,) is stated at 1,300 pounds. Two horses would, therefore, readily transport it on the field. Opportunity not offering, no practice was had to ascertain penetration.

I do not think this battery can be effectually substituted for field guns of any description, but am of opinion that, under certain circumstances — such as defence of bridges, breaches, defiles, field works and fortified lines, or to cover or prevent the passage of rivers — batteries of this kind might be made extremely serviceable.

Some modification in the details of equipment would be needed to give increased certainty and efficiency to the fire and general service of the battery.⁴⁹

Apparently, General Barry was not impressed with the Requa gun as an artillery piece, but envisioned it as having some use as a defensive weapon for fortified positions.⁵⁰

Meanwhile, Dr. Requa was gone from his Rochester practice and his father, James Requa, had to mind his office. In January 1863, the senior Requa reported that a Mrs. Cady, a patient, said that "she would try and make her old plate hold together" until he got back.⁵¹

The New Company's Financial Problems – 1863: A "Constant Stream of Money"

On 27 January 1863, David Smith informed Secretary of War Stanton that the company had fifteen batteries on hand, six of which were completed and could be delivered in ten days and the others ready in twenty days. The price per gun mounted on its carriage and 100 rounds of loaded ammunition (which included 100 retractors

and 2500 cartridge holders) was \$1000.00 delivered in New York City.⁵²

By February 1863, Smith reported that he had already spent \$20,000 in promoting the rifle battery and that it took a "constant stream of money" to continue to show the weapon. He wanted to raise \$50,000 in cash immediately. To obtain this kind of capital, he suggested that a company be formed with a capital fund of \$200,000 in order to start a shop to manufacture the guns. He offered Requa and Billingham \$25,000 in paid-up stock in lieu of their royalty. For the stock, they in turn would "sell, assign, and set over" all their "rights, title, interest, and claim in" the battery to Smith and Bradley for the sum of one dollar. Smith and Bradley would own the patent and stock which would come to \$40,000 each. They expected to raise the balance of the money from their friends. They also agreed not to take any money out of the company's assets until a dividend was made.⁵³

On 20 June 1863, the ordnance department received five guns at \$1000.00 each. On 24 July 1864, an additional two guns were delivered at the same price. In addition, the department purchased skin cartridges to load the metallic cases, percussion caps ("Eley's double waterproof"), and 600 pounds of "No. 54 swedged bullets." David Smith received payment of \$9724.75 for the seven guns and ammunition.⁵⁴

On 15 July 1863, General Ripley forwarded David Smith's bill for the two Requa battery orders, which had been contracted for by the secretary of war, to the Treasury Department for settlement.⁵⁵

The Siege of Battery Wagner - 1863: The "Mosquito Batteries"

Despite the lack of official acceptance by the U.S. Army, Requa batteries did see action during the war. In January 1863, Brigadier General Quincy A. Gillmore, the commander of the Department of the South and the 10th Corps, ordered five guns "as samples" to be shipped that same

week. He was preparing for the campaign to recapture Fort Sumter in the Charleston Harbor. With the fort in Confederate hands, the port was a loophole in the Union naval blockade of the eastern seaboard. An earlier attempt in June 1862 to take the city through James Island on the south had resulted in a federal disaster at the battle of Secessionville. The attack was scheduled to begin with the operations on Morris Island, a narrow stretch of land forming the southern entrance to the harbor, and the assault on Batteries Wagner and Gregg.⁵⁶

In order to recapture Fort Sumter, it was necessary to first destroy its outpost, Battery Wagner, located near the north end of Morris Island about 2,600 yards from the fort. Wagner was designed to "prevent the erection of breaching batteries" against Sumter. Wagner was an "enclosed work," which occupied the entire width of Morris Island and was protected by impassable marshes on its western side and a sluice gate for retaining the high tides in a ditch. It was constructed of "compact sand" upon which even the heaviest shells had very little effect and the damages were easily repaired. In addition, it was protected by an inclined palisade running 200 yards in advance across the entire island; had a bomb-proof shelter for its garrison; mounted fifteen to twenty guns covering its only approach, which was a "shallow and shifting beach" subject to flooding at high tide; and it was under an "excellent command." It was also protected by the guns of Fort Sumter, Battery Gregg (located on Cummings Point, the northern extremity of Morris Island), and several batteries on James Island. Such were the problems facing General Gillmore's forces.⁵⁷

On 10 July 1863, Gillmore's troops successfully landed on the southern end of Morris Island forcing the rebels to retreat to Battery Wagner. After an initial infantry assault on 11 July by 3,000 troops of the 7th Connecticut, 76th Pennsylvania, and the 9th Maine regiments failed to capture Wagner, Gillmore began his preparations for a protracted siege. On 12 July, a new

advanced line, called the "first parallel," was begun. On 18 July, Gillmore reported "three Requa rifle batteries" as part of the ordnance (which included "eight siege and field guns, ten siege mortars") for "Battery Reynolds" which was constructed for the first parallel. The "Requa batteries" were placed on the flanks to protect the sappers and miners from enemy sorties while they extended their parallels. If an assault at short range occurred, each Requa battery could "throw as much lead as a regiment of men in a given time."⁵⁸

Meanwhile, on 18 July, following an intense bombardment, a second infantry attack was launched by 6,000 federal troops. The 54th Massachusetts (African-American) was in the lead column followed by the 6th Connecticut, 7th Connecticut (a battalion), 48th New York, 3rd New Hampshire, 9th Maine, and the 76th Pennsylvania regiments, with the 7th New Hampshire, 100th New York, 62nd and 67th Ohio regiments in support. Again, Wagner held and of the 5000 bluecoats in the attack, 1515 became casualties. The 54th Massachusetts and the 48th New York suffered the greatest number. Among the officers either killed or fatally wounded were Brigadier General George C. Strong and Colonels John L. Chatfield, Haldimand S. Putnam, and Robert G. Shaw. One Union officer called Wagner the "gate of Hell." Henceforth, the siege would determine Wagner's fate and the Requa would play a significant role.⁵⁹

Major Thomas B. Brooks, New York Volunteer Engineers, who was in charge of the engineering operations against Wagner, on 20 July, stated: "Three emplacements for Requa batteries were finished and occupied, one, on the extreme left of the whole line, firing so as to flank the parallel and defend the entire obstacle, and two, on the right, placed between the parallel and obstacle for economy of room, and so arranged as to enfilade the beach, flank the return in, and fire on the entire palisading. These advanced pieces were protected from the fire of the parallel by a traverse in their rear."⁶⁰

The personnel operating the batteries

were detailed from the various regiments in the field, which included the 39th Illinois, the 3rd New Hampshire, and the 9th Maine regiments. In August 1863, a gun manned by three members (Corporal George Burton, Privates W.W. Ely and Hugh R. Snell) of the 39th Illinois, commanded by First Lieutenant A.W. Wheeler of Company "K" and Second Lieutenant E. Kingsbury of Company "E," rendered excellent service in supporting the charge of the 24th Massachusetts to dislodge the Confederate sharpshooters in front of Battery Wagner. The gun with its rapid fire and "well-directed aim" made it impossible for Confederates inside the fort to sally out to help their sharpshooters in the rifle-pits outside. Thus, many sharpshooters were captured in the operation. As soon as the battery disclosed its location, Forts Gregg, Moultrie, and Sumter opened up on it, but it was not hit.⁶¹

The men of the 3rd New Hampshire Regiment referred to their Requa guns as the "Mosquito Batteries." In all, nineteen members of the 3rd New Hampshire were detailed for duty with the "death producers" in the operations around Battery Wagner.⁶²

From a different perspective, a Confederate sergeant of the 25th South Carolina infantry stationed at Battery Wagner stated that the Requa batteries were out-ranged by the garrison's rifles.⁶³

A Strong Cribwork – July 1863: The "Surf Battery"

On 23 July, Gillmore reported the second parallel was established about 600 yards ahead of the first, running diagonally across the island. On the right, the parallel extended to the "low water mark," and ended in a "strong cribwork" (wooden platform) constructed in the water. It was protected by sand bags (made of "gunny cloth sewn with cotton twine" and weighing about eighty-five pounds when filled with sand); and mounted "three Requa batteries and two field howitzers, to sweep the beach." This battery was called the "Surf

