CIVIL WAR FIELD ARTILLERY IN THE WEST, 1862-1863

by

CHARLES W.F. BISHOP

B.A., University of British Columbia, 1966

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

in the Department
of
History

We accept this thesis as conforming to the
required standard

THE UNIVERSITY OF BRITISH COLUMBIA

September, 1967
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the Head of my Department or by his representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of History

The University of British Columbia
Vancouver 8, Canada

Date 29 Sept. 67
ABSTRACT OF

CIVIL WAR FIELD ARTILLERY IN THE WEST, 1862-1863

Problem: The problem in this thesis was to determine the role of field artillery in the battles of Shiloh, Perryville, Murfreesborough and Chickamauga in the western theatre of the American Civil War — between April 6, 1862, and September 21, 1863. Little has been written about the role of artillery in any theatre of the war, and nothing about its significance in the west.

Method: To develop a basis of information, it was necessary to become acquainted with the literature used by Civil War artillerists. By studying the two artillery text-books in use during the period, a theoretical model of the role of the guns could be constructed. This basis was reinforced by the reading of secondary material on the employment of artillery in other areas of the war, as well as general studies of the four battles on which this thesis is based.

Having become conversant with both artillery theory and the general background of the campaign, it was then possible to design the research methods necessary to deal with basic primary sources. The reports printed in the Official Record form the core of the research done for this thesis. They contain two types of information, reports and correspondence, and statistical data. The statistical data provided a method of analysis of the organization and equipment of the field artillery units. A separate data
sheet was set up for each battery in each of the four battles, and all information about the battery which was suited to statistical analysis were entered. The content of the sheets varied because the same data were not available for all units. This created problems in collating the information. In the end, the material was reduced to statistics which included the numbers of men, numbers of horses, types of weapons, numbers of casualties, ammunition used, and the parent formation to which the battery had been assigned. The mass of statistical data was then checked against the written reports published in the *Official Record* and other sources. Much of the material relevant to the study of artillery is not available in the former, however, so certain assumptions made in the thesis may be wrongly weighted. Nonetheless, the role of the guns has been reconstructed with some success.

**Conclusions:** The thesis concludes that artillery functioned primarily in support of infantry. In attacks, the guns rarely influenced the outcome of the battles studied. When used to support a defence, field artillery could often lend valuable assistance. In at least one case, the guns played an important part in stopping a major Confederate attack. Between April 6, 1862, and September 21, 1863, both the Union and Confederate armies increased the numbers of their field artillery, an indication that, although they were not decisive in the battles studied, the armies must have considered the guns to be of value.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>i</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>iii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Chapter I. SHILOH</td>
<td>6</td>
</tr>
<tr>
<td>II. PERRYVILLE</td>
<td>43</td>
</tr>
<tr>
<td>III. MURFREESBOROUGH</td>
<td>57</td>
</tr>
<tr>
<td>IV. CHICKAMAUGA</td>
<td>84</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>103</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>106</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>130</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table | Page
--- | ---
I. Numbers of Batteries engaged at Shiloh on April 6-7, 1862. | 9
II. Rifled Field Artillery Types Identified at Shiloh April 6-7, 1862. | 11
III. Smooth-Bore Guns Identified at Shiloh, April 6-7, 1862. | 12
IV. Numbers of Batteries Present at Perryville and number engaged. | 48
V. Number of Union and Confederate Field Artillery Batteries Present at Murfreesborough with Breakdown of Numbers of Guns. | 61
VI. Rifled Guns Identified in Union and Confederate Armies at Murfreesborough. | 62
VII Smooth-Bore Guns Identified in Both Armies at Murfreesborough. | 63
VIII. Ammunition Expended by Batteries at Murfreesborough | 78
IX. Average Percentage Casualties Reported from Field Artillery. | 79
X. Numbers of Guns per Battery in the Field Artillery at Chickamauga. | 86
XI. Types of Rifled Field Artillery at Chickamauga | 87
XII. Types of Smooth-Bore Artillery Present at Chickamauga | 88
XIII. Number of Guns Present at Murfreesborough and at Chickamauga | 89
XIV. Comparative Casualty Percentages in Union Infantry and Artillery | 98
INTRODUCTION

