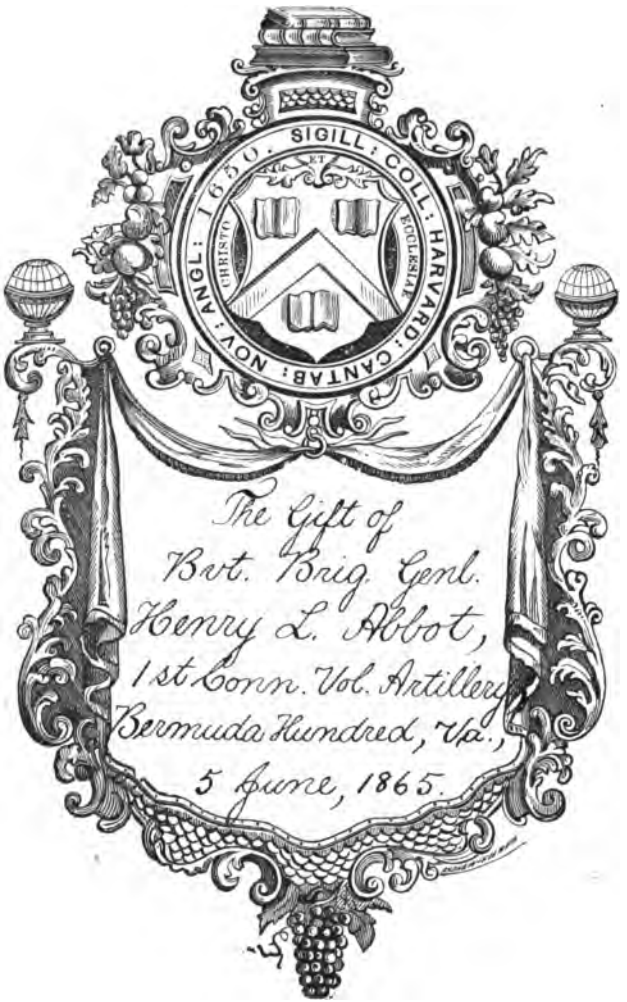

The Gift of
Bvt. Brig. Genl.
Henry L. Abbot,
1st Conn. Vol. Artillery
Bermuda Hundred, Va.,
5 June, 1865.

REPORT

with respects of Gen. Abbot

OF THE

MOVEMENTS AND OPERATIONS

OF THE

1ST CONN. HEAVY ARTILLERY,

FOR THE YEAR ENDING MARCH 31, 1865.

AS GIVEN IN THE

ANNUAL REPORT

OF THE

ADJUTANT-GENERAL OF CONNECTICUT.

APRIL 1, 1865.

HARTFORD:
PRESS OF CASE, LOCKWOOD & COMPANY.
1865.

REPORT

OF THE

MOVEMENTS AND OPERATIONS

OF THE

1ST CONN. HEAVY ARTILLERY,

FOR THE YEAR ENDING MARCH 31, 1865,

AS GIVEN IN THE

ANNUAL REPORT

OF THE

ADJUTANT GENERAL OF CONNECTICUT,

APRIL 1, 1865.

HARTFORD:
PRESS OF CASE, LOCKWOOD AND COMPANY.
1865.

HEAD-QUARTERS 1st CONN. ARTILLERY,
BROADWAY LANDING, VA., March 24th, 1865.

BRIG.-GEN'L H. J. MORSE,
Adjutant-General State of Connecticut.

GENERAL:—

Having received the requisite authority from the War Department, I have the honor to submit, as requested in your circular of February last, the following report upon the operations of my regiment during the year ending March 1, 1865.

It has served with a few auxiliary troops all the heavy guns in front of Richmond. Being thus on the lines of two armies, its organization has been so peculiar, as to render necessary many details and some reference to other troops.

Moreover its experience has been so considerable with the new kinds of artillery and of projectiles, that I have added a short statement of the results of this practical test of modern Siege Artillery, which will, I think, possess scientific interest, as well as enhance the reputation of the officers of this regiment by whose unusual and often laborious efforts, these results have been obtained.

At the beginning of the year my regiment was stationed in the Defences of Washington, holding the seven forts from Fort Scott to Fort Ward, on the line south of the Potomac.

PREPARATION OF THE SIEGE TRAIN.

On April 20th, 1864, I received a confidential memorandum from Major-General Halleck, Chief of Staff, Armies of the United States, directing me to organize a siege train.

I was informed that this memorandum was based upon a project drawn up by Brig.-Gen'l H. J. Hunt, Chief of Artillery, Army of the Potomac, and that it was intended to order me to report to him when the train was brought into use. Its composition, since largely increased, was the following, viz; forty rifled siege guns, (4½-inch ordnance or 30-pdr. Parrotts,) ten 10-inch mortars, twenty 8-inch mortars, twenty Coehorn mortars, with a reserve of six 100-pdr. Parrotts. Subsequently ten 8-inch siege howitzers were added to the list. The necessary mortar wagons, battery wagons, forges, etc., were to be provided together with the following supply of ammunition: 1000 rounds per gun, except the 100-pdrs., which were to have 500 rounds each; 600 rounds per heavy mortar, and 200 rounds per Coehorn.

All this train was to be afloat at the Washington Arsenal as soon as possible, and twenty siege guns complete with 200 rounds each, were to be afloat at that depot by April 30th, without fail.

Very little of this material was in depot at Washington Arsenal, but it was collected from all quarters with great rapidity by the Ordnance Department. About a dozen schooners of about 200 tons burden were furnished without delay by the Quartermaster's Department.

I detailed Captain S. P. Hatfield, 1st Conn. Artillery, as Ordnance Officer of the train, and placed him at the Arsenal, assisted by 1st Lieut. L. W. Jackson, to superintend the loading.

As the ordnance arrived, it was promptly placed on the schooners. The decks were shored up and ten 30-pdr. guns placed amidships side by side, resting on skids. Their carriages, platforms, and 3000 rounds of ammunition complete, were packed in the hold. The masts and rigging afforded facilities for loading this material, and rendered the schooners far superior to the canal barges used for the siege train of 1862. The 10-inch mortars, with 2200 rounds, were loaded on one schooner. The 8-inch mortars, with 2300 rounds, together with the Coehorn mortars, were loaded on another. The 8-inch howitzers, with their carriages, the mortar wagons, platforms and miscellaneous articles, filled another. The six 100-pdrs., with 2000 rounds, loaded another. The rest of the vessels carried ammunition, etc. This material was essentially afloat by May 10th.

REGIMENT ORDERED FORWARD IN ADVANCE OF THE TRAIN.

On that date my regiment was ordered forward in advance of the train, to report for duty to Major-General Butler, then near Bermuda Hundred, Va. We arrived on May 13th, about 1700 strong; but 349 men were discharged in ten days, on account of expiration of term of service. The regiment has since been filled to the maximum.

I had been notified by General Halleck that if General Butler desired it, a part of my train might be sent forward at once. Upon landing, however, I found four 30-pdr. Parrotts, and five 20-pdr. Parrotts already disembarked, and as other pieces were subsequently received from Fort Monroe, this was not judged necessary.

On May 14th, I was ordered to report to Col. Howell, 85th Pa., commanding the line of defenses of Bermuda Hundred.

My regiment was at once put to work, getting the heavy guns into position, making magazines, strengthening the lines, etc., etc.

On May 16th, the main army fell back to the line of entrenchments.

On May 17th, General Butler placed me in command of the Siege Artillery of his army, then consisting of my regiment and Co. M, 3d Pa. Artillery, Capt. Korte, serving two 8-inch howitzers, ordering me to report direct to his headquarters.

1st Lieut. W. C. Faxon was immediately detailed by me as Ordnance Officer, assisted by 1st Lieut. C. Gillette. A reserve depot of ammunition, to consist of 100 rounds per gun, was established near Hatcher's House, and a regular system of supply for the batteries was organized. From this date until the arrival of the army of the Potomac, in the latter part of June, a heavy artillery fire was kept up much of the time, along the lines.

On May 20th, a strong demonstration was made by the enemy upon our position, in which they drove in the pickets, but were repulsed on the left by the artillery fire of the works, and on the right (in woods) by the 1st division, 10th corps.

My guns in position were then the following:

	30 pdr. Parrott.	20 pdr. Parrott.	8 Siege Howitzers.	32 pdr. Howitzers.	24 pdr. Howitzers.	Total.
Battery "Drake,"		3	2			5
" "Perry,"		2				2
" "Anderson,"	2	2				4
" "Pruyn,"	2	1		2	1	6
Total,	4	8	2	2	1	17

The fire of those guns bearing on the point of attack (ten in number,) was effective, and contributed much to the easy repulse of the enemy. On May 24th, the rebels made a determined attack upon Wilson's Landing, on James River, garrisoned chiefly by colored troops.