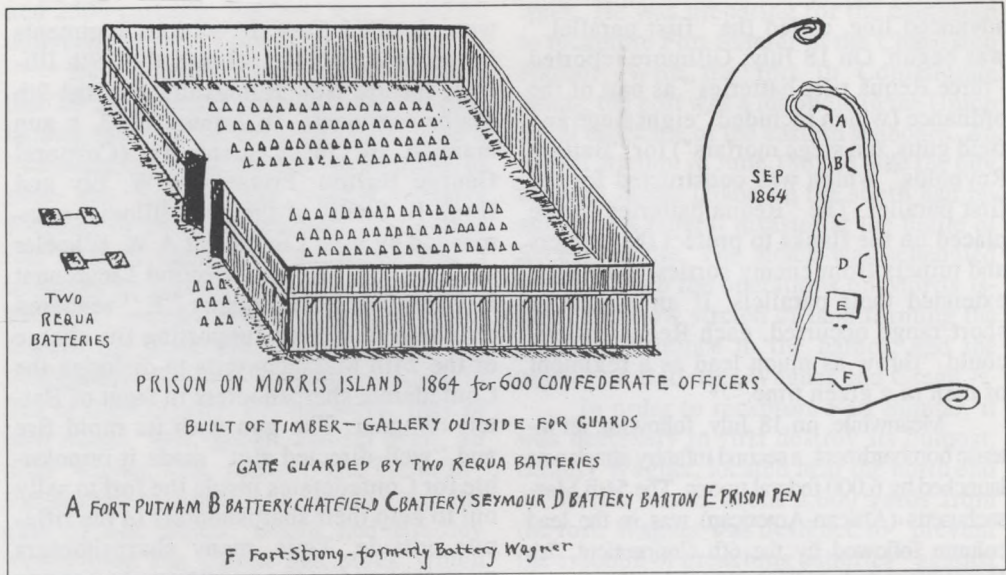


Fig. 31. The position of Requa Batteries at Morris Island Prison in 1864 after a sketch in the U.S. Army Military History Institute collections.

Battery." Apparently, dampness was not a problem for these guns mounted over water. Frequently, the Confederates made the "cribwork" the target of their fire.⁶⁴

The aforementioned Major Brooks described the "Surf Battery:

Its foundation was a strong crib thirty-two by thirty-six feet, built of heavy logs fastened together with ropes, on this was spiked a platform of heavy plank thirty feet front by twenty-five feet wide, its surface just above the highest tides. On the front of this platform was built a sand bag parapet eleven feet wide, six and a-half feet high and having a slope of 1 to 3 inside and 2 to 3 outside. At each flank of the battery was built a light sand bag epaulement containing a recess 2 x 2 x 3 feet for ammunition.

The surf battery was provided with three covered embrasures lined with boiler iron, two for the left gun and one for the right. They were so arranged as to flank the second parallel and defend all the ground in its front to extreme low water.⁶⁵

By 5 August, the second parallel had "three Requa batteries in position on the

left of the seaward defensive barricade, and thirty-four yards (extending nearly to low water) completed for infantry defence." The gun platforms were protected by a parapet of sandbags. The Confederates frequently shelled the works heavily.⁶⁶

"Barbette" Emplacements – August 1863 A "Favorable Impression"

On 10 August, a barbette for a "Requa battery" was built for the third parallel in a "salient angle" near the center of the parallel. However, Battery Wagner opened up with a heavy fire of "grape, canister, and shell" which stopped the working parties. By 11 August, the "Surf Battery" was completed for the second parallel. Also completed was the placement of the "Requa battery" in the salient of the third parallel, which came under fire from enemy sharpshooters "brisk" fire the next day. On 18 August, a "Requa battery was placed in position on the extreme left of the third parallel, to enfilade the front of the parapet of the proposed sap."⁶⁷

On 22 August, Major Brooks reported:

One Requa battery was mounted last night on the right of the first line of approach to the rear

of the fourth parallel, so placed as to enfilade its face and the beach. Another battery of this kind is about fifty yards in rear of the fourth parallel, near the centre of the island, and taking this parallel in reverse. Two other Requa batteries are in the third parallel. These four light defensive pieces comprise all the artillery in position in advance of the second parallel.⁶⁸

On 24 August, a "barbette emplacement for a Requa battery" was built near the center of the fourth parallel. Heavy rain and darkness interfered with the work's progress. On 25 August, Major Brooks reported:

Experience now proves that the sap cannot proceed further, unless the artillery fire of Wagner be subdued, or the enemy be driven out of the ridge in which they confront us so closely and securely. ... Requa battery on the left of the fourth parallel, fired to enfilade the reverse of the ridge. ... The enemy not only remained in the ridge, but were reinforced just at dusk, when brisk musketry firing took place, which lasted for half an hour. The two Requa batteries in the fourth parallel took part in this skirmish. Although not well served, their firing was such as to confirm my previous favorable impression of the gun for defence of earthworks.⁶⁹

This remark was his first mention of the Requa gun's effectiveness in the investment of Battery Wagner.⁷⁰

On 26 August, positions for "two Requa batteries" were built for the fifth parallel, "one on the right, and one near the centre of the parallel on top of the ridge; the latter in an advanced position, in order to flank the line." On 27 August, "two emplacements for Requa batteries" were mounted at night for the fifth parallel which was now some 200 yards from Wagner. On 2 September, a "Requa battery" was mounted on the fascine parapet on the beach on the right of the sap. The War Department's *Official Atlas of the Civil War* depicts eleven Requa battery emplacements during the investment of Battery Wagner. The fort was finally captured on 7 September 1863, but the city of Charleston

did not fall into Union hands until February 1865.⁷¹

Major Brooks Report – 1863: Fired with "Good Effect"

At the end of his journal, Major Brooks synopsised his opinion of the Requa battery's participation in the operations against Battery Wagner:

From these reports I extract the following description: This rifle battery is a device for multiplying and accelerating infantry fire from rifle barrels, and appears in principle to be a substitute for a six-pounder field gun whenever grape and canister are needed, and, to the extent of its range, case shot, over each of which it possesses greater precision and much less liability to fail in producing desirable results.

It consists of twenty-five rifle barrels, each twenty-four inches long, arranged upon a horizontal plane and held in position upon a light field carriage by an iron frame. Upon this frame, in the rear of the barrels, is fitted a sliding bar worked by two levers, (one at each side,) by which the cartridges are forced to the rear of the chambers. By a lever under the frame the barrels may be diverged so as to scatter the balls one hundred and twenty yards in a distance of one thousand. The weight of the battery, complete, is thirteen hundred and eighty-two pounds.

When served by three men, the battery is readily fired seven volleys, or one hundred and seventy-five shots, per minute. It did not foul. Nine degrees elevation gave a range of twelve hundred yards, at which distance, the barrels being diverged, the shot scattered into an effective line. Thirteen hundred yards is probably its effective range, although two thousand yards is claimed for it. The axis of the barrels is thirty inches above the plane on which the piece stands.

During the siege, four emplacements were constructed for the "Requa rifle batteries" in the first parallel, five in the second, two in the third, five in the fourth, two in the fifth, and one in advance of it, in all, nineteen positions built successively as the approaches advanced; all these positions were occupied for a longer or shorter time by these batteries. They were located on the flanks or in the salient angles of the works. About one-third were in embrasure. The platforms used were of boards eight feet square, well nailed to five

sills of same material. They were moved forward with the pieces. These batteries constituted, up to the 23d of August, the only artillery in advance of the second parallel; at that date three cohorn mortars were moved forward into the fourth parallel.

On several occasions these batteries were used against the enemy's sharpshooters and working parties, apparently with good effect. On the evening of August 25th the two batteries in the fourth parallel took an active part in a brisk skirmish. Three infantrymen, who were not thoroughly drilled, served each piece. They were fired rapidly, and apparently with good effect.

Being breech-loading, and easily handled, scarcely any exposure above the parapet was required on the part of the gunners. But one piece was disabled during the siege, and it was quickly repaired.