This is a case study of the role of field artillery in the western theatre of the American Civil War from April, 1862, to September, 1863. It is based on the examination of its organization, equipment and tactics during four battles -- Shiloh, Perryville, Murfreesborough and Chickamauga. Although, on occasion, field artillery was decisive in stopping an enemy attack, I have not found evidence that it was ever a critical factor in offensive operations. Most of the time the guns acted as valuable auxiliaries in close support of the infantry, and the available evidence shows that this was their primary role in the west. Large number of guns were massed on relatively few occasions.

Although an extensive literature on these battles exists, the study of field artillery has been neglected. In fact, the only major analyses of the subject in the entire Civil War deal with conditions in Virginia. Although they do discuss changes in equipment, Jennings C. Wise, in his work on the artillery of the Army of Northern Virginia, *The Long Arm of Lee*, and L.V. Naisewald in *Grape and Canister: The Story of the Field Artillery of the Army of the Potomac* are concerned primarily with organization. Both authors stress the evolution of a special command and staff system for the field artillery and the growth of a large artillery reserve. Both see the increasing use of large masses of artillery
as significant in the growth of artillery as a separate arm. This article is not intended to test these conclusions, but is an initial examination of the artillery in another theatre of the same war.

In the west in the period under study, the battery was the basic field artillery organization and usually contained four or six guns. Since it was expected to maneuver with the army, it was made as mobile as possible and, because it was often required to operate over rough terrain, considerable ingenuity had been used to make the components as light in weight as was practical. Each gun was attached to a limber -- a two-wheeled ammunition chest -- and the combined unit was pulled by six horses. Each gun and limber was, in turn, supported by a caisson -- another two-wheeled cart containing additional ammunition and an extensive assortment of other supplies. The caisson was also combined with a limber to form a four-wheeled conveyance and six more horses were required to pull it. In addition, a battery required a battery wagon and forge, each with its team of horses. A complete discussion of the many important developments in artillery technology before, during, and arising from the experience of the American Civil War would fill several volumes; but, throughout this study, technical detail has been kept to a minimum. It intrudes when an understanding by the reader of the difficulties facing artillerists is necessary. Where different types of weapons are discussed, an explanation of significant mechanical differ-
ences is included.

The batteries were manned by regulars and volunteers. The former, from the pre-war professional army, made up only a small proportion of the Union field artillery. The rest were volunteers, enlisted after the opening of hostilities. Forced to create an entire army after secession, the Confederates had no regular artillery, and all of their batteries were manned by volunteers. Although some on both sides had served in the militia or had had other experience, most were completely ignorant of their duties at the beginning of the war. The demand for West Point-trained officers to command infantry regiments denied the artillery the experience of some expert gunners, although official pressure kept many of the Union regulars serving with their batteries. 3

In the west, few of the officers who commanded batteries in 1863 on either side were promoted. A number, both regular and volunteer, served through the entire war as captains. This indicates that volunteers who, at the outset, had been untrained, had an opportunity to learn their jobs and that their lack of experience in traditional artillery duties may have allowed them to approach their responsibilities unburdened with obsolescent notions. Only two officers -- one Union and one Confederate -- reached the grade of brigadier general from battery command level. W.R. Terrill, who commanded his regular battery with distinction at Shiloh, was killed at Perryville just after he had been promoted to the rank of briga-
dier general. Felix H. Robertson, who had resigned from West Point to enter the Confederate artillery, also reached this rank, but it was never confirmed by the Confederate Senate. 4