The mail-boat was stopped, and all the troops on board were landed to meet the assault. Among them were six enlisted men of the First Conn. Artillery, returning from veteran volunteer furlough. Although no officer of the regiment was present, these men volunteered to serve a 10-pdr. Parrott, then silenced, and did so, so effectively as to contribute materially to the repulse of the rebels. They fired about eighty rounds,—some being double-shotted cannister at about 200 yards range,—and their gun was the only one not silenced by the enemy. The names of these brave soldiers are Sergt. W. H. H.

Bingham, Co. G, (since promoted,) Privates W. B. Watson, Co. H, James Kelley, (since killed by a shell in front of Petersburg,) H. G. Scott, James R. Young, and John Keaton, of Co. I.

On May 25th, Co. G, 1st Conn. Artillery, Capt. Osborne, was placed, with two 20-pdr. Parrotts, in Fort Converse, on right bank of Appomattox river. Subsequently, two 30-pdr. Parrotts were added. They did good service in repelling an attack on May 31st, and also in occasionally shelling Fort Clifton from an advanced position on the river bank.

On May 26th, Major-General Gillmore was placed in command of the whole line. On the 29th, he appointed me his Chief of Artillery, and on June 1st, his Acting Chief Engineer. There were at this time, beside my siege guns, eight light batteries in Terry's Division, and six light batteries, with eight mountain howitzers in addition, in Turner's Division. Total, 82 light guns.

On June 2d, the rebels made a strong demonstration on our lines. Previously (on May 21st,) Co. L, 1st Conn. Artillery, Capt. Pride, had been placed in the advanced redoubt, "Dutton," then partially completed, with two 32-pdr. and one 24-pdr. brass howitzers, and had energetically proceeded to put the work in fighting condition. After driving in the picket lines on June 2d, the 22d S. C. regiment, Col. Dantzler, made a determined assault upon this redoubt. It was repulsed with severe loss by cannister fire, the Colonel himself being among the killed, of whom 17 were counted. So demoralized were his command, that a Lieutenant and 22 enlisted men surrendered to the garrison rather than attempt to retreat under the fire. They were brought in with their arms, by a detachment of Co. L, 1st Conn. Artillery, and some dismounted cavalry serving as infantry supports.

On June 4th, a platoon of Co. H, 1st Conn. Artillery, with one 30-pdr. Parrott, with Ashby's battery of four 20-pdr. Parrotts, was placed under command of 1st Lieut. George Dimock, 1st Conn. Artillery, in Battery "Spofford." Subsequently, after several changes, this armament was fixed at one 100-pdr. Parrott and three 4½-inch guns, all served by Lieut. Dimock's platoon.

On June 14th, the 18th Corps under Major-General Smith arrived in advance of the Army of the Potomac, and at once moved on Petersburg.

On June 20th, Co. I, 1st Conn. Artillery, Capt. Burton, was sent with two 30-pdr. Parrotts, (a third subsequently added,) to his front.

On June 21st, the rebel rams came down near Dutch Gap, and with the Howlett's-house rebel battery fired on our fleet. Lieut Dimock replied from battery "Spofford," and ultimately silenced the battery.

SIEGE TRAIN ARRIVED. ORGANIZATION OF THE SIEGE ARTILLERY.

On June 23d, my regular train arrived from Washington Arsenal, in charge of Capt. Hatfield. Lieut. Gen. Grant immediately ordered me to report to Brig. Gen. Hunt, Chief of Artillery, Army of the Potomac, for the service of that train, detaching such companies from the Bermuda Hundred lines as were necessary for serving the guns, but not otherwise changing my duties under General Butler. Accordingly since that date I have held the double position of Commanding Officer of the Siege Artillery of the Army of the James, and of the Siege Train of the Army of the Potomac. All the heavy artillery in front of Richmond has thus been served under a common head, and chiefly by the 1st Conn. Artillery.

Prior to this date, all my ordnance supplies were drawn from Capt. A. Mordecai, Chief Ordnance Officer, Army of the James. After its arrival, the siege train was supplied by direct requisition upon the Ordnance Department, and subsequently, by order of Gen. Grant, the procuring of all ordnance supplies for heavy guns for both armies was placed under my charge.

The following is a full statement of firing done under the former system:

Station on Lines of Bermuda Hundred.	Commanding Officers.	30 pdr. Parrot	20 pdr. Parrot	4½ in. Ord. Gun.	32 pdr. How-itzer.	24 pdr. How-itzer.	Total No. R'nds.
Battery "Anderson,"	Maj. T. S. Trumbull,	349	378				727
" "Pruyn,"	Cpts. Pierce & Gillett,	155	54				209
" "Perry,"	Capt. E. A. Gillett,		16				16
Redoubt "Dutton,"	" W. G. Pride,				157	66	223
Fort "Converse,"	" W. F. Osborne,	234	353				587
Battery "Spofford,"	Lieut. Geo. Dimock,	166	24	19			209
	Total,	904	825	19	157	66	1971

My first duty, upon the arrival of the train proper, was to establish a suitable depot. After due examination, Broadway Landing on the Appomattox river was selected, and three substantial wharves were built. My orders were to keep the material afloat, and this has been scrupulously done, no ammunition even being unloaded except to put upon the wagons.

Maj. Gen. Butler established a telegraph office at the Landing for the service of the train, and gave me a detail of two companies of the 138th Ohio N. G. for ordnance duty. They were relieved on July 15th by two companies of 37th New Jersey Vols., which on August

28th were replaced by a detachment of one hundred men of the 11th Conn. Vols. under command of Capt. Kraszynski, relieved in its turn on Nov. 25th by Co. M, 3d Penn. Artillery, under command of Capt. Korte.

Brig. Gen. Ingalls, Chief Quartermaster, Armies in the Field, supplied a tug and a train of fifty wagons, with a promise of farther transportation when required. Beside these wagons, the four artillery teams of Capt. Korte have been habitually used. This battery was organized by Gen. Butler for the purpose of moving all his heavy guns, its regular armament being two 8-inch siege howitzers, which themselves would hardly require transportation other than that furnished by the Quartermaster's Department. Capt. Korte has been eager for service, and much benefit has been derived from this organization.

Lieut. Col. N. L. White was appointed by General Butler, Acting Inspector General of my command on June 29th, and besides his other duties, has discharged the functions of that office in a thorough manner.

Capt. S. P. Hatfield, was placed in command of the depot, assisted by 1st Lieut. W. C. Faxon and 1st Lieut. C. Gillette all of 1st Connecticut Artillery; Capt. Hatfield had commanded a siege battery during a part of the Peninsular Campaign of 1862, and had been Ordnance Officer of my brigade in the Defenses of Washington for more than a year. To his high professional attainments and energetic character, and to the zeal and ability of his assistants, the excellent administration of his department during the campaign, is to be attributed.

The general system for the service and supply of the batteries was the following. The companies and parts of companies serving the batteries situated within convenient distances, were placed under command of a field officer of the 1st Connecticut Artillery, who received his orders as to firing from the local commander. In other respects he received his orders from these head-quarters. The battery commanders forwarded daily to their Majors reports showing the amount of ammunition on hand at last report, amount received during the twenty four hours, amount expended, and amount remaining on hand.

These reports were collected by orderlies from my head-quarters, and usually reached the depot about noon. A train was at once fitted out to supply the deficiencies below a certain number of rounds (usually one hundred per gun or mortar) ordered to be kept in the field magazines. These trains reported to the field officers, already informed by telegram of their destination and time of starting, and were conducted

after dark under their direction to their proper batteries. Although some 1100 tons of ammunition, hauled an average distance of nearly seven miles by wagon, have already been fired during the campaign, in no single instance has a battery failed to be amply supplied for ordinary or even extraordinary demands, and in no case has a useless accumulation of ammunition occurred.

The question of responsibility for ordnance property, so difficult of convenient adjustment, has also been very simply settled for the siege train. The whole material remains charged to the Ordnance Officer. Memorandum receipts, which are destroyed when the property is accounted for to him, being only required from battery commanders. No time is thus expended upon unnecessary papers which with the constant transfers of ordnance from one battery to another would have entailed great labor upon company commanders, had the usual system been adopted.

Knowing that the rations likely to be drawn from the neighboring Commissaries of subsistence would be inferior to those which would be supplied by an independent organization, I appointed my Regimental Quartermaster Lieutenant (now Capt.) G. P. Mason, 1st Conn. Artillery, A. A. Q. M. and A. C. S. and directed him to supply the command. This he has done to perfection with a train of only 17 wagons. Although the line has often exceeded fifteen miles in length, the water transportation has enabled him to get his supplies and forage to the depot without hauling, and his own good judgment and energy have done the rest.

Advantage has been taken of the comparative stability of the command to have all the regimental sick properly cared for by Surgeon S. W. Skinner, 1st Connecticut Artillery, who has organized one of the best field hospitals I have ever seen. The patients have varied from thirty to seventy in number. By avoiding the sending of those lightly diseased, to General Hospital, much has unquestionably been done to keep up the numbers of the command. The comforts of the patients have been quite unusual for the field, owing to the attention of the Surgeon in charge, and to the efforts of Chaplain S. F. Jarvis 1st Connecticut Artillery, who has actively exerted himself in their behalf.