Although the defensive properties of the Requa rifle battery were not severely tested in the small amount of service above recorded, I feel quite satisfied that it is adapted to the defence of earthworks, particularly in a flat country like this, where the horizontal line of dispersion afforded by the fire of this piece is more effective than the cone of dispersion of the howitzer. It should be noted that the angle of dispersion can be varied to suit the case in this battery, which is not true of the howitzer. These properties, together with its small recoil, and its loading at the breech, and lightness, are the qualities most desirable in a gun for boat service.⁷²

In 1864, the gate at the wooden stockade prison for 600 Confederate officers located on Morris Island was guarded by two Requa batteries. Presumably, these were left over from the 1863 operations on the island. One source states that the thirty Requa batteries made at the Troy factory were mounted on a ship that took part in the Charleston campaign. Later, that they were used in the battles of Peterboro and Cold harbor.⁷³

Another source states that Battery "C," 3rd Regiment, Rhode Island Heavy Artillery, which served in the Morris Island campaign, had two Requa Batteries in 1864.⁷⁴

The Kentucky Militia Order – 1864: An "Immediate Decision"

In the summer of 1864, the Kentucky

quartermaster general, S.G. Suddarth, ordered two Requa batteries (complete with carriages and ammunition) for the Kentucky state militia. Guy R. Pelton, the attorney for the Billinghamurst & Requa Company, unsure of Kentucky's status in the Union, requested permission from the War Department before shipping the guns. The secretary of war referred the matter to Brigadier General Ramsey, Chief of Ordnance, for his opinion. On 9 July 1864, Ramsey replied: "These batteries are not such as would be used for the service of the United States; and I am not aware of the regulations, if there be any, which prevent arms from being sent to Kentucky."⁷⁵

On 21 July, after he had failed to hear from the government, Pelton again wrote to the War Department pleading for an "immediate decision" on the Kentucky order. He stated that it was not only "a matter of interest" to the Kentuckians but of "great importance" to the company he represented. Obviously, the company needed the business. Finally on 25 July, Charles A. Dana, the assistant secretary of war, notified Pelton: "The Secretary of War instructs me to inform you that the Treasury Department has been requested to remove the prohibition upon the trade in arms and munitions of war in Kentucky, so far as relates to articles of that description contracted for by the State government." Therefore, on 29 September 1864, General Suddarth was able to complete his requisition and, on 4 October, the state paid \$2615 for the two guns and 5,000 cartridges.⁷⁶

Reportedly, when General John Hunt Morgan was rumored to be preparing for a raid on Frankfort, Kentucky, in 1864, one or both of the guns were hauled out of the state arsenal and placed at the north end of the St. Clair Street Bridge where the Confederates were expected to enter the city. Manned by the Frankfort Home Guards, the fire of the "Street Sweepers" aimed at the height of a horse's chest would have clogged the bridge with dead horses and effectively blocked it until the bodies were removed. However, since Morgan's attack



Fig. 32. MG Benjamin F. Butler

on Frankfort occurred on 10-11 June 1864 or four months before the Requas were ordered, it seems unlikely that they could have been used in the battle.⁷⁷

Currently, a Requa Battery is in the collections of the Kentucky Military History Museum, Frankfort, Kentucky. The museum's gun was made by Parmenter & Bramwell of Troy, New York, and is missing one of its barrels, which reportedly was used as a substitute poker in the adjutant general's office for over a century. It is presumed to be one of General Suddarth's guns. The whereabouts of the second gun is unknown.⁷⁸

General Butler's Two Guns – 1864: The "Petersburg Campaign"

On 14 July 1864, Major General John A. Dix, the commander of the Department of the East, from his headquarters in New York City, ordered two Billinghamst & Requa batteries, 9,800 cartridges, and 550 loader-clips for Major General Benjamin F. Butler, the commander of the Army of the James, who was engaged in the Petersburg campaign. They were delivered on 24 July 1864 at a cost of \$2532.00. Reported-

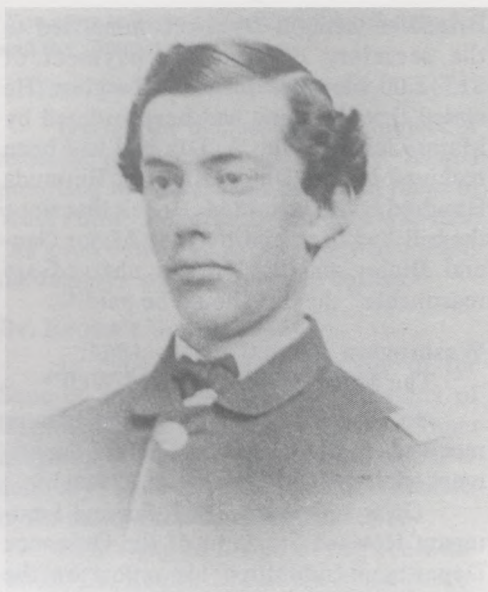


Fig. 33. 2nd Lt Howard Stockton

ly, the gun's were successfully operated by a detachment of the 16th Regiment, New York Heavy Artillery. Sommers (1981) referred to their service with the New York regiment as undocumented. Reportedly, Requas were also used at the 1864 battle of Cold Harbor.⁷⁹

The company failed to receive payment for the two guns ordered by General Butler, which amounted to \$2532.00. On 25 August 1864, General Ramsey submitted the bill, which had been approved by General Butler, to the secretary of war. According to the law (of 8 February 1815), only the senior ordnance officer, acting under the approval of the secretary of war, could purchase ordnance stores for the government. In this case, the proper legal ordnance requisition channels had simply not been used in procuring these weapons; therefore, the bill was not paid. This incident was typical of the government red-tape the new company encountered and one of the reasons it developed financial problems.⁸⁰

By May 1865, the company had still not received payment for Butler's two guns. Finally, on 21 December 1866,

Brigadier General Dyer recommended to the secretary of war that payment of \$2532.00 be made for Butler's guns. He stated that the guns had been ordered by Major General John A. Dix and had been received by the Union Army at Bermuda Hundred on 24 July 1864. He felt that since the bill had been approved by Major General Butler and the "prices charged are reasonable" the bill should be paid.⁸¹

Washington Arsenal Trial – 1864: The Mechanism "Worked Well"

In August 1864, the Requa battery received its final official ordnance department trials at the Washington Arsenal.

On 8 September 1864, Second Lieutenant Howard Stockton of the Ordnance Department submitted his report on the Billinghamurst & Requa Rifle Battery to his commanding officer at the Washington Arsenal, Major James G. Benton. For the test for accuracy, at an elevation of 3 degrees, 12 rounds (300 cartridges) were fired at a 7 by 12 foot target at a distance of 640 yards. Only twenty-six shots struck the target. Ten more rounds were fired at various elevations over water to test "the equality of ranges of the different barrels, the effect of diverging them, etc." The results showed that the shots struck "very uniformly and, with diverged barrels, at reasonably regular intervals." In testing the rapidity of fire, one man was able to load and fire at a rate of four rounds per minute "without exertion." None of the cartridges failed to fire during the entire trial. The gun mechanism "worked well," was "simple and not likely to get out of order." At the trial's conclusion, the gun's barrels were only "very little fouled."⁸²

Despite the simplicity of its design and its reliability, further trials were not scheduled by the army. However, in his 1866 report, the chief of ordnance listed five Requa guns purchased for \$5482.72.⁸³

Meanwhile, Dr. Requa had resumed his dental practice at his office at the corner of Buffalo and Exchange streets over the Traders' Bank. On 3 August 1864, he ad-

vertised in the *Union & Advertiser* that "Artificial Teeth" were inserted but that "Particular attention paid to the preservation of the Natural teeth."⁸⁴

Dr. Requa's Civil War Service – 1864: The "Old Light Guard"

In 1864, following the completion of his battery's ordnance trials, Dr. Requa served with Company "C," "Old Light Guard," 5th Regiment (54th New York National Guard), which guarded Confederate prisoners at Elmira, New York. The regiment was mustered into service for only 100 days (from 20 August to 10 November 1864); therefore, Dr. Requa modestly never claimed to be a Civil War veteran. Earlier, he had been exempted from the draft because he was the "only son of an aged & infirm parent." Later, Dr. Requa was the president of the regiment.⁸⁵