Little is known about the literature used to train these batteries. The basic manual for Union artillerists was Instruction for Field Artillery, first approved in 1859. This book was a combined technical and tactics text and remained in use for the next two decades. A companion volume, John F. Gibbon's Artillerist's Manual, having been written as a West Point text book, provided more theoretical information. 5 While conclusive evidence about the manuals of the Confederate artillery is lacking, the fact that the Confederates copied the organization and regulations of the pre-war army suggests that the text-books were copied as well.
NOTES TO THE INTRODUCTION

1 Jennings C. Wise, The Long Arm of Lee; or the History of the Artillery of the Army of Northern Virginia (2 vols.; Lynchburg: J.P. Bell, 1915), I, 159, 337, 344, 486. Also L.V. Naisawald, Grape and Canister; The Story of the Field Artillery of the Army of the Potomac, 1861-1865 (New York: Oxford University Press, 1960), pp. 534-535. Also valuable in any study of artillery is W.E. Birkhimer, Historical Sketch of the Organization, Administration, Matériel and Tactics of the Artillery, United States Army (Washington: James J. Chapman, 1884), p. 106. Birkhimer, a professional artillery officer at the time that he published his work, reflected this concern for massing the artillery and placing it under the command of a single officer. He cited Gettysburg as a close approach to the Napoleonic ideal of the successful use of massed artillery.

2 The composition of batteries varied from time to time throughout the period under study. The equipment described represents the minimum usually used. The numbers of men and horses varied considerably as is shown in the data presented in the appendices.

3 Birkhimer, Historical Sketch, p. 69. At the outbreak of war there were four regiments of artillery in the United States Army and, while a fifth was raised afterward, the total professional artillery force available was insufficient to supply even the Virginia theatre. The term, 'battery' actually dates from the raising of the Fifth U.S. Artillery. Before that time, all units were called 'companies'. For the sake of simplicity, I have referred to all organizations as batteries as this was the correct tactical term.


5 [W.H. French, W.F. Barry, H.J. Hunt] Instruction for Field Artillery (Philadelphia: J.B. Lippincott Company, 1860). Essentially a field manual, this work is invaluable to any study of Civil War field artillery. The appendices include technical data on the capabilities of the weapons and their other characteristics which are unavailable from any other source. John F. Gibbon, Artillerist's Manual (New York: D. Van Nostrand, 1860), supplies information lacking in the Instruction for Field Artillery. Both works were re-issued a number of times, the major revisions being inclusion of material on rifled artillery.
Shiloh, on April 6th and 7th, 1862, was the first great battle in the west. Although its significance was limited, artillery participated on both sides in support of the infantry. For many of the Union and Confederate batteries, as it was for many of the infantry units, this battle was their first experience under fire. In the confusion surrounding the various stages of this conflict, the role of field artillery is sometimes unclear, but the situations here described are believed to be representative. In all cases, the major role of the guns was in support of the infantry and, as field artillery is alleged to have been decisive in two phases of the battle, these actions will be examined in detail.

The battle developed during a Union movement against the important Confederate supply depot at Corinth, Mississippi. The Union Army of the Tennessee, commanded by Major General Ulysses S. Grant, was moving up the Tennessee River, intending to meet the Union Army of the Ohio at Savannah, Tennessee, where Grant was to lead the advance on Corinth. When the battle began, five of Grant's divisions were camped around Pittsburg Landing, nine miles south of Savannah, and another division was at Crump's Landing, between Savannah and Pittsburg Landing. The Union main
force was supported on the river by two gunboats, the U.S.S. *Lexington* and *Tyler*, and used a fleet of steamboats for supplies and communications.

On Sunday, April 6th, the Confederate Army of the Mississippi, commanded by General Albert Sidney Johnston, smashed into the Union main force at Pittsburg Landing. Attacking in corps waves northward along the two roads leading into the landing, Major Generals W.J. Hardee, Braxton Bragg, and Leonidas Polk forced the Union army out of its camps and toward the water. Although Grant hurried up the river from Savannah to take command — ordering the division at Crump's Landing into action as he passed — by the afternoon the Union line had collapsed, leaving only the division of Brigadier General B.M. Prentiss to block the Confederate advance. The combination of the arrival of Union reinforcements from Savannah, the division from Crump's Landing and an improvised ring of Union artillery by late afternoon combined to halt the Confederates for the night, but not before Prentiss and most of his division were either prisoners or dead. Johnston had also been killed.