Asst. Surgeon J. S. Delavan has devoted himself to the sick of the regiment in the batteries in front of Petersburg, and Asst. Surgeon N. Matson until broken down by his exertions, to those in the command on the lines of Bermuda Hundred. Although so much scat-

tered, I believe few troops have enjoyed as good medical care during this campaign as mine.

For the prompt and accurate transaction of the various office work of the command, I am indebted to Capt. B. P. Learned, 1st Connecticut Artillery, Acting Assistant Adjutant-General.

The following changes have been made in the organization during the campaign. On June 28th, Companies A and H, 13th N. Y. Artillery under command of Capt. Wm. Pendrell, were assigned to my command by Major-General Butler. They were placed in the lines of Bermuda Hundred. Ten Companies of the 4th N. Y. Artillery, Lieut. Col. Allock, Commanding, aggregate 1072 men, were added by Gen. Hunt on July 14th. On the 15th, I placed Company A, Capt. McKeel, on duty at the siege train depot, and on the 29th Co. M. Capt. Morrison, on the same duty. Three companies, as shown in the table below, served batteries, the rest of the regiment did excellent service in making gabions, fascines, magazines, and in constructing some of the siege batteries. They were detached on Aug. 4th. On Oct. 16th, I was ordered to report, for my command of the Siege Artillery, Army of the James, to the Officer commanding the lines of Bermuda Hundred, instead of direct to General Butler as heretofore. On Nov. 15th, the 3rd Connecticut Independent Battery, commanded by Capt. Gilbert, was temporarily attached to my regiment by an order from the War Department. It was placed on duty with siege guns in the lines of City Point. On Dec. 17th, Companies E and G, 3rd Pennysvania Artillery, commanded by Major F. Von Schilling, and stationed at Fort Converse were added to the command.

BATTLE OF PETERSBURG MINE.

The organization just described was originally made under a pressure which, owing to the constant demands for siege artillery in front of Petersburg, increased its difficulties. The batteries and the ammunition were hauled an average distance of nearly eight miles, over roads extremely dusty but otherwise good. The following table exhibits the amount of siege artillery, with the corresponding dates, put into position preparatory to the explosion of the mine on the front of the 9th Corps on July 30th.

The designations of the batteries refer to the official sketch of the line prepared on September 13th, 1864, by Major Michler, Chief Engineer, Army of the Potomac.

Date. 1864.	Company.	Com'dg Officer.	Armament.	Locality and Remarks.
June 20,	"I," 1st Conn. Art'y,	Capt. Burton,	3 30-pdr. Parrotts,	Battery 4.
" 24,	"B," " "	" Brigham,	4 " "	" 1.
" 24,	"I," " "	Lieut. Jackson,	4 8-inch Mortars,	" 10.
" 25,	"D," " "	" Lincoln,	5 Coehorns,	3 to Battery 9.
		" Williams,		2 to " near Fort McGilvray.
" 27,	"F," " "	Capt. Dow,	3 30-pdr. Parrotts, 4 8-inch Mortars,	Battery 5.
" 27,		Maj. Trumbull,		To assume command of Batteries on line of 18th Corps.
" 30,	"B," " "	Capt. Brooker,	6 4½-inch Guns,	Battery 17.
July 6,		" Brooker,		To assume command of Batteries on line of 9th and 5th Corps.
" 6,	"A," " "	" Gillett,	4 8-inch Mortars,	In front of Battery 14.
" 8,	"C," " "	Lieut. Sargent,	2 8-inch Mortars,	Near Battery 11.
" 9,	"G," " "	" Andrews,	5 Coehorns,	" " 12.
" 9,	"G," " "	Capt. Osborne,	1 12-inch Mortar,	On R. R. near Battery 9.
" 25,	"M," " "	" Pratt,	6 4½-inch Guns,	Fort Morton.
" 28,	"K," 4th N. Y. Art'y,	" Gould,	6 Coehorns,	Near Battery 11.
" 28,	"C," 1st Conn. "	" Pierce,	10 10 inch Mortars,	Near Fort Rice.
" 28,	"A," " "	Lieut. Patterson	6 8 " "	Near Battery 20.
" 29,	"H," 4th N. Y. "	Capt. Brown,	6 4½ " Guns,	Fort Sedgwick.
" 29,	"C," " "	Lt. McPherson,	6 Coehorns,	In front of Battery 15.
		Total,	81 Pieces.	

From the time of going into position until the explosion of the mine, on General Burnside's front, the fire of most of these batteries was incessant, and their practice was all that could be desired.

On July 30th the mine was sprung at four hours, forty-five minutes A. M., and a heavy cannonade was instantly opened and continued until about ten hours, thirty minutes A. M., when it gradually ceased, the assault of the Infantry having failed, and the attack being discontinued. The part assigned to the Artillery, to keep down the fire of the enemy upon the flanks of the column of attack, and to keep back his reinforcements, was successfully executed.

This battle was probably the first in which spherical case from heavy mortars was used. The expedient, putting thirty 12-pdr. canister shot under the bursting charge of the ten inch shells, was of great utility, their steady fire keeping quiet the most dreaded flanking batteries of the enemy's line.

The following table exhibits the amount of fire of the different batteries under my command during the battle, and also during the entire siege up to July 31st.

Batteries. (See preceding table for Armament and Commanding Officers.)	Total firing to July 31st.						Fire during battle of July 30.					
	30-pdr. Parrott.	4½-inch Gun.	13-inch Mortar.	10-inch Mortar.	8-inch Mortar.	Coehorn	30 pdr. Parrott.	4½-inch Gun.	13-inch Mortar.	10-inch Mortar.	8-inch Mortar.	Coehorn
No. 1,	883						65					
Near No. 3,			45						19			
No. 4,	1361						176					
No. 5,	2116				2197		206				174	
No. 9, near Ft. McGilvray,						1776						121
No. 10,					2145						337	
Near No. 11,					1023	271					136	267
Near No. 12,						1507						334
Near No. 14,					836						259	
Fort Morton,		331						331				
Near No. 15,						315						315
Near No. 17,		534						216				
Fort Rice,				360						360		
Near No. 20,					217						217	
Fort Sedgwick,		~~496~~						300				
	4310	1060	45	360	6418	3869	447	847	19	360	1123	1037

300 / 1165 /

The aggregate number of rounds fired in front of Petersburg up to July 31st, was thus ~~16,062~~ rounds, amounting to about 300 tons, and during the battle of July 30th, 3,833 rounds, amounting to about 75 tons.

16167 /

The firing on the Bermuda Hundred lines between the arrival of the siege train and July 31st, nearly ceased, amounting only to nineteen 10-inch mortar shells, six 4½-inch shells, and three 20-pdr. Parrott shells.

Thus the entire expenditures from the opening of the campaign to July 31st, was ~~18,061~~ rounds, amounting to 325 tons.

18167 /

At 11:35 P. M., July 30th, 1864, I received a telegram from Gen. Hunt, to move with urgent haste certain siege ordnance and siege material from the batteries at Petersburg to my depot at Broadway Landing on Appomattox river. The following table exhibits what was moved. The distances are accurately taken from the engineer maps of the Army of the Potomac. It will be seen that the mean distance per piece, exactly computed, is eight miles.

Name of Battery (See sketch by Maj. Michler, dated Sep. 13th, 1864.)	Armament.	Distance to Depot. (Miles.)	Distance for one Piece. (Miles.)	Remarks.
Fort Sedgwick,	6 4½-inch Guns,	9.3	55.8	5th Corps front.
Near Battery 20,	6 8-inch Mortars,	9.1	54.6	5th " "
Near Fort Rice,	10 10-inch Mortars,	8.5	85.0	5th " "
Battery 17, - -	6 4½-inch Guns,	8.0	48.0	5th " "
Near Battery 18,	6 Coehorns,	8.8	52.8	5th " "
Fort Morton, -	6 4½-inch Guns,	8.0	48.0	9th " "
Near Battery 14,	4 8-inch Mortars,	8.2	32.8	9th " "
Battery 4, - -	3 30-pdr. Parrotts,	5.4	16.2	18th " "
Battery 1, -	4 30-pdr. Parrotts,	4.0	16 0	18th " "
Total, - -	51		409.2	
On R. R. near Battery 3, - -	1 13-inch Mortar,			Sent 6 miles to City Point
Total, - -	52			

The seven siege guns, etc., in Batteries 1 and 4, were moved by transportation—light artillery teams and wagons—furnished by Col. Piper, Chief of Artillery, 18th Corps.