On 20 August 1864, at age thirty-one, Dr. Requa was enrolled and mustered in as a private in Company "C," 54th Regiment, New York National Guard, at Rochester for 100 days service. Dr. Requa's company was assigned to guard duty at Camp Chemung, Elmira Prison No. 3. Prior to its conversion to a prison camp in early 1864, the thirty-five wooden buildings of Barracks No. 3 had served as a training depot for Union troops on their way to Dixie. On 26 August, Requa wrote home that he was "quite comfortably situated" as his company had all of their tents "boarded two feet high and a floor in." At that time, there were ten to eleven thousand Confederate prisoners in the "Bull Pen." Dr. Requa frequently pulled guard duty, reporting in September that the "nights are getting quite cold;" therefore, he requested that his "thick" gloves and boots be sent to him. Normally, the guards patrolled "outside the fence" two hours on and four off the twenty-four hour period. On one occasion, he borrowed a rubber blanket and took a nap on it. His other duties he recalled included cleaning up his rifle and uniform brass for the company drills.⁸⁶

In September 1864, Requa's com-

pany moved into new tents when the 16th Veteran Reserve Corps was transferred to Harrisburg, Pennsylvania. On 16 October, Requa wrote his wife that he had been "called out" at 11 p.m. and in "line of battle" in less than ten minutes, but it was a false alarm. He was promoted to quartermaster sergeant on 4 October 1864, being in his own words the "Boss Carpenter," building a new quartermaster store house. On 24 October, he closed his letter to his wife with "Monday night 9 o'clock and all is well." On 10 November 1864, he was mustered out, overdrawn \$7.96 on his clothing allowance.⁸⁷

After the war, the Light Guards formed a veterans organization. At the time of his death, Dr. Requa was the group's president. He also participated in the activities of organized dentistry. Although not one of the organizers of the Dental Society of the State of New York in 1868, Dr. Requa was the society's first permanent member from the Seventh District. He was elected at the 30 June 1868 meeting of that organization held in Albany.⁸⁸

The Pan American Exposition — 1901: "Yes, I Made It"

During the 1901 Pan American Exposition held at Buffalo, New York, the Requa Battery in the West Point Museum collection was exhibited. One day while Dr. Requa was visiting the fair, he stopped to look at his invention. As he was standing there, the young curator in charge of the exhibit began to explain its mechanism. The following conversation took place:

'How about this,' asked the doctor and he pointed to a certain part of the gun.

'You have me, sir,' the young man replied.

'I can see,' said the doctor, 'how you fire the middle cartridge, but how do you touch off the others.'

The young man could not answer.

The doctor suggested that the flame from the first middle cartridge passed through the hollow bar and exploded the others.

'You seem to know a good deal about the gun,' said the young man.

'Yes, I made it,' replied the doctor.

During the discussion, the subject of missing parts came up and Dr. Requa promised to make them and send them to West Point. Reportedly, the gun was then "as good condition as the day when it left the factory," over forty years earlier.⁸⁹

Dr. Requa's Death: 1910

In 1906, the Dental Society of the State of New York and the University of Buffalo, Dental Department, held a dinner honoring Dr. Requa for his long career in dentistry. He was one of the oldest dentists in the state when he retired in 1908.

Following an illness of two years duration, Dr. Requa died at his home in Rochester at 12:35 a.m., on 21 November 1910, at age seventy-eight. A private funeral was held the next day. He was survived by his wife, Anna Requa, a son, Dr. LeRoy Requa, and a sister, Sarah Morgan.⁹⁰

Conclusion

In retrospect, Dr. Requa has to be regarded as one of the early pioneers in the ordnance field and, in particular, that of multi-firing weaponry.

Despite its simplicity of design, unique clip-loading, quick-locking and un-locking mechanism, and reliability, the Requa gun apparently had a problem being accepted in the field. Some authors have stated that the unprotected spark train rendered firing impossible in damp or rainy weather. Others, mention its lack of accuracy and need for protective cover, consequently, it was used primarily as a defensive weapon. However, none of the contemporary Civil War ordnance trials emphasize these faults. As a matter of fact, the gun was recommended as a "gun for boat service" and saw action in the assault at Battery Wagner in the "Surf Battery" on Morris Island.

Another possibility was the ordnance department's reluctance to accept a new

weapon, one which fit somewhere in between the standard musket and an artillery piece: the role of the rapid-fire gun in warfare had not yet been defined.⁹¹

At least four Requa Batteries are known to have survived the Civil War. Among the surviving guns are those in the collections of the U.S. Military Academy

Museum, West Point, New York (currently on loan to the Smithsonian Institution, Washington, D.C.); the Kentucky Military History Museum, Frankfort, Kentucky; the Marine Corps Historical Center, Washington Naval Yard, Washington, D.C.; and the Springfield Armory National Historic Site, Springfield, Massachusetts.⁹²

NOTES

1. John Ellis, *The Social History of the Machine Gun* (Baltimore: Johns Hopkins University Press, 1986), pp. 10, 21; Paul Wahl, and Donald Toppel, *The Gatling Gun* (NY: Arco Publishing Co., Inc., 1965), pp. 10, 11, 12.
2. "Obituary. Dr. Josephus Requa," *Dental Cosmos* 53 (January 1911), p. 125; "Dr. Josephus Requa, Inventor and Dentist, Dies After Long Illness," *Daily Union & Advertiser* (Rochester, NY), 22 November 1910; Sue Allen, "Dr. Requa's Gun," *Civil War Times Illustrated* 27 (February 1989), p. 30; H.J. Swinney, Associate Curator, History, Rochester Museum & Science Center, Rochester, NY, letter [information on Josephus Requa] to authors, 21 November 1994. William Billingham (1807-80) of Monroe County, NY, was a well-known rifle maker who established his shop prior to 1843 at 9 Stillson Street in Rochester, NY.
3. "Obituary. Dr. Josephus Requa," *loc. cit.*; George M. Chinn, *The Machine Gun*, vol. 1 (Washington: Government Printing Office, 1951), pp. 35-36; G[raham] S. Hutchison, *Machine Guns* (London, UK: Macmillan & Co., Ltd., 1938), p. 7; Aiken Simons, "A Chronicle of Ordnance II, The Story of Barbed Wire and Machine Guns," *Army Ordnance* 15 (November-December 1934), p. 149; Melvin M. Johnson, Jr., and Charles T. Haven, *Automatic Arms* (NY: William Morrow & Co., 1941), p. 11; Record Group 156, Entry 201, Office of the Chief of Ordnance, Reports of Experiments, 1826-71, vol. 5, Edwin D. Morgan to Edwin M. Stanton, Secretary of War, letter, 16 June 1863, no. 56, pamphlet [Billingham & Requa, *Reports upon the Billingham & Requa Rifle Battery* (NY, NY: George F. Nesbitt & Co., 1863), p. 1 (Colonel Richard Delafield to George Opdyke, letter, 28 July 1862)], no. 53, National Archives (hereafter cited as RG_, E_, OCO, RE, NA).
4. Chinn, *loc. cit.*, p. 36; Calvin Goddard, "The Machine Gun — Its Early Applications, Part IV," *Army Ordnance* 22 (March-April 1942), p. 767; Berkeley R. Lewis, *Small Arms and Ammunition in the United States Service, 1776-1865*, reprint, 1960 (Washington: DC, Smithsonian Institution, 1956), pp. 125, 227, 229; Jack Coggins, *Arms and Equipment Of The Civil War* (Garden City, NY: Doubleday & Co., Inc., 1962), p. 44; David A. Armstrong, "The Endless Experiment: The United States Army And The Machine Gun, 1861-1916," (Ph.D. diss., Duke University, 1975) pp. 57-58; Edward S. Farrow, *Farrow's Military Encyclopedia*, vol. 1 (NY: Edward S. Farrow, 1885), p. 158; U.S. Patent Office, "Improvement in Platoon-Batteries," patent no. 36,448, 16 September 1862, p. 1; RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billingham & Requa, *op. cit.*, pp. 6, 7 (Lieutenant W. Mitchell to Captain J.A. Dahlgren, report, 21 January 1863)], no. 53, Second Lieutenant Howard Stockton, Ordnance Department, to Major James G. Benton, Commander, Washington Arsenal, report [on Billingham & Requa Rifle Battery], 8 September 1864, no. 64, NA.
5. Chinn, *loc. cit.*
6. "A Rifle Battery," *Daily Union & Advertiser* (Rochester, NY), 29 June 1861.
7. "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; "The Rifle Battery," *Daily Union & Advertiser* (Rochester, NY), 16 December 1861; "Captain A.G. Mack: Sudden Death of the Well Known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897; Allen, *op. cit.*, pp. 29-30.
8. "A Deadly Instrument," *Daily Union & Advertiser* (Rochester, NY), 12 July 1861; "The Rifle Battery," *Daily Union & Advertiser* (Rochester, NY), 16 December 1861; "Captain A.G. Mack: Sudden Death of the Well Known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; Allen, *loc. cit.*
9. W.H.B. Smith, and Joseph E. Smith, *Small Arms Of The World*, 7th ed., rev. (Harrisburg, PA: The Stackpole Co., 1962), p. 105; William B. Edwards, *Civil War Guns* (Secaucus, NJ: Castle, 1982) p. 228; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; Robert W. Fisch, Curator of Arms, West Point Museum, U.S. Military Academy, West Point, NY, letter (information from provenance file) to authors, 20 October 1994.
10. "The Rifle Battery," *Daily Union & Advertiser* (Rochester, NY), 16 December 1861.
11. *Ibid.*
12. Josephus Requa to Mary Groat, letter, 23 April 1862, Lincoln card, 1 May 1862, Josephus Requa Papers [in custody of Margaret Requa DeFrancisco] (hereafter cited as JRP); "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; "Lincoln Note Helped Requa Sell U.S. Gun: Rochester Dentist Pushed Device