The next morning the Union troops assumed the offensive, bolstered by elements of Major General D.C. Buell's Army of the Ohio. In a second day of vicious fighting the Union managed to recover its camps, but allowed the Confederates — now commanded by General P.G.T. Beauregard, Johnston's second-in-command — to withdraw unpursued.
The basic unit of field artillery at Shiloh was the battery, commonly commanded by a captain. Except for two batteries which supported the Army of the Ohio on April 7th, all of the field artillery on both sides was manned by volunteers. While regimental organizations of artillery existed on both sides, they do not appear to have had any tactical or administrative meaning, for all of the batteries operated as independent tactical entities. Since little is known about their methods of recruitment, the background of these volunteer batteries is difficult to trace. In his study of the command of the Army of Northern Virginia, D.S. Freeman states that artillery batteries were drawn from the upper echelons of society; but concrete evidence to support this generalization is not available. One Confederate battery, the Fifth Company, (Washington Artillery, from New Orleans,) was indeed composed of aristocrats. This battery required references from young gentlemen desiring to enlist, and supplied its own cannon and equipment. While there is no evidence that the aristocratic background was responsible, the battery distinguished itself in every battle from Shiloh to Chickamauga and appears to have been as effective a battery as any in the Confederate service.

Perhaps more typical of the volunteer artillery was Stanford's Mississippi Battery. This unit also fought in every battle from Shiloh to Chickamauga and included in its ranks a diarist, Corporal John Euclid McGee, who described the steps between enlistment and
battle and provided valuable information on battery life. The battery was raised in Grenada, Mississippi, in September, 1861, and remained there in a camp of instruction until November 15th. McGee does not say how the battery acquired its single cannon but, when it was mustered into Confederate service, there were sixty horses to pull it. Throughout the winter of 1861-1862 the battery followed the forces under Major General Leonidas Polk through Kentucky and Tennessee. Armed with four and, finally, six assorted guns, it numbered 131 men and 95 horses on the eve of Shiloh.

At Shiloh the Federals had more batteries than did the Confederates. Numbers in the Union main force at the Landing and in the attacking army were approximately the same, but the Union received reinforcements during the battle.

TABLE I

NUMBERS OF BATTERIES ENGAGED AT SHILOH ON APRIL 6-7, 1862

<table>
<thead>
<tr>
<th>Type of battery</th>
<th>Union Main Force</th>
<th>Union Reinforcements</th>
<th>Confederates</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 guns</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>6 guns</td>
<td>13</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Known to have been present, number of guns unknown</td>
<td>3</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Total batteries</td>
<td>21</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>
Since some of the main force batteries had only recently arrived and were not yet assigned to infantry divisions, any Union advantage gained from artillery superiority may have been illusory. Unfortunately, it is difficult to reach conclusions about the relative strength of the Union and Confederate artillery. Details of the guns of a number of southern batteries are not available. It may be possible to reconstruct the role of a battery in a battle and to determine the number of casualties suffered and still be impossible to find out how many pieces it possessed.

The armament of the batteries falls into two classifications, smoothbore and rifled. Both types of cannon loaded at the muzzle and were mounted on similar carriages. Both types discharged by friction primers and used several types of time-fused ammunition. The rifled guns represented a major development in field artillery, however. While the gunner of the sixteenth century would have found little strange about the smooth-bore, the application of the rifling technique in field guns was new.\(^7\)

The principle of grooving the barrel of a firearm was very old, having been used in hand guns since the days of the Renaissance. Rifling caused the projectile to spin and thus to fly both more accurately and a longer distance. This same principle is used by a modern football player when he puts a spin on a passed ball. Problems of application of the concept to cannon had delayed its introduction until the decade before the Civil War.\(^8\) The major difficulty was to
develop metallurgical techniques which would ensure that the projectile would acquire the rifling grooves in the barrel and that, in the process, it would not place too much strain on it.