The 13-inch mortar, which was served on a railroad truck car made so strongly as to resist the shock of firing, was drawn to City Point by a locomotive. The rest of the material was moved by the four artillery teams of Capt. Korte, and by a train furnished by Gen. Ingalls, as follows: my regular train, 50 wagons; an extra train of 60 wagons, furnished for contingencies arising from the battle, upon my requisition on July 30th; and an extra train of 60 wagons and 18 eight-mule teams furnished at 8:30 A. M., July 31st, in response to a telegram of mine dated 1:35 A. M. of that date. Total, 170 wagons and 22 teams.

The orders to move the material were received by me at 11:35 P. M., July 30th. By the aid of the telegraph, matters were so well arranged that the trains began arriving at the depot at daylight of July 31st, and continued to do so as fast as they could be unloaded, up to 2:30 A. M. of August 1st, when the last was received,—total period occupied in removal, 27 hours.

The material was all brought in Government wagons, except the guns and the 10-inch mortars, the latter of which were loaded on mortar wagons. The rebels did not discover the movement, although many of the batteries were in the very front of our line. The aggregate weight transported was 225 tons.

The material was shipped as fast as unloaded. By noon of August 1st, 36 hours after the first telegram, everything was afloat.

The labor at the depot was performed by two companies of the 4th

N. Y. Artillery, and six companies of the 37th N. J. Volunteers,—the latter working two at a time,—aided occasionally by the companies of 1st Conn. Artillery who had served and moved the batteries.

Three wharves were used, which were at this date mere crib gangways.

The very unusual promptness of this movement was due, 1st, to the facilities furnished by the telegraph; 2d, to the ample transportation furnished by Gen. Ingalls; 3d, to the intelligence and energy of Captain (now Major) Brooker, 1st Conn. Artillery, commanding the batteries on 5th and 9th Corps front; of Major Trumbull, 1st Conn. Artillery, commanding the batteries on 18th Corps front; of Lieut. Col. White, 1st Conn. Artillery, Acting Inspector-General; and of the officers commanding the batteries.

Everything was brought away,—artillery, ammunition, implements, platforms, mantlets,—nothing was damaged or lost. To Capt. Hatfield, 1st Conn. Artillery, my Ordnance Officer, the credit is due for the rapid loading of so much material on transports. Thus ended the first period of the siege.

SUBSEQUENT OPERATIONS IN FRONT OF RICHMOND.

At this date I had thirty-three (33) guns and mortars in position on the Bermuda Hundred lines, and twenty-nine (29) in front of Petersburg. The following table exhibits the modifications, which occurred during August, September and October, in both armies.

It is inserted to give an idea of the amount of work constantly called for in addition to the firing.

Later changes can not properly be reported at present.

Date.	Company.	Command'g Officer.	Armament.	Locality and Remarks.
1864.				
August 5,	I, 1st Conn. Artil'y.	Lt. Jackson,	1 13-inch Mortar,	Stationed on R. R., near Battery 3, Petersburg.
" 5,	H, " "	Lt. Cashin,		Sawyer Gun., Cal. 5-8-in., burst Battery Sawyer.
" 9,			2 12-pdr. Howitzers,	Sent to Battery Burpee.
	F, " "	Capt. Dow,	3 30-pdr. Parrotts,	Transferred to Battery 4, Petersburg.
" 12,	B, " "	Lt. Cummings,	1 100-pdr. Parrott,	Sent to Dutch Gap.
" 17,	A, " "	Capt. Gillette,	4 10-inch Mortars, 2 4½-inch Guns,	Sent to Fort Morton, Petersburg.
" 18,	M, " "	Capt. Pratt,	4 4½-inch Guns,	Sent to Fort Sedgwick, Petersburg.
" 19,			Sawyer Field Gun,	Sent to Dutch Gap from Battery Pruyn.
" 22,	B, " "	Capt. Brooker,	2 Coehorns,	Sent to Dutch Gap.
" 24,			2 12-pdr. Howitzers, 1 20-pdr. Parrott, 1 32-pdr. Navy Gun, 1 8-inch Siege Howitzer. 3 10-in S. C. Mortars, 2 100-pdr. Parrotts,	Received from Capt. Hart, in accordance with ~~General~~ Orders No. 69, Head-Quarters Armies of the United States, dated August 4th, 1864.
" 26,			3 8-inch Mortars, 1 12-pdr. Gun,	Added to Dutch Gap. Transferred from Battery Burpee to Dutch Gap.
" 27,	I, " "	Lt. Jackson,	1 13-inch Mortar,	" to Battery No. 4, Petersburg.
" 31,	M, " "	Capt. Pratt,	4 4½-inch Guns,	" " " No. 17, "
Sept. 7,			1 32-pdr. Navy Gun,	Sent to Fort Monroe.
" 11,	E, " "	Lt. Logan,	3 30-pdr. Parrots,	Added to Battery 5, Petersburg.
" 12,			4 Coehorns,	" to Redoubt Dutton.
" 27,			1 20-pdr. Parrott,	" to Battery Drake.

15

Special

Date.	Company.	Command'g Officer.	Armament.	Locality and Remarks.
1864.				
Sept. 28,	M, 3d Pa. Artil'y,	Capt. Korte,	2 8-inch S. Howitzers,	Transferred to Fort Converse.
" 28,			1 13-inch Mortar,	" to City Point.
" 28,	M, 1st Conn. Artl'y,	Capt. Pratt,	4 4½-inch Guns,	" to Fort Morton.
Oct. 2,			8 6-pdr. Guns,	Captured Guns received from 18th A. C.
" 3,			8 6-pdr. Guns,	Sent captured Guns to Fort Monroe.
" 5,			1 8-inch Columbiad, 1 32-pdr. Smooth bore Navy Gun, 1 32-pdr., Rifled and Banded, 1 12-pdr. Rifled Richmond Gun,	Captured Guns received from 18th A. C.
" 6,	M, 1st Conn. Artl'y.	Capt. Pratt,	4 4½-inch Guns,	Transferred to Battery No. 17, Petersburg.
" 6,	M, " "	Lt. E. P. Mason,	2 8-inch Mortars,	Sent to Battery No. 20.
" 8,			4 4½-inch guns, 1 8-inch S. Howitzer,	Sent to Fort Monroe.
" 13,			1 30-pdr. Rifled Richmond Gun,	Captured Gun received from 18th A. C.
" 14,			1 8-inch Columbiad, 1 32 pdr. Smooth bore Navy Gun, 1 32-pdr., Banded and Rifled, 1 12-pdr. Rifled Richmond Gun,	Sent to Fort Monroe.

Oct. 14,			2 8-inch Mortars,	Added to Battery No. 20, Petersburg.
" 15,	C, 1st Conn. Artl'y,	Capt. Pierce,	1 100 pdr. Parrott,	Transferred from Dutch Gap to Fort Brady.
" 16,			1 100 pdr. Parrott, 3 4½-inch Guns,	Transferred from Battery Spofford to Fort Brady.
" 20.	C, " "	Capt. Pierce,	3 30-pdr. Parrotts,	Sent to Battery near Fort Brady.
" 23,			2 Coehorns,	Transferred to Depot.
" 25,			1 12-pdr. Gun, 1 Sawyer Field Gun,	" " "
" 26,	M, " "	Capt. Pratt,	4 4½-inch Guns,	" to Fort Sedgwick.
" 26,	M, " "	Lt. E. P. Mason,	4 8-inch Mortars,	" to Fort Sedgwick.
" 26,			3 8-inch Mortars,	Transferred from Dutch Gap to Fort Brady.
" 27,	Miscellaneous Detachment.	Maj. Trumbull,	8 4½-inch Guns, 2 30-pdr. Parrotts,	Sent to City Point Lines.
" 27,	B, 1st Conn. Artil'y,	Lt. Bannon,	1 12-pdr. Gun,	Placed in Redoubt at Broadway Landing.
Oct. 30,	M, " "	Capt. Pratt,	4 4½-inch Guns,	Transferred back to Battery No. 17, Petersburg.
	M, " "	Lt. E. P. Mason,	4 8-inch Mortars,	" " " No. 20, "

The following table exhibits the transfers of Companies serving the Siege Batteries, during the three months considered,—when moved without guns. If moved with guns, the changes of station appear in the preceding table. Later transfers cannot properly be made known.