- Made Here," *Daily Union & Advertiser* (Rochester, NY), 22 November 1910; Allen, *op. cit.*, pp. 30-31; Ezra J. Warner, *Generals In Blue*, (Baton Rouge: Louisiana State University Press, 1964), pp. 404, 405.
13. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 5 (Lieutenant W. Mitchell to Captain John A.B. Dahlgren, report, 13 May 1862)], no. 53, NA; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; Lieutenant Mitchell was not located in the U.S. Navy Register [the authors].
 14. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 4 (Lieutenant Foxhall A. Parker to Captain A.A. Harwood, Chief of Bureau of Ordnance, letter, 15 May 1862)], no. 53, NA.
 15. Josephus Requa to Mary Groat, letter, 25 May 1862, JRP.
 16. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, pp. 8-9 (Lieutenant Colonel Henry H. Hall to Lieutenant Henry R. Dalton, Assistant Adjutant-General, Headquarters, Military Defenses Southwest of Washington, report, 28 May 1862)], no. 53, NA.
 17. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 9 (Brigadier General A.W. Whipple, endorsement to Lieutenant Colonel H.H. Hall's report, 31 May 1862)], no. 53, NA.
 18. David Smith to Billinghurst & Requa, letter, 11 February 1863, JRP; Francis A. Lord, "175 Shots Per Minute — 'Requa Rifle Battery,'" *Civil War Times Illustrated* 1 (June 1962), p. 29; Idem, *Civil War Collector's Encyclopedia*, vol. 2 (West Columbia, SC: Lord Americana & Research, Inc., 1975), p. 105; "The Rochester Rifle Battery," *Daily Union & Advertiser* (Rochester, NY), 13 August 1862; Allen, *op. cit.*, pp. 31-32.
 19. Allen, *loc. cit.*, p. 32; "[Title?]," *Daily Union & Advertiser*, (Rochester, NY), 13 August 1862; Harvey J. Burkart, "Centennial History of Dentistry in Rochester," in Edward R. Foreman, comp., ed., *Centennial History of Rochester, New York*, vol. 4 (Rochester, NY: Rochester Public Library, 1934), p. 284; "The First Rapid Fire Gun," *Rochester Herald*, (Rochester, NY), 11 December 1904; Kentucky Military History Museum, accession form (32-62), Billinghurst & Requa Battery, Kentucky Historical Society (hereafter cited as KHS); "The Orleans Battery," *Daily Union & Advertiser* (Rochester, NY), 27 August 1862.
 20. U.S. Patent Office, "Improvement in Platoon-Batteries," patent no. 36,448, 16 September 1862; Donald H. Mc Ternan, curator, Springfield Armory National Historic Site, Springfield, MA, letter (information from provenance file) to authors, 20 December 1994.
 21. Frederick H. Dyer, comp., *A Compendium of the War of the Rebellion*, vol. 2 (Dayton, OH: The National Historical Society & Press of the Morningside Bookshop, 1979), p. 1400; "Captain A.G. Mack: Sudden Death of the Well Known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897; RG 94, Adjutant General's Office, Compiled Military Service Record (hereafter cited as AGO, CMSR), Albert G. Mack, 18 Battery N.Y. Art'y, NA; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; Allen, *loc. cit.*, p. 32.
 22. Advertisement ["Rochester Rifle Battery"], *Daily Union & Advertiser* (Rochester, NY), 13, 29 August 1862; Advertisement ["Rochester Rifle Battery"], *Daily Democrat* (Rochester, NY), 13, 14, 29 August, 1, 6 September 1862; RG 94, AGO, CMSR, Albert G. Mack, 18 Battery N.Y. Art'y, NA; Bibliographic File [18th Independent Battery, New York Light Artillery], Reference Branch, U.S. Army Military History Institute (hereafter cited as USMHI); Dyer, *loc. cit.*; "Captain A. G. Mack: Sudden Death of the Well Known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897; Frederick Phisterer, comp., *New York in the War of the Rebellion 1861 to 1865*, vol. 2, 3d ed. (Albany, NY: J.B. Lyon Co., 1912), pp. 1602, 1603; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904.
 23. Advertisement ["Another Billinghurst & Requa Rifle Battery"], *Daily Union & Advertiser*, (Rochester, NY), 5 September 1862; Phisterer, *op. cit.* pp. 1616, 1617. The 26th Independent Battery left New York on 4 December 1862 with the Banks' Expedition to the Department of the Gulf. The battery was wrecked twice and was enroute fifty-one days before reaching New Orleans on 24 January 1863. It was mustered into federal service on 25 February 1863 and was attached to the Defences of New Orleans, Department of the Gulf, until June 1863. [Phisterer, *loc. cit.*, p. 1616.]
 24. Advertisement ["Another Billinghurst & Requa Rifle Battery"], *Daily Union & Advertiser* (Rochester, NY), 5 September 1862; Advertisement ["Another Billinghurst & Requa Rifle Battery"], *Daily Democrat* (Rochester, NY), 6 September 1862.
 25. City of Rochester *Proceedings of Common Council* [special meeting], 17 November 1862.
 26. "The Rifle Batteries," *Daily Union & Advertiser* (Rochester, NY), 19 November 1862. General Banks was the commanding officer of the 19th Corps, Department of the Gulf (from 16 December 1862-20 August 1863. [Stewart Sifakis, *Who Was Who in the Civil War* (NY: Facts on File Publications, 1988), pp. 30-31.]
 27. "The Rifle Batteries," *Daily Union & Advertiser* (Rochester, NY), 19 November 1862.
 28. RG 94, AGO, CMSR, Albert G. Mack, 18 Battery N.Y. Art'y, NA; Bibliographic File [18th Independent Battery, NY Light Artillery], Reference Branch, USMHI; Dyer, *loc. cit.*; "Captain A. G. Mack: Sudden Death of the Well Known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897; Phisterer, *loc. cit.*; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904; James Requa to Josephus Requa, letter, 19 January 1863, JRP.
 29. "Another Rifle Battery," *Daily Union & Advertiser*