Table II illustrates the types of artillery identified at Shiloh. Because they cannot be identified in field artillery in subsequent battles, some appear to have been discarded as impractical.

**TABLE II**

**RIFLED FIELD ARTILLERY TYPES IDENTIFIED AT SHILOH APRIL 6-7, 1862**

<table>
<thead>
<tr>
<th>Type of rifled gun</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-pounder Parrott rifle</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>10-pounder Parrott rifle</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>12-pounder James rifle</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6-pounder James rifle</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>12-pounder Wiard rifle</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6-pounder Wiard rifle</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3-inch Ordnance</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Total rifled guns identified | 48    | 2 |

The variety indicates that the Union was experimenting with many types of rifled guns at this stage in the war. The 6-pounder James rifles had been made by rifling the old 6-pounder guns. Like many conversions, it was not altogether satisfactory, but many of these guns served in the field artillery of both sides during 1862-1863. The most modern gun present at Shiloh was the 3-inch Ordnance rifle.
and only two of these were identified.

While the number of different types of smooth-bore guns is not as great as the variety of rifles, four of the former have been noted. Of that number only the 12-pounder Napoleon was of a new design. It represented an effort to reduce to a single type the guns required by the field artillery. In the older systems of field artillery both guns and howitzers were used. The major difference between a gun and a howitzer was the weight of the tube. A gun was intended to fire round shot at long ranges, while a howitzer was designed to fire at shorter ranges and with a higher elevation. The Napoleon was an attempt to cut down the weight of the old 12-pounder gun while providing the shell-firing capability of the 12-pounder howitzer.

TABLE III

SMOOTH-BORE GUNS IDENTIFIED AT SHILOH, April 6, 1862

<table>
<thead>
<tr>
<th>Type of Smooth-bore</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-pounder Howitzer</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>12-pounder Howitzer</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>12-pounder Napoleon</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>6-pounder Gun</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>37</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

Most of the smooth-bores identified at Shiloh were older types, all having been in service since the Mexican war. The small number
of Napoleons indicates that this pattern had not yet been issued in large numbers to the Union forces in the west. While the lack of Confederate data is confusing, there is no evidence in the reports to show that the distribution of guns would have been different. It is interesting that the two most modern types of artillery present -- the Napoleons and the 3-inch rifles -- were not found in Grant's army but belonged to regular batteries in the Army of the Ohio. Further, it appears that the six Confederate Napoleons were the result of an early attempt by the brass foundries of New Orleans to cast cannon.

The field artillery at Shiloh used four basic types of ammunition: shot, shell, case shot and canister. Although some types of rifled guns also used solid projectiles, the old-fashioned cannon balls, or shot, were used primarily by smooth-bores for long range fire. Shells with fuses and bursting charges were also employed at long range, commonly against cavalry. Case shot, or shrapnel, were shells with bursting charges and cargoes of musket balls, and were often used against infantry. Canister was the close range ammunition. A tin case, filled with iron balls, converted the cannon into a huge shot-gun and, when forced by an emergency, two canisters could be fired at once. The major difference between rifles and smooth-bores was that the former fired shells and case shot more accurately at long range, while the latter were more effective with canister. While the theoretical range of some rifled guns was as great as 4,000
yards, there is little evidence that this advantage was ever signifi-
cant in the west. On the whole, the field artillery had to fire
all types of ammunition from distances within small arms range, and
batteries were often under small arms fire all of the time that they
were in action.