Date.	Company.	Command'g Officer.	Locality and Remarks.
1864.			
August 2,	A, B, I and M,	Capt. Brooker,	Stationed at Depot.
" 2,	C, 1st Conn. Artil'y,	Capt. Pierce,	Relieved Co. L, at Battery Burpee.
" 2,	G, " "	Capt. Osborne,	Rel'd Co. K, 4th N. Y. Art., near Bat. 11, Peters'g.
" 2,	D, " "	Capt. Brigham,	Relieved Co. I, at Battery 10, Petersburg.
" 4,	I, " "	Capt. Burton,	Sta'd at Ft. Converse, rel'd Co. M, 4th N. Y. Art.
" 19,		Maj. Trumbull,	Placed in com'd of all Siege Art. in front Peters'g.
" 29,	K, " "	Lt. Twiss,	Relieved Co. H, at Battery Sawyer.
Sept. 1,		Capt. Brooker,	" Maj. Trumbull, at Petersburg.
" 2,	C, " "	Capt. Pierce,	" Co. B, at Dutch Gap,
" 2,	B, " "	Lt. Bannon,	" Co. C, at Battery Burpee.
" 10,		Lt. Col. White,	" Capt. Brooker, at Petersburg.
" 11,	E, " "	Lt. Logan,	" Co. F, at Battery 5, "
" 11,	I, " "	Capt. Burton,	" Co. F, at Battery 4, "
" 11,	B, " "	Lt. Bannon,	" Co. I, at Fort Converse.
" 11,	A, 13th N. Y. Art'y,	Lt. Pratt,	" Co. B, at Battery Burpee.
" 11,	F, 1st Conn. Artil'y,	Capt. Dow,	" Co. E, at Battery Pruyn,
" 11,	C, " "	Lt. Pardee,	" Co. K, at Battery Sawyer.
" 12,	L, " "	Capt. Pride,	" Co. G, near Bats. 11 & 12, Petersburg.
" 12,	G, " "	Capt. Osborne,	" Co. L, at Redoubt Dutton. [Petersburg.
" 13,	K, " "	Capt. Ager,	Rel'd Co. D, at Bats. 9 & 10 & near Ft. McGilvray,
" 13,	D, " "	Capt. Brigham,	Relieved Co. K, at Battery Anderson.
" 28,		Maj. Brooker,	" Lt. Col. White, Petersburg.
" 28,	H, 13th N. Y. Art'y,	Capt. Pendrell,	" Co. M, 3d Pa. Artillery, Redoubt Drake.
" 30,	B, 1st Conn. Artil'y,	Lt. Bannon,	Transferred to Siege Train Depot.
Oct. 16,	H, " "	Lt. Cashin,	Relieved Co. C, at Battery Sawyer.

Since the battle of the Mine, the firing in front of Petersburg, and near the James River, has been heavy.

The average weight of iron thrown daily has been, during August, 5.2 tons; during September, 7.8 tons; during October, 4.5 tons; during November, 2.7 tons; during December, 2.1 tons; during January, 1.6 tons; during February, 1.1 tons.

The aggregate number of rounds fired during this period has thus been 37,264, amounting to about 793 tons of iron. The total expenditures of ammunition from the beginning of the campaign to March 1st, 1865, has been ~~55,325~~ rounds, amounting to 1118 tons of iron. 55430

Upon the Petersburg lines the firing has been so frequent as to render it difficult to select special instances for mention. At all hours of the day and night sudden artillery battles have occurred, often involving the entire line, and demanding the expenditure of many tons of ammunition. This has usually arisen from the position of the right of our lines, which is necessarily enfiladed from the Chesterfield Heights, an advantage that has given the rebel batteries there a strong temptation to open fire. It is beyond a doubt that our practice, especially in mortars, is superior to theirs, and these fights have thus uniformly terminated in our favor. Upon the occasion of their exploding a mine near Battery 12, on August 5th, an unusually heavy fire occurred, as also at other times when they attempted to interfere with the use of our military railroad, or we tried to interrupt their working parties, or to stop picket firing by shelling Petersburg.

General Butler's canal at Dutch Gap, has also been the scene of much firing. On Aug. 13th, just after the work began, the rebel fleet came down, and in conjunction with the Howlett-house batteries and some field guns on Cox's Hill, opened a very heavy concentric fire upon the gap from an arc of about 170°. My James River batteries were very active, and finally succeeded in driving off the rams, and in silencing the Howlett-house battery so effectually that the experiment was not repeated.

About August 20th, however, the rebels planted some Coehorn mortars in a secure spot north-west of the canal, within good range, and after that time kept up a desultory fire upon the Gap, doing very little damage however, owing to their want of skill in serving the mortars. Not one in a hundred of their shells have fallen in the canal, where good artillerists would certainly have thrown one in five.

After the advance upon Fort Harrison, the rebel fleet habitually lay in the reach near the "Graveyard," in plain sight of our lines, occasionally firing upon them. A surprise was planned for them by

General Butler, whose Chief Engineer, Major Michie, erected a battery commanding their position. During the night of October 21st, three 30-pdr. Parrotts, served by Co. C, 1st Conn. Artillery, and Ashby's battery of four 20-pdr. Parrotts, the whole under command of Capt. Pierce, 1st Conn. Artillery, were placed in position, and at daylight opened suddenly upon the fleet, at a range of about 1500 yards. The effect was excellent. The rebel papers admit that a gun-carriage was hit on the gunboat "Drury," by a shell, which wounded five men; that the smokestack of the ram "Fredericksburg" was considerably perforated, and six men on her wounded, and that a plate was started on one of the ironclads. It is believed from the number of times the wooden boat was hit,—sixteen,—that her injuries were more serious than admitted. Certain it is that the fleet all steamed away as fast as possible, and that the wooden boats have not again exposed themselves in this reach. Our batteries were heavily fired upon by the rebel land batteries, but no damage was done except to wound one man.

On September 29th, the army of the James crossed James River, and the 18th corps captured several guns, thirteen of which were brought to the rear, in large measure through the exertions of Major Cook and Lieuts. Gillette and Pond, 1st Conn. Artillery. The following is a list of these guns: Seven iron 6-pdrs., old model; one iron 6-pdr., new model, resembling our 3 inch ordnance gun; one 8 inch Columbiad; one 32-pdr. navy smooth bore; one army 32-pdr. old model, banded and rifled; one 12-pdr. iron gun, made in Richmond, banded and rifled, throwing a shell weighing about 40 lbs.;—it weighed 6700 lbs., and was mounted on a siege carriage. Also one 30-pdr. Richmond gun, banded like the rest, and like our 30 pdr. Parrott, except that the front end of the re-inforce was beveled off. It had a swell of the muzzle, and weighed 4700 lbs.,—date 1864. A caisson for its ammunition was also captured. This gun and the captured ammunition was retained for our own use. The other guns were sent to Fort Monroe.

The most important event during January, on these lines, was the attempt of the rebel fleet to pass the obstructions in James River, on the night of January 23d, when I think it may fairly be claimed that the 1st Conn. Artillery prevented a serious disaster. Subsequent changes in ordnance render it proper to give the details of the affair. Three rams, the wooden gunboat "Drury," a small steam torpedo-boat, and perhaps more, passed Fort Brady about 8 P. M., under cover of the darkness. They received about 25 shots from the fort,—arma-

ment two 100-pdr. Parrotts and three 30-pdr. Parrotts. The fort was instantly opened upon by the rebel land batteries, mounting about a dozen guns, and their fire soon disabled one of the 100-pdr. guns. The fleet passed on to a point near the rebel Howlett battery, out of range of Fort Brady. My batteries below Fort Brady were three in number,—Parsons and Wilcox,—armament one 100-pdr. Parrott, and one 10-inch sea-coast mortar; Spofford, armament one 30-pdr. Parrott, placed in position about 7 A. M., and Sawyer, armament one 100-pdr. Parrott and two 10-inch sea-coast mortars. About 10 P. M., a ram succeeded in reaching and began removing the obstructions, receiving 31 shots from the mortar in Wilcox, and 9 from those in Sawyer, with musketry fire from all the spare artillery-men while so engaged. At 3 A. M., one ram passed the obstructions and anchored about 600 yards above Sawyer, where she remained for 45 minutes. This position was only exposed to mortar fire; one shell fired at 60° elevation struck her, and she immediately moved up the river; 19 shells had been fired at her while lying in this position. During the night 44 rounds from the 100-pdr., and 24 rounds from the mortar in Parsons and Wilcox, and 3 rounds from the 100-pdr. in Sawyer, were fired at the fleet above the obstructions. The darkness prevented the effect of this fire from being known. At daylight two rams and the "Drury" were discovered aground near left bank, some 1500 yards above Parsons. Fire was at once opened from that battery with long percussion shell from the 100-pdr. The second shot struck the "Drury," and the third exploded her magazine, completely destroying her. The following table shows the fire upon the fleet after daylight, before it escaped up the river, about noon:

	100-pdr.		10th S. C. Mortar.		30-pdr. Parrott.		Range in yards.	Commanding Officer.
	Fired.	Hit.	Fired.	Hit.	Fired.	Hit.		
Parsons and Wilcox,	57	30	25	2			1500	Lt. H. A. Pratt, 1st Conn. Artillery.
Spofford,					62	27	1800	Lt. C. N. Silliman, 1st Conn. Artil'y.
Sawyer,	21	7	31	2			2500	Lt. E. P. Mason, 1st Conn. Artillery.
Total,	78	37	56	4	62	27		

As soon as the rams could get afloat, they retreated out of range near Howlett Battery, leaving the torpedo boat aground. About 3 A. M. on the 25th, they escaped up the river past Fort Brady, receiv-

ing a number of rounds in the darkness, several of which struck them.