- tiser (Rochester, NY), 19 November 1862. The 25th Independent Battery was mustered in on 12 December 1862 and embarked for New Orleans, Louisiana, on 18 December. While enroute on the transport *Sparkling Sea*, the battery was wrecked on 9 January 1863 and arrived in New Orleans on 4 February. It was attached to the Defences of New Orleans, Department of the Gulf, until June 1863. [Dyer, *op. cit.*, p. 1401.]
30. Edwards, *Civil War Guns*, *op. cit.*, p. 229. The primary source for this note was not located [the authors].
 31. "From Mack's Black Horse Battery," *Daily Union & Advertiser* (Rochester, NY), 18 February 1863; "Friend Butts," *Daily Union & Advertiser* (Rochester, NY), 7 March 1863; James Requa to Josephus Requa, letter, 19 January 1863, JRP.
 32. "Messrs. Editors," *Daily Union & Advertiser* (Rochester, NY), 7 March 1863.
 33. "Song of the Black Horse Battery," *Daily Union & Advertiser* (Rochester, NY), 7 March 1863.
 34. RG 94, AGO, CMSR, Captain A.G. Mack to Second Lieutenant E.R. Craft, letter, 20 October 1863, NA; "Captain A.G. Mack: Sudden Death of the Well known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904.
 35. RG 393, E 1837, U.S. Army Continental Commands, 1821-1920, Papers of Capt. Francis J. Shunk, Chief of Ordnance, 1863-65, Department of the Gulf and Louisiana, requisition for ordnance stores, 8 March 1864, Box 2, NA; Dyer, *loc. cit.*; "Captain A. G. Mack: Sudden Death of the Well Known Veteran Last Evening," *Daily Union & Advertiser* (Rochester, NY), 22 July 1897.
 36. RG 156, Microcopy 1281 (hereafter cited as MC), OCO, Summary Statements of Quarterly Returns of Ordnance and Ordnance Stores on Hand in Regular and Volunteer Army Organizations, 1862-1867, 1870-1876, roll 1 (Artillery, vols. 1-5), NA; "The First Rapid Fire Gun," *Rochester Herald*, 11 December 1904; "Lincoln Note Helped Requa Sell U.S. Gun: Rochester Dentist Pushed Device Made Here," *Daily Union & Advertiser* (Rochester, NY), 22 November 1910; James Requa to Josephus Requa, letter, 19 January 1863, JRP; U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*, ser. 1, vol. 26, part 1 (Washington, DC: Government Printing Office, 1889) [special orders no. 9, Hdqrs. 19th Army Corps, Baton Rouge, LA, 28 August 1863; Office Chief of Artillery, New Orleans, LA, document, 8 September 1863], pp. 698, 721 (hereafter cited as OR).
 37. Lawrence Van Alstyne, *Diary of an Enlisted Man* (New Haven, CT: Tuttle, Morehouse & Taylor Co., 1910), p. 122; Phisterer, *op. cit.*, p. 1602.
 38. Edward Cunningham, *The Port Hudson Campaign 1862-1863*, 1994 ed. (Baton Rouge: Louisiana State University Press, 1963), p. 157; Francis A. Lord, *Civil War Collector's Encyclopedia*, (Secaucus, NJ: Castle Books, 1963), p. 30.
 39. RG 156, E 5, OCO, Letters, Endorsements, and Reports Sent to the Secretary of War, 1812-89 (hereafter cited as LERSW), vol. 14, Brigadier General Ripley, Chief of Ordnance, endorsement on letter of M.B. Hartley, 27 January 1863, p. 78, NA; "From Mack's Black Horse Battery," *Daily Union & Advertiser* (Rochester, NY), 18 February 1863.
 40. RG 156, E 5, OCO, LERSW, vol. 14, Brigadier General George D. Ramsey, Chief of Ordnance to Edwin M. Stanton, Secretary of War, letter, 11 January 1864, p. 455, NA.
 41. RG 156, E 5, OCO, LERSW, vol. 14, Brigadier General George D. Ramsey to Secretary of War Stanton, letter, 23 February 1864, p. 512, NA.
 42. RG 156, E 5, OCO, LERSW, vol. 15, Brigadier General Alexander B. Dyer, Chief of Ordnance, endorsement on letter of David Smith, 15 September 1864, p. 174, NA. Lieutenant Francis J. Shunk was promoted to captain on 3 March 1863. [U.S. War Department, *Official Army Register for 1865* (Washington, D.C.: Adjutant General's Office, 1865), p. 15.]
 43. Josephus Requa to Mary Groat, letter, 14 January 1863, JRP.
 44. Josephus Requa to James Requa (father), letter, 15 January 1863, JRP.
 45. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 9 (Major General S.P. Heintzelman to E.M. Stanton, Secretary of War, letter, Lieutenant Colonel B.L. Alexander, endorsement, 22 January 1863)], no. 53, NA.
 46. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 7 (Lieutenant W. Mitchell to Captain J.A. Dahlgren, report, 21 January 1863)], no. 53, NA.
 47. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 6 (Lieutenant W. Mitchell to Captain J.A. Dahlgren, report, 21 January 1863)], no. 53, NA.
 48. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, p. 11 (Captain J.A. Dahlgren to Major W.M.B. Hartley, letter, 28 January 1863)], no. 53, David Smith to Edwin M. Stanton, Secretary of War, letter, 16 June 1863, no. 56, NA.
 49. RG 156, E 201, OCO, RE, vol. 5, pamphlet [Billinghurst & Requa, *op. cit.*, pp. 10-11 (Brigadier General William F. Barry, Inspector of Artillery, to Major W.M.B. Hartley, report, 22 January 1863)], no. 53, NA.
 50. Armstrong, *op. cit.*, pp. 59, 60.
 51. James Requa (father) to Josephus Requa, letter, 19 January 1863, JRP.
 52. RG 156, E 201, OCO, RE, vol. 5, David Smith to Edwin M. Stanton, letter, 16 June 1863, no. 56, NA.
 53. David Smith to Billinghurst & Requa, letter, 11 February 1863, JRP.
 54. Edwards, *loc. cit.* The primary source for this note was not located [the authors].
 55. RG 156, E 5, OCO, LERSW, vol. 14, Brigadier General Ripley, Chief of Ordnance, endorsements on letter of David Smith, 11, 21 July 1863, pp. 271,