Drill was the key to the potential fire-power of field arti-
16 llery. Once it was committed, the teamwork of gunners and drivers
was needed to get the battery into action in a hurry. Only hard
work by the gun crews could develop the speed necessary to fire
three shots a minute at close range. Once this skill was developed,
the battery could lay down an awesome curtain of canister or case
shot. A single 12-pounder howitzer, firing double charges of canis-
ter, could cover the ground in front with 288 one-inch iron balls
per minute, a rate comparable with that of a modern machine-gun.

Little information is available, unfortunately, about the training
of the field artillery which served at Shiloh. Corporal McGee men-
tioned that an officer was assigned to drill his battery, but gave
no other details. The only two references found anywhere to a
manual of instruction used to train the Confederate artillery are
to the Instruction for Field Artillery. 18 It must be assumed, there-
fore, that both sides used the same text-book. In any case, the
precision displayed by some of the Union and Confederate batteries
could only have come through long hours of drill.

When Albert Sydney Johnston assumed command of the Army of the
Mississippi on March 29, 1862, he decreed that one six-gun battery
was to be assigned to each 2500-man infantry brigade. He also made a provision for the establishment of an artillery reserve, but did not put the plan into effect before the battle. While his premature death makes it difficult to determine his intentions, it appears that he meant to provide each brigade with its own artillery support. Since he was a professional soldier with varied military experience, it is suggested that the combination of battery and brigade represented his solution to the problem of the best use of artillery.

On the other hand, Grant reorganized his field artillery. Shortly before the battle he removed the batteries from the brigades and assigned a number to each division. In theory this would have permitted the division commander to concentrate the fire of his guns on special targets more easily than if they were dispersed with the individual brigades. The Instruction for Field Artillery favoured this concept as well, for it prescribed:

The effect of field artillery is generally in proportion to the concentration of its fire. It has therefore for its object, not to strike down a few isolated men, and here and there to dismount a gun, but by a combined and concentrated fire to destroy the enemy's cover; to break up his squares and columns; to open his ranks; to arrest his attacks, and to support those which may be directed against him.

Both generals intended their field artillery to act as infantry support, but they differed as to method. Johnston placed his guns "under command" of his brigades, giving each brigadier his own force of field artillery; in contrast, Grant's guns were "in support", but
not directly under infantry control.

At Shiloh field artillery supported both the Confederate attack and the Union defense. The following examples illustrate the way in which both sides used artillery during the three phases of the battle: the offensive phase, from the initial Confederate assault on the morning of April 6 until the surrender of Prentiss's division in the late afternoon; the defensive phase involving the Union action around Pittsburg Landing, from the surrender of Prentiss until dark; and the counter-attack phase — the Union's reinforced offensive on the following day.

In issuing orders for the battle on April 3, Johnston made little mention of the disposition of his artillery. In an attack by three corps in succession, Hardee's corps was to lead. The order required Hardee to "make proper disposition of the artillery along the line of battle, remembering that the rifled guns are of long ranges and should be placed on any commanding position in rear of the infantry to fire mainly on the reserves and second line of the enemy, but [its fire] will occasionally be directed on his batteries and heads of columns." It is clear that Johnston's intention was to use the artillery of his first wave to dominate the field and to prevent the enemy from being reinforced. The order seems incompatible, however, with the type of artillery organization he had created. By placing the immediate control of the field batteries with individual brigadiers, Johnston effectively denied Hardee the control of his guns, once the battle was joined. The presence of
the guns within each separate brigade made any overall coordination of the artillery impossible. Further, Johnston seems to have failed to consider the terrain over which he was attacking. Since only two major roads let into the Pittsburg Landing area from the south, Johnston set the stage for a monumental traffic jam. The teams and wagons of the army's artillery and transport choked the roads in the attack area, already deep in mud, and forced the postponement of the assault an extra day. By sundown on April 4, Corporal McGee and the rest of his battery had progressed only as far as a camp on the Purdy road seven miles from the Landing.23 During the entire next day the battery was able to move only five miles. Since both Bragg and Beauregard were upset by the delay in getting the attacking force organized, one wonders why Johnston failed to change the assaulting formation, especially when it must have been obvious that the terrain would break up the Confederate line once the battle began.24