The ammunition used in this engagement consisted in part of solid shot, and in part of shell—percussion and time and case. Unfortunately the line of fire, when the rams were aground, was oblique, and the projectiles glanced off without penetrating. Officers on picket directly opposite, however, report that the armor was started and partially ripped off in a number of places.

During the firing my batteries, especially Fort Brady and Parsons and Wilcox, were under a very heavy fire from the rebel land batteries. Three men were killed in the former, and a large number slightly injured from fragments, etc.

Too much commendation can not be given to Captain Pierce, commanding Fort Brady, and to Lieutenants Pratt, Mason and Silliman, commanding the other batteries, for their excellent conduct. The total firing including those fired in reply to the rebel land batteries was about 500 rounds of siege and sea-coast ammunition. Lieut. W. G. Ball, 13th N. Y. Artillery, also moved a 20-pdr. Parrott (field gun) to the bank of the river and fired 85 rounds at a range of about 1,400 yards with creditable zeal.

EXPEDITION TO FORT FISHER.

At six hours thirty minutes P. M., on January 5th, I received an order from General Grant, to embark a siege train which ultimately proved to be destined for Fort Fisher. I was to acccompany it, with a sufficient detail of artillerymen from my command, and a company of volunteer engineers from General Benham's Brigade, and also a small detachment from General Graham's Naval Brigade. During January 6th, I was waiting transportation, but removed three companies (Cos. B, G, and L,) 1st Conn. Artillery, from the lines, and also two 30-pdr. Parrotts and four Coehorn Mortars. The propeller C. C. Leary, 841 tons, reported at 8 A. M. on January 7th—and my Ordnance Officer at once began loading her from both sides with all possible despatch with the Ordnance. They employed about 150 men. The propeller Scott, 1086 tons, reported at 3 P. M., with 50,000 feet of lumber on board. By 8 P. M. she was ready to sail with two companies (280 men) and 36 mules. At seven hours thirty minutes A. M. of January 8th, the propeller Gov. Chase, 746 tons, reported; at noon she was ready to sail with two companies (282 men) and 41 animals. During the evening the three steamers

with my head-quarters on the Leary dropped down to City Point, where I received written orders from Gen. Grant to report to Gen. Terry. My command consisted of 20 officers 568 men, 77 animals, 12 wagons, 16 30 pound Parrotts, 20 Coehorns, with 8,000 rounds for former and 6,600 for latter, 50,000 feet lumber, etc. etc. We took 19 days rations, 4 being cooked. We sailed at daylight of January 9th, and reached Fort Monroe that evening. On January 10th we were detained by a severe storm—but sailed at 8 A. M. of January 11th—arriving at Beaufort N. C. on the following day in time to join the fleet, then starting for Fort Fisher, where we arrived about 5 P. M. During January 13th we were ordered to remain on board.

On January 14th I put the Engineer Company on shore, with 87 animals, rations, forage, etc. The sea was too rough to land the guns. The steamer was anchored, and a warp of three inch rope, 120 fathoms long, was secured to the beach. The men were pulled ashore in surf boats, and the animals slung, hoisted overboard, and towed ashore by the warp. On the 15th the sea was smoother. I had brought three launches and a detachment of 35 men of Gen. Graham's Naval Brigade, under Lieut. Neilson, to aid in disembarking my train. I also received all the assistance required from the Navy; Acting Master, Z. L. Tanner, aided by Acting Ensign L. Pope, both of the Rhode Island, took charge of removing the stores, etc. from the ship's side to the beach, and labored most faithfully and skillfully on January 14th and 15th, to accomplish all that was possible. On January 15th, three 30-pdr. Parrotts, complete with ammunition, etc., another company, the rest of the animals, the wagons, etc. etc., were unloaded. The guns were unloaded in the following manner:—They were raised from the hold and slung overboard by using purchases from the mast-head, and the yards strengthened by a preventer-brace. They were carefully lowered overboard and placed on the launch, (one at a trip,) with very considerable risk owing to the rolling of the ship. The launch was then pulled along the warp to the edge of the surf and the gun rolled overboard. It was then dragged up by about 200 men pulling upon a rope secured to it. It was a slow and dangerous process, and only possible in a very smooth sea. The carriages, ammunition, etc. were landed in a similar way.

Fort Fisher was carried by assault on the ~~morning~~ evening of January 15th, and the disembarkation of my train was at once suspended. It has since been sent back to these lines.

The following is a list of the guns captured in Fort Fisher.

Smooth bore Ordnance.	Good order.	Disabled.	Total.	Rifled Ordnance.	Good order.	Disabled.	Total.
11-inch Brooks,	2		2	8-inch Armstrong Gun, 150-pdr,	1		1
10 " Columbiad,	13	2	15	8 " Blakely,	1		1
10 " S. C. Mortar,	1		1	7 " Brooks' Double Bands,	1	2	3
8 " Columbiad,	11	1	12	6.4-inch Parrott, U. S.,	1		1
32-pdr., Iron,	3	4	7	6.4-inch Brooks' Double Bands,	4		4
32 " Carronade,	5	1	6	6.4-inch Single Band,	4	2	6
24 " Iron,	1	1	2	6.4-inch, No Bands,	2	2	4
24 " Coehorn, (Iron,)	4		4	5.8-inch, "	1		1
12 " Howitzer, U. S.,	1		1	4.6-inch, Blakely,	1		1
12 " " F.,	1		1	4.2-inch Parrott, (No. 2,)	1		1
12 " Gun, U. S.,	3		3	4.2-inch, Banded,		1	1
6 " " "	2		2	3-inch Banded, Richmond,	2		2
6 " " Iron,	2		2	3-inch Whitworth,	1		1
1.5-inch Gun,		1	1	2.2-inch " muzzle loader,	4		4
Volley Gun,		1	1				
Total,	49	11	60		24	7	31

Many of the carriages of the guns in good order were disabled. Immense quantities of ammunition, ordnance stores, etc. were taken.

ORDNANCE AND GUNNERY.

Considering the large amount of firing, the injuries suffered by our guns have been unusually small—being limited to blowing off the muzzle of a 30-pdr. Parrott about a foot from the face—probably by a premature explosion of the shell; it was cut smooth with a cold chisel, and the accuracy of the piece seems not at all impaired; and to the bursting of the 5.8-inch Sawyer gun, which occurred on August 5th, after firing ten rounds. The gun had already been fired a large number of times at Fort Monroe. It burst into four principal parts—the largest including the trunnions and all in front of them remained in its place on the carriage—the next piece, forming the bottom of the bore near the breech, fell between the cheeks—the left half of the top—which split as usual through the vent, fell upon the top of a return of the parapet a short distance from the gun—the right half was thrown some 200 yards entirely outside the fort. The vent was evidently defective, showing a double cavity, much enlarged. The strength of the gun being doubtful, it was fired by quick-match, consequently no one was injured.

The only novelty in the service of the Siege Artillery requiring special notice has been the method of mounting the 13 inch Mortar. The extreme weight of which, (17,000 lbs.) renders it unmanageable. Maj. Gen. Butler conceived the idea of serving it upon a railroad car, and ordered one made as an experiment. The first car broke under the shock. A second, prepared by the Engineers in charge of the Military Railroad, answered its purpose admirably. It consisted of an ordinary truck car, strengthened by additional beams tied strongly by iron rods and covered by iron plating. Fired with 14 lbs of powder, the mortar recoiled upon the car less than two feet, and upon the track some ten or twelve feet. It was a decided success. On one occasion three different observers reported that a shell burst under a gun and blew it and its carriage entirely above the parapet. Certain it is that the mortar was much dreaded by the enemy.

During the campaign, it has been necessary to conduct certain experiments, to facilitate the fire of the batteries. Among them was the deducing of a table of ranges for the 8-inch Siege Mortar which differs materially from the old model in this respect, owing to the substitution of the elliptical for the Gomer chamber. The ranges were determined with care, and the following table exhibits the result.

RANGES OF EIGHT INCH SIEGE MORTAR.

(Model, 1861.)

Charge.	Projectile.	Elevation.	Range.	Time.	Remarks.
Lbs. oz.	Shell.	°	Yards.	Seconds.	
0 8	"	45	360	8.0	Ranges obtained
0 12	"	"	703	12.5	from experiments
1 0	"	"	1082	15.0	conducted near
1 4	"	"	1412	17.0	Petersburg, by the
1 8	"	"	1741	18.5	1st Conn. Artillery
1 12	"	"	1985	20.0	in Sept. 1864.
2 0	"	"	2225	21.0	

Another experiment was to test a new shell invented by Mr. Pevey. It consists of two concentric shells thinner than usual, and connected firmly by studs. The open space between is filled with small iron balls or incendiary composition. Shells for trial, both 10 inch and 8 inch were ordered by Gen. Butler, and the result indicated by bursting them over water and over a dusty plain was highly satisfactory. In my judgment they will break into more than double the

number of fragments of the ordinary shell, and consequently have fully double the effect. They bore the shock without injury, although one 10 inch shell was thrown from a Sea Coast Mortar with a charge of about seven lbs. of powder.