- 280, NA.
56. RG 156, E 201, OCO, RE, vol. 5, David Smith to Edwin M. Stanton, letter, 16 June 1863, no. 56, NA; Warner, *op. cit.*, pp. 176-77; U.S. Department of the Interior, *Fort Sumter: Anvil of War* (Washington, D.C.: National Park Service, 1984), pp. 33, 40; Idem, *Battery Wagner* (Washington, D.C.: National Park Service, n.d.), 1 lv. Clark (1889) reported that Gillmore used six Requa batteries in the operations on Morris Island. [Charles M. Clark, *The History of the Thirty-Ninth Regiment Illinois Volunteer Veteran Infantry*. (Chicago: Veterans Association of the 39th Regiment, 1889), p. 363.] The *Rochester Herald* (1904) states: "The other thirty were given to General Gillmore who placed them on warships for use in attacking Charleston. The defense of Charleston were [sic] so strong that General Gillmore could not approach near enough to use the guns. They were then landed and afterwards used with good effect in the battles of Peterboro and Cold Harbor." ["The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904.]
 57. Quincy] A. Gillmore, *Engineer and Artillery Operations against the Defenses of Charleston Harbor In 1863*, (NY, NY: D. Van Nostrand, 1865), pp. 42-43, 44; U.S. War Department, OR, 1st ser., vol. 28, part 1 (Washington, DC: Government Printing Office, 1890), pp. 6, 13, 14. Battery Wagner was named in honor of Lieutenant Colonel Thomas M. Wagner, 1st South Carolina Artillery, who was killed on 17 July 1862 in a gun explosion at Fort Moultrie, South Carolina. Morris Island was about 3 and 3/4 miles long and its width varied between 25 to 1,000 yards depending on the tide. It was approximately 400 acres and was 5 and 3/8 miles from the city of Charleston. [Timothy Bradshaw, Jr., *Battery Wagner*, (Columbia, SC: Palmetto Historical Works, 1993), p. 7; U.S. War Department, OR, 1st ser., vol. 28, part 1, loc. cit., p. 14.]
 58. U.S. War Department, OR, 1st ser., vol. 28, part 1, op. cit., pp. 3, 5, 16; Stephen R. Wise, *Gate of Hell* (Columbia, SC: University of South Carolina Press, 1994), p. 76; U.S. Department of the Interior, *Fort Sumter, op. cit.*, p. 36; Gillmore, *op. cit.*, pp. 46, 169, 173; Clark, *op. cit.*, p. 364.
 59. Wise, *op. cit.*, pp. 102, 104, 105, 114; U.S. War Department, OR, 1st ser., vol. 28, part 1, op. cit., p. 15; U.S. Department of the Interior, *Fort Sumter, op. cit.*, pp. 36, 40.
 60. Gillmore, *op. cit.*, pp. 173, 45.
 61. Clark, *loc. cit.*, p. 364.
 62. D. Eldredge, *The Third New Hampshire: And All About It* (Boston: E.B. Stillings & Co., 1893), pp. 377-78.
 63. Simons, *op. cit.*, p. 148.
 64. Gillmore, *op. cit.*, pp. 47-48; Clark, *loc. cit.*, p. 364; Eldridge, *loc. cit.*, p. 378.
 65. Gillmore, *op. cit.*, pp. 234-35.
 66. *Ibid.*, p. 189.
 67. *Ibid.*, pp. 193, 195, 196, 202.
 68. *Ibid.*, p. 206.
 69. *Ibid.*, pp. 214-15.
 70. *Ibid.*, p. 215.
 71. *Ibid.*, pp. 217-18, 223; U.S. War Department, *The Official Atlas of the Civil War*, reprint (NY, NY: Thomas Yoseloff, 1958), plate 44, no. 4; U.S. Department of the Interior, *Fort Sumter, op. cit.*, p. 41.
 72. Gillmore, *op. cit.*, pp. 254-55.
 73. Military Order of the Loyal Legion, Photographic Collection [print caption, "Prison on Morris Island, 1864"], USMHI; "Dr Josephus Requa, Inventor and Dentist, Dies After Long Illness," *Daily Union & Advertiser* (Rochester, NY), 22 November 1910.
 74. Richard D. Stuart, "First in the Art of War," *Confederate Veteran* 35 (September 1927), p. 334; Dyer, *op. cit.*, p. 1628.
 75. RG 156, E 5, OCO, LERSW, vol. 15, Brigadier General George D. Ramsey, Chief of Ordnance, endorsement on letter of Guy R. Pelton, attorney for Billinghamst, Requa & Co., 9 July 1864, p. 94, NA.
 76. RG 107, Secretary of War, M 221, Letters Received by the Secretary of War, Main Series, 1801-1870, Guy R. Pelton to Charles A. Dana, Assistant Secretary of War, letter, 21 July 1864, C.A. Dana to G.R. Pelton, letter, 25 July 1864, roll 260 (June-September 1864), no. P-1008 (133), NA; State of Kentucky, S.G. Suddarth to A. Hitchcock, invoice (for two batteries), 4 October 1864, Kentucky Military History Museum [provenance file], KHS.
 77. Kentucky Military History Museum, accession form (32-62), Billinghamst & Requa Battery, KHS; Charles F. Hinds, "Society Has Early Gun" [newspaper, n.p.], n.d.; Kentucky Military History Museum [provenance file (A-127)], KHS; Nicky Hughes, "Fort Boone and the Civil War Defense of Frankfort," *Register of the Kentucky Historical Society* 88 (Spring 1990), p. 148; Nicky Hughes, Curator (The Old State Capitol, Kentucky Historical Society) to authors, letter [information on battle at Frankfort], 2 April 1996.
 78. Thomas W. Fugate, Curator (Kentucky Military History Museum) to authors, letter, 9 November 1994; Kentucky Military History Museum, accession form (32-62), Billinghamst & Requa Battery, KHS; Hinds, "Society Has Early Gun," [newspaper, n.p.], n.d.
 79. RG 156, E 152, OCO, Statements of Accounts for Contractors, 1817-1905, vol. 12, "Statement of Contracts, 1868-69," "The U.S. Ordnance Department in account with David Smith of New York," 14 July 1864, p. 125, NA; U.S. Congress, House, 40th Cong., 2d sess., Ex. Doc. 145, "Contracts by Ordnance Department: Letter from the Secretary of War," 4 February 1868, pp. 4, 6; Sifakis, *op. cit.*, p. 184; Bibliographic File [Billinghamst-Requa Battery Gun, M 1862], Reference Branch, USMHI; Richard J. Sommers, *Richmond Redeemed: The Siege at Petersburg* (Garden City, NY: Doubleday & Co., Inc., 1981), pp. 581, 459, 526, 460; "Obituary. Dr. Josephus Requa," *loc. cit.*; "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904.

80. RG 156, E 5, OCO, LERSW, vol. 15, Brigadier General Ramsey endorsement on letter of David Smith, 25 August 1864, p. 156, NA; Armstrong, *op. cit.*, pp. 58-59.
81. RG 156, E 5, OCO, LERSW, vol. 15, Colonel William Maynadier, Acting Chief of Ordnance, endorsement on letter of David Smith, 17 May 1865, p. 296, Brigadier General Alexander B. Dyer, Chief of Ordnance, endorsement on letter of David Smith, 21 December 1866, p. 542, NA.
82. RG 156, E 201, OCO, RE, vol. 5, Second Lieutenant Howard Stockton, Ordnance Department, to Major James G. Benton, Commander, Washington Arsenal, report [on Billingham & Requa Rifle Battery], 8 September 1864, no. 64, NA.
83. Armstrong, *op. cit.*, pp. 59, 60; *loc. cit.* The primary source for this note was not located [the authors].
84. Advertisement ["Dr. J. Requa"], *Daily Union & Advertiser* (Rochester, NY), 3 August 1864.
85. "Obituary. Dr. Josephus Requa," *loc. cit.*; RG 94, AGO, CMSR, Josephus Requa, 54 N.Y.N.G., NA; Josephus Requa to Mary Groat, letter, 24 August 1864, JRP.
86. RG 94, AGO, CMSR, Josephus Requa, 54 N.Y.N.G., NA; Josephus Requa to Mary Requa (wife), letters, 26, 28 August, 2, 8 September 1864, JRP; Thomas E. Byrne, "Elmira's Civil War Prison Camp: 1864-65," *Chemung County Historical Journal* 10 (September 1964), p. 1279.
87. Josephus Requa to Mary Requa (wife), letters, 1864 [no month], 2 September, 16, 24 October 1864, JRP; RG 94, AGO, CMSR, Josephus Requa, 54 N.Y.N.G., NA;
88. "Dr. Josephus Requa, Inventor and Dentist, Dies After Long Illness," *Daily Union & Advertiser* (Rochester, NY), 22 November 1910; Charles S. Butler to Frank L. Sibley, letter, 22 January 1906, JRP.
89. "The First Rapid Fire Gun," *Rochester Herald* (Rochester, NY), 11 December 1904.
90. "Obituary. Dr. Josephus Requa," *loc. cit.*; "Dr. Josephus Requa, Inventor and Dentist, Dies After Long Illness," *Daily Union & Advertiser* (Rochester, NY), 22 November 1910.
91. Chinn, *loc. cit.*; "Obituary. Dr. Josephus Requa," *loc. cit.*; Gillmore, *op. cit.*, pp. 235, 255.
92. Edwards, *loc. cit.*, p. 229. See also Personal Communications in Bibliography from those institutions whose collections contain a Requa Battery.