Another experiment was to test the light balls furnished for our 8 inch Mortars. It was found that on ground of ordinary hardness, no larger charge than six oz. of powder, giving a range of only 255 yards, could be used without causing the ball to break into fragments from the force of its fall. This range is entirely too short for our purposes. Possibly by using an elevation less than 45°, the range might be lengthened, but in my opinion the balls are not made of sufficient strength to be practically useful.

Other important experiments with new projectiles incendiary, double and triple bursting, etc., have been made, but the results are withheld for the present.

The subject of Mantlets to protect the gunners has received considerable attention. Those furnished by the engineer department are made of rope, five feet by four and one half feet, and about six inches thick, weighing about 600 lbs. each. They are excellent for protection, but their great weight makes them difficult to handle. In my judgment it might be safely reduced by lessening their thickness. The penetration in them of an elongated bullet from a Springfield rifled musket at 20 paces is less than 3 inches. I had also an opportunity to see the effect of a 10-pdr. rifled projectile at 600 yards range upon a rope mantlet made at Fort Monroe, and only about 4 inches thick. The shot was deflected, breaking the lashing of the mantlet, and throwing down the pole supports, but was so much checked in velocity by so doing as to then knock a man down without seriously injuring him. In other cases these thin mantlets have been penetrated even by musket balls where the ropes were not closely lashed together, but the experience of the campaign has convinced me that a thickness of 4. 5 inches is, all things considered, the best which can be given them.

In this connection it may be well to call attention to the fact, that we have had great difficulty in drawing heavy guns and supplies through the covered ways leading to Fort Sedgwick, owing to the sharp curves at the angles. In such places security must in part be sacrificed to facility of travel, or great delays may result in moving siege guns. Our guns have been more than once dismounted in turning these corners.

As most of the magazines have been made under the superintend-

dence of my officers, it may be well to state that the plan adopted, putting them in secure positions and making the chamber entirely below ground, roofed by heavy logs and covered by dirt about six feet thick, has been found to be both simple and safe. Boards have seldom been used either for the sides or the floor, which is made to drain into a barrel sunk near the entrance. The usual dimensions, in the clear, have been six feet wide by five feet deep, length to vary according to capacity required. In no instance has one of them been blown up, although often hit by the rebel projectiles, and even in heavy rains, such as that of August 15th, at Petersburg when several soldiers in the low bottom were washed away and drowned, very little loss of ammunition has occurred from leakage.

The large amount of mortar firing during this campaign has disclosed one defect which should be corrected. The friction primers are driven out of the vent with great violence by the explosion, and occasion serious danger to the cannoniers. One valuable officer of my regiment, Lieut. Andrews, lost the sight of one of his eyes from this cause. Another, Lieut. Jackson, had a narrow escape, being severely cut on the forehead, while the instances of injury more or less serious to enlisted men, will, I think fully amount to a dozen The vents should be covered by a cap similar to that used for the Whitworth gun, and the line of metal should be permanently and accurately marked on all Mortars. Moreover what is not the case now, some convenient hook should be arranged for guiding the lanyard into a direction perpendicular to the vent. In other respects I regard the new Mortars and carriages as vast improvements over the old models, in fact, as perfect.

The siege guns and carriages now in use are generally excellent. Much trouble, however, has arisen from the breaking of the new elevating screws of the 30-pdr. Parrotts, which are ill adapted to their purpose. A more general defect, which applies to rifled guns of all calibres, is that little or no care is used in their sights. For a sharpshooter who is not expected to fire more than five or six hundred yards with his rifle, we supply accurate globe sights and a fine telescope. For a rifled gun which is to fire three thousand yards, we give sights far coarser than those of any old smooth-bore musket. Rifled artillery can never accomplish all that it ought, until accurate telescopic globe sights are furnished.

Several precautions to insure rapidity and precision of mortar fire, have been suggested by the intelligent observation of Capt. Osborne, Lieut. Jackson, and other officers commanding batteries. Thus a

wooden-handled steel scraper, made in the shape of a hoe with a double edge,—curvature 6.5 inches,—was found to reduce more than one-half the time required to serve the 13-inch mortar. Although the fuses for this mortar were old and poor, they were made to almost invariably burn by driving them gently so as not to shake out the composition, and by placing a train of dry powder from the top of the shell to the fuse, and another, where the fuse would strike the bottom of the bore in rolling out,—both made to remain in place by wetting the iron. It was also found that wooden fuses should not be sunned; that the powder should be well stirred in the barrel before firing, and that, in inserting the Coehorn shell, its paper fuse should be placed near to the top of the bore to insure its ignition.

We may derive some useful hints from the rebel smooth-bore ammunition. Thus: their Coehorn shells are provided with ears, which is a great improvement over our system of banding. The interior surface of some of their 12-pdr. shells are regular dodecahedrons; of others, it consists of an upper and lower pentagon, connected by ten equal trapezoids. The effect of both these devices is to cause the shell on bursting to divide into twelve pieces weighing about a pound each, and thus to secure the maximum effect. It is a decided success,—the former shape appearing to be more uniformly successful than the latter. Their system of filling spherical case with iron balls is a failure, the weight not being sufficient to render them effective.

The great problem,—what is practically the best projectile for rifled artillery,—has been carefully investigated during this campaign, both by requiring full reports of our own firing, and by carefully collecting all varieties of projectiles fired by the rebels in return. Drawings of this collection, and of our own projectiles have been made, and the collection itself has been sent to the Military Museum at West Point.

The following facts as to the rebel rifle projectiles are worthy of notice. Their variety is very great, about seventy different kinds having been collected. They may, however, be classified into *nine* systems, according to the devices for making them take the grooves.

The first device is a cupped copper plate, secured to the shell by a screw, and held firm by radial grooves, generally seven in number, but sometimes six. One sample bears Brooke's name upon the cup. It seems to be confined to the heavier guns exclusively,—samples of the calibres 7 inches, 6.4 inches, and 4.2 inches, alone being collected. The projectiles appear to take the grooves well, but their plates are often missing,—showing that it would be dangerous to use them over troops.

The second device consists of making the projectiles of wrought iron, the bottom cupped like a lead bullet. This is rare, only three calibres, 7 inches, 6.4 inches, and 4.62 inches, being collected. It seems to be faulty only from its expense. The samples were solid shot, apparently designed for firing at iron-clad vessels.

The third device is a curved copper plate, secured by a screw, and held firm by three dowels, made sometimes of three copper projections from the plate, extending into holes in the iron base of the shell, and sometimes of three iron projections from the base of the shell, extending through holes in the plate. The explosion of the powder flattens the plate, and thus gives the rifled motion by increasing its calibre. This system is liable to the objection that the plate almost invariably separates from the shell, rendering the projectile unfit to be used over troops. It is, however, quite common, samples of the following calibres having been collected: 7 inches, 6.4 inches, 4.62 inches, and 2.2 inches. It is even used to render serviceable, projectiles made upon other systems which are failures.

The fourth system is that of Reed, which closely resembles Parrott's. This is very common, no less than twenty different kinds of projectiles being collected. Seven have wrought iron cups, calibres 6.4 inches, 4.2 inches, 3.67 inches, and 3 inches. Eleven have copper rings, calibres 8 inches, 7 inches, 4.62 inches, 4.2 inches, 3.67 inches, and 3 inches. The larger samples are rare, but for field guns this seems to be the standard system. The different devices for attaching the ring are numerous, and are worthy of study,—one, especially, in which the shell apparently never fails to take the grooves and never loses the ring, nor throws off fragments of iron from its base,—faults to which most of the other varieties seem liable.

The fifth system takes the grooves by the expansion of a lead sabot It seems to be chiefly confined to large calibres. The lead sometimes remains upon the shell, but is very liable to strip.

The sixth system is that of Mr. Whitworth, whose 12-pdr. guns the rebels use considerably. Some of the projectiles are English, and some of Rebel manufacture. They have even tried to make shells by boring out a cavity in the bolt to the diameter of their usual fuse-hole (0.9 inches). This, however, does not contain a sufficiently large bursting charge to be of service.

The seventh system,—which is in common use,—is that of Mr. Hotchkiss. Many of these projectiles are evidently of our manufacture, bearing Mr. Hotchkiss' name and patent stamp. Others have no mark, and are without doubt of rebel manufacture. I have such

samples for calibres 5.2 inches, and 3.3 inches, as well as 3 inches. The one of 3.3 inches has a large wire wound around the middle and covered by the lead, which I have never seen in those supplied by Mr. Hotchkiss.

The eighth system is in some doubt. The specimen is one of Mr. Schenkl's old model 30-pdr. projectiles, which may possibly have been received from our batteries and fired back. It, however, has the characteristic copper fuse-plug of the rebels, and they evidently must have made a sabot for it,—of what material is not known.

The ninth system is that of the English Armstrong and Blakely flanged projectiles,—samples of which were captured at Fort Fisher —but none of which have been used on these lines.

Among the ammunition captured by the 18th Corps near Fort Harrison, were several samples of 100-pdr. and 30-pdr. projectiles, which I have issued for use to my batteries.

There has been so much discussion of late as to the merits of the different kinds of guns and ammunition now in use in our service, that I have decided to report upon certain of our records—remarking that it is possible that future firing may modify the results obtained.

First, as to Endurance.

The only failures, as already stated, have been the bursting of a 24-pdr. Sawyer (rifled)—and the blowing off of the muzzle of a 30-pdr. Parrott, caused by the explosion of a shell in the bore. The latter gun was not destroyed. The face was cut smooth with a cold chisel and its accuracy seems not impaired. The following table shows the extent of the tests—the record of a few guns showing the largest amount of firing being selected.

100-*pdr. Parrott*,	No. 11, fired 302 times,	All old guns, fired an unknown number of times, before coming into my possession.
	No. 13, fired 533 times,	
	No. 15, fired 304 times,	
	No. 20, fired 458 times.	
30-*pdr. Parrott*,	No. 100, fired 1210 times,	Apparently uninjured.
	No. 101, fired 1404 times,	
	No. 121, fired 970 times,	
	No. 255, fired 1487 times,	
	No. 256, fired 1472 times,	
	No. 259, fired 1392 times,	

4.5-*in. Ord.*, No. 41, fired 457 times,
No. 89, fired 578 times,
No. 96, fired 499 times,
No. 97, fired 519 times,
} All rendered dangerous, from not being bouched when made. This is a great defect in this class of guns, which should be removed.

8-*inch Siege Mortar*, No. 20, fired 1530 times,
No. 24, fired 1614 times,
No. 25, fired 1521 times,
No. 26, fired 1536 times,
No. 32, fired 2015 times,
No. 36, fired 2016 times,
} Apparently uninjured,—the vents even, not showing much wear.

Second, as to Ammunition.

The following tables explain themselves. They include February.

Kind of Gun.	Projectile.	Number fired.	Uncertain.	Number tested.	Took Grooves.	Tumbled.	Per Centage Serviceable.	Remarks.
100-pdr. Parrott,	Parrott,	1355	87	1268	1223	45	0.96	
"	Rebel, (captured,)	22	0	22	21	1	0.95	
30-pdr. Parrott,	Parrott,	8596	1738	7218	6924	294	0.95	
"	Schenkl, banded,	178	56	122	70	52	0.57	
"	Rebel, (captured,)	43	1	42	40	2	0.95	
4.5-inch Ordnance,	Schenkl,	2662	520	2142	1767	375	0.82	
"	Dyer,	1364	142	1222	981	241	0.80	
"	Absterdam, (lead,)	239	30	209	65	144	0.31	
20-pdr. Parrott,	Parrott,	572	67	505	432	73	0.85	
"	Schenkl,	49	0	49	46	3	0.93	
5.8-inch Sawyer,	Sawyer, (flanged,)	10	0	10	10	0	1.00	Gun burst.
3.67-inch Sawyer,	Sawyer, (lead,)	125	20	105	81	24	0.77	

The following table tests the fuzes in use. It includes the February firing.

Kind of Fuze.	Number used.	Uncertain.	Number Tested.	Burned Well.	Burned Variably	Did not Burn.	Per centage Servic'able.	Remarks.
Parrott { Percussion,	7649	2492	5157	4327	112	718	0.83	
Parrott { Time,	2822	662	2160	1712	119	329	0.79	
Schenkl, { Percussion,	2526	814	1812	1506	79	227	0 83	
Schenkl, { Combination,	359	210	149	83	22	44	0.55	
Dyer. Time,	296	94	202	143	0	59	0.70	
Absterdam Percussion,	236	48	188	99	27	62	0.53	
Tice. Concussion,	41	0	41	30	1	10	~~7.08~~	0.73
Rebel, { Percussion,	7	6	1	0	1	0	——	
Rebel, { Time,	38	6	32	9	8	15	0.28	
Sawyer Combination,	135	47	88	75	2	11	0.85	
Bormann,	706	218	488	359	34	95	0.73	
13 inch Mortar, wooden,	218	54	164	128	18	18	0.78	
10 inch Mortar, wooden,	2349	854	1495	1206	231	58	0.80	
8 inch Mortar, wooden,	12527	1664	10863	9557	815	491	0.87	
Coehorn Mortar, paper,	13267	1706	11561	10495	470	596	0.90	

These figures are too simple and convincing to require remark, other than to explain that every possible care has been taken to secure accuracy. They are taken from the daily reports of the batteries, where men are specially detailed under the close supervision of the battery commander to note the effect of every shot. If any uncertainty exists, the shot is entered "uncertain" and is not included in the final ratio. I believe that such records have never before been attempted in actual service, and therefore regard them as extremely valuable.

CONCLUDING REMARKS.

The casualties in the Regiment during the year have been one officer and twenty-nine enlisted men killed, and four officers and forty four enlisted men wounded. Total seventy-eight. The deaths from other causes have been sixty-six in number.

Lieut. Eben P. Hall was killed by a sharpshooter while regardless of personal safety he was skillfully directing the fire of his mortar battery. Lieut. J. H. Cummings and Lieut. G. L. Turner, refusing to leave their exhausting labors under fire until too late, died in consequence of their devotion to duty. The regiment may well be proud that these names appear upon its rolls.

With a regiment so widely scattered as mine, unusually responsible duties / ~~duty~~ devolve upon the subordinate officers. I have every reason to

be satisfied with the manner in which they have borne the test, and with the manner in which the enlisted men have seconded their efforts.

To Lieut. Col. White I am indebted for cordial support and gallant service. Acting as Inspector General on my Staff, and for a time as Commanding Officer of the batteries in front of Petersburg, he has been the model of a high-toned gentleman. After serving until the end of the campaign, about six months beyond his original term, he left the army regretted by all who knew him.

Lieut. Col. Trumbull has highly distinguished himself for ability courage and devotion to duty. Entering upon the campaign with health much impaired, and placed at first in command of Fort Anderson where he was under fire night and day, he seemed to throw off disease by determined will. Transferred to the command of the most important line of batteries in front of Petersburg, his only fault was in laboring beyond his strength. In October when recovering from a severe attack thus engendered, he gave energetic attention to getting into position and organizing the artillery on the lines of City Point. Few officers have the energy and ability to accomplish what he has done.

Major Cook, during most of the campaign has been in charge of the artillery on the lines of Bermuda Hundred, and has well performed his duties.

Major Brooker and Major Ager, after gallant and distinguished services during the summer as battery commanders, have been promoted and have energetically entered upon their new duties.

Where all the Company ~~Commanders~~ Officers have so faithfully done their duty, it seems almost invidious to select names for special mention. Almost all have at different times had command of independent batteries, and none have failed to efficiently serve them. Some, however, have been more fortunate than others in having rare opportunities for performing conspicuous services; of this number are especially Captains Pierce, Osborne and Pride; also Captains Dow, Pratt, Gillett, Brigham, Burton, Lincoln, Twiss, Sargeant, Bannon and Dimock; Lieutenants Jackson, Pratt, E. P. Mason, Patterson, O'Brien, Cashin, Odell, Bill, Woodruff, Beers and Silliman.

The administration of a command so widely separated and so peculiar as mine, would have been impossible without a staff far more efficient than usual. I have already defined their different duties, and can only add, that to Capt. Hatfield, assisted by Lieuts. Faxon, Gillette, Jackson and Westervelt, to Capt. Mason, and to Capt. Learned,

great credit is due for skillful and energetic performance of perplexing labors.

Surgeon Skinner, Asst. Surgeons Delavan and Matson, and Chaplain Jarvis, all merit my thanks for their faithful care of our sick.

To the various corps commanders, upon whose fronts our batteries have been placed, and especially to Brevet Major-General H. J. Hunt, Chief of Artillery, Army of the Potomac, under whose orders most of the regiment is now serving, we have every reason to be grateful. The latter, and Brevet Major-General W. F. Barry, formerly Chief of Artillery, Army of the Potomac, have been our constant friends since the peninsular campaign, and have laid us under deep obligations.

The following extract from a letter received from Major-General W. F. Smith, shortly after he left the Petersburg front, shows the estimation in which the regiment is held:

"I saw much of the services of the 1st Conn. Artillery during the campaign of 1862, and was then delighted with the skill and gallantry of the officers and men. During the time I commanded the 18th corps before Petersburg, I called heavily upon you for siege guns and mortars, and never before during the war have I witnessed such artillery practice as I saw with your regiment. The practicability of holding my position there after the 21st of June, was due in a great measure to the skill displayed by your regiment. I trust every effort will be made to fill up a regiment which has not its equal in artillery firing, and which can not be dispensed with without great injury to the service."

I am, General,

Very respectfully your ob't serv't,

HENRY L. ABBOT,

Col. 1st Conn. Artillery,

Brevet Brigadier-General Vols.

Commanding.