BIBLIOGRAPHY

- Allen, Sue. "Dr. Requa's Gun." *Civil War Times Illustrated* 27 (February 1989), pp. 28-33.
- Armstrong, David A. *The Endless Experiment: The United States Army And The Machine Gun, 1861-1916*. Ph.D. diss., Duke University, 1975 [Ann Arbor, MI: University Microfilms International, authorized facsimile, 1976].
- Billingham, [William], and [Josephus] Requa. *Reports upon the Billingham & Requa Rifle Battery*. New York: George F. Nesbitt & Co., 1863.
- Bradshaw, Timothy, Jr. *Battery Wagner: The Siege, the Men Who Fought and the Casualties*. Columbia, SC: Palmetto Historical Works, 1993.
- Burkhart, Harvey J. "Centennial History of Dentistry in Rochester," in Edward R. Foreman, comp., ed., *Centennial History of Rochester, New York*. vol. 4. Rochester, NY: Rochester Public Library, 1934.
- Byrne, Thomas E. "Elmira's Civil War Prison Camp: 1864-65." *Chemung County Historical Journal* 10 (September 1964), pp. 1279-1300.
- Chinn, George M. *The Machine Gun: History, Evolution, and Development of Manual, Automatic, and Airborne Repeating Weapons*. 4 Vols. Washington: Government Printing Office, 1951-55.
- Clark, Charles M. *The History of the Thirty-Ninth Regiment Illinois Volunteer Veteran Infantry*. (Yates Phalanx.) In *The War Of The Rebellion. 1861-1865* Chicago: Veterans Association of the 39th Regiment, 1889.
- Coggins, Jack. *Arms And Equipment Of The Civil War*. Garden City, NY: Doubleday & Co., Inc., 1962.
- Cunningham, Edward. *The Port Hudson Campaign 1862-1863*. 1994 ed. Baton Rouge: Louisiana State University Press, 1963.
- Dyer, Frederick H., comp. *A Compendium of the War of the Rebellion*. 2 Vols. Dayton, OH: The National Historical Society & Press of the Morningside Bookshop, 1979.
- Edwards, William B. *Civil War Guns, The complete story of Federal and Confederate small arms: design, manufacture, identification, procurement, issue, employment, effectiveness, and postwar disposal*. Secaucus, NJ: Castle, 1982.
- Eldredge, D. *The Third New Hampshire: And All About It*. Boston: E.B. Stillings & Co., 1893.
- Ellis, John. *The Social History of the Machine Gun*. Baltimore: Johns Hopkins University Press, 1986.
- Farrow, Edward S. *Farrow's Military Encyclopedia: A Dictionary Of Military Knowledge*. 3 Vols. NY: Edward S. Farrow, 1885.
- Gillmore, Q[ui]ncy A. *Engineer and Artillery Operations against the Defenses Of Charleston Harbor In 1863; Comprising the Descent Upon Morris Island, the Demolition of Fort Sumter, the Reduction of Forts Wagner and Gregg with*

- Observations on Heavy Ordnance, Fortifications, etc.* NY: D. Van Nostrand, 1865.
- Goddard, Calvin. "The Machine Gun — Its Early Applications, Part IV." *Army Ordnance* 22 (March-April 1942), pp. 767-68.
- Hughes, Nicky. "Fort Boone and the Civil War Defense of Frankfort." *Register of the Kentucky Historical Society* 88 (Spring 1990), pp. 148-62.
- Hutchison, G[raham] S. *Machine Guns: Their History and Tactical Employment (Being also a History of the Machine Gun Corps, 1916-1922)*. London, UK: Macmillan & Co., Ltd., 1938.
- Johnson, Melvin M. Jr., and Charles T. Haven. *Automatic Arms: Their History, Development and Use*. NY: William Morrow & Co., 1941.
- Lewis, Berkeley R. *Small Arms and Ammunition in the United States Service, 1776-1865*. Reprint, 1960. Washington: DC, Smithsonian Institution, 1956.
- Lord, Francis A. "175 Shots Per Minute — 'Requa Rifle Battery.'" *Civil War Times Illustrated* 1 (June 1962), pp. 29-30.
- . *Civil War Collector's Encyclopedia: Arms, Uniforms, and Equipment of the Union and Confederacy*. Secaucus, NJ: Castle Books, 1963.
- . *Civil War Collector's Encyclopedia: Military Material, Both American and Foreign, Used by the Union and Confederacy*. vol. 2. West Columbia, SC: Lord Americana & Research, Inc., 1975.
- National Archives. Record Group 94: Adjutant General's Office, entry 519; Record Group 107: Office of the Secretary of War, microcopy 221; Record Group 156: Office of the Chief of Ordnance, entries 5, 152, 201, microcopy 1281; Record Group 393: Continental Commands, 1821-1920, entry 1837.
- "Obituary. Dr. Josephus Requa." *Dental Cosmos* 53 (January 1911), p. 125.
- Phisterer, Frederick, comp. *New York in the War of the Rebellion 1861 to 1865*. 5 Vols., 3d ed. Albany, NY: J.B. Lyon Co., 1912.
- Requa Papers, Josephus. [Margaret Requa De-Francisco, Fairport, NY].
- Rochester, (NY). *Daily Democrat*, 13, 14, 29 August, 1, 6, 7, 8, 9, 12 September 1862.
- Rochester, (NY). *Daily Union & Advertiser*, 29 June, 12 July, 16 December 1861; 13, 14, 27, 29 August, 5, 6, 16, 19 September, 19, 21 November 1862; 18 February, 6, 7 March 1863; 2, 3 August 1864; 22 July 1897; 22 November 1910.
- Rochester, (NY). *Rochester Herald* 11 December 1904.
- Sifakis, Stewart. *Who Was Who in the Civil War*. New York: Facts On File Publications, 1988.
- Simons, Aiken. "A Chronicle of Ordnance II, The Story of Barbed Wire and Machine Guns." *Army Ordnance* 15 (November-December 1934), pp. 147-51.
- Smith, W.H.B., and Joseph E. Smith. *Small Arms Of The World: The Basic Manual Of Military Small Arms*, 7th ed., rev. Harrisburg, PA: The Stackpole Co., 1962.
- Sommers, Richard J. *Richmond Redeemed: The Siege at Petersburg*. Garden City, NY: Doubleday & Co., Inc., 1981.
- Steuart, Richard D. "First in the Art of War." *Confederate Veteran* 35 (September 1927), pp. 333-35.
- U.S. Congress. House. *Executive Documents*. Washington, DC: Government Printing Office, 1868.
- U.S. Department of the Interior. *Battery Wagner*. Washington, D.C.: National Park Service, n.d.
- . *Fort Sumter: Anvil of War*. Washington, D.C.: National Park Service, 1984.
- U.S. Army Military History Institute. Bibliographic File, Reference Branch, Billingshurst-Requa Battery Gun, M 1862; 18th Independent Battery, New York Light Artillery.
- . Military Order of the Loyal Legion. Photographic Collection, print caption, "Prison on Morris Island, 1864."
- U.S. War Department. *Official Army Register for 1865*. Washington, D.C.: Adjutant General's Office, 1865.
- . *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*. 130 Vols. Edited by Robert N. Scott. Washington, DC: Government Printing Office, 1881-1901.
- . *The Official Atlas of the Civil War*. Reprint. New York: Thomas Yoseloff, 1958.
- Van Alstyne, Lawrence. *Dairy of an Enlisted Man*. New Haven, CT: Tuttle, Morehouse & Taylor Co., 1910.
- Wahl, Paul, and Donald R. Toppel. *The Gatling Gun*. NY: Arco Publishing Co., Inc., 1965.
- Warner, Ezra J. *Generals In Blue: Lives of the Union Commanders*. Baton Rouge: Louisiana State University Press, 1964.
- Wise, Stephen R. *Gate of Hell: Campaign for Charleston Harbor, 1863*. Columbia, SC: Uni-

versity of South Carolina Press, 1994.

Personal Communications

Fisch, Robert W. [Curator of Arms, West Point Museum, U.S. Military Academy, West Point, NY]. Letter to authors, 20 October 1994.

Fugate, Thomas W. [Curator, Kentucky Military History Museum, Kentucky Historical Society, Frankfort, KY]. Letters to authors, 9 November, 19 December 1994.

Hudson, Michael A. [Registrar, Kentucky Historical Society, Frankfort, KY]. Letter to authors, 5 February 1996.

Hughes, Nicky. [Curator, The Old State Capitol, Kentucky Historical Society, Frankfort, KY]. Letter 2 April 1996.

McCabe, John R. [Park Ranger, Springfield Armory National Historic Site, Springfield, MA].

Letter to authors, 17 July 1995.

McTernan, Donald H. [Curator, Springfield Armory National Historic Site, Springfield, MA]. Letter to authors, 20 December 1994.

Smith-Christmas, Kenneth L. [Curator of Material History, Museums Branch, Marine Corps History and Museums Division, Headquarters U.S. Marine Corps, Quantico, VA]. Letter [information from provenance file] to authors, 6 December 1994.

Swinney, H.J. [Associate Curator of History, Rochester Museum & Science Center, Rochester, NY]. Letter to authors, 21 November 1994.

Umberger, Eugene. [Curator of History, Rochester Museum & Science Center, Rochester, NY]. Letter to authors, 27 January 1998.

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