When Hardee moved his corps into the attack on the morning of April 6, his artillery was posted behind his infantry brigades.25 His wave advanced on a four-brigade front, each battery directly behind its assigned infantry brigade. But once the advance actually began, the artillery commenced to have difficulty in maintaining position with the infantry. Captain W.L. Harper, who commanded the Jefferson Artillery attached to Brigadier General S.A.M. Wood's brigade, soon lost contact with his assigned formation.26 Although, in obedience to the original order for the attack, the guns halted on high ground, the initial success of the infantry soon left them behind. Harper
reported that, although he had cooperated with the other batteries on his left in finding good fire positions, he could do little more at first than to "make the best progress possible across ground frequently difficult for artillery." It was this "impediment of the ground" that forced him to the right, causing him to lose contact with Wood's brigade, and placed him under Brigadier General T.C. Hindman. Here the battery collaborated with Hindman's brigade and battery to drive the Federals from their camp. After this action, Harper tried to find his own brigade but, was unsuccessful. He resolved "to throw myself in wherever a chance offered." For the balance of the day he followed this tactic, supporting attacks wherever he could and engaging both Union infantry and artillery. In the afternoon he served under the orders of General B.F. Cheatham, one of Polk's divisional commanders -- a clear indication that the attack formation had become badly mixed. His report showed clearly that artillery support was often given at very close range for, on one occasion, he silenced a Union gun at a distance of 150 yards. It also reflected the confusion which characterized the operations of Confederate field artillery during the offensive phase of the battle. Harper obviously believed that it was his duty to fire at Union targets, but nowhere in his report is there any indication that he was aware of the failure in Confederate artillery organization.

The artillery of the second wave had similar experiences. The Fifth Company, Washington Artillery, commanded by Captain Irving Hodgson, entered the battle in rear of his assigned brigade.27 He,
too, opened fire first on a Union camp. Although his position on the field is not clear, it seems likely that he was firing into camps on the left of the Confederate line. As an example of the way in which artillery became disorganized, Hodgson was supported by two guns from the Confederate first wave. After using his shells and case shot to silence a Union battery, and, later, to support an assault on the camp, he too began to operate independently. He reported:

At this point I lost your [Brigadier General Patton Anderson, his brigade commander] command, and on the order of General Ruggles to go wherever I heard the most firing, I passed over the first camp captured through a third, and on to a fourth, in which your [Anderson's] troops were doing sad havoc to the enemy. I formed in battery on your extreme left, in the avenue of the camp, and commenced firing with canister from four guns into the tents of the enemy, only some 50 yards off. It was at this point I suffered most. The skirmishers of the enemy, lying in their tents only a stone's throw from us, cut holes in their tents near the ground, and with "white powder", or some preparation which discharged their arms without report, played a deadly fire in among my cannoneers, killing 3 men, wounding 7 or 8, besides killing some of my most valuable horses, mine among the rest.

Obviously Hodgson believed in the value of close support, but he must have imagined the silent fire of the enemy since there was no such thing as "white powder". The quotation also illustrates another aspect of field artillery tactics. By firing his canister at close range Hodgson cleared the camp, but the in-fighting produced casualties among his gunners and horses. Throughout the battle close-range fire was to have similar results in all batteries.
Captain W.H. Ketchum, commanding an Alabama battery under Bragg, also engaged the Federal infantry at close range. Advancing in support of Colonel Preston Pond's brigade, he fired at Union infantry with shell and case shot, moving gradually forward, two guns at a time. This tactic of advancing by "half battery" permitted him to dominate the enemy with his fire, while moving forward by stages, a maneuver still in use today in the jungles of Viet Nam. After this successful attack, Ketchum was ordered away from his assigned brigade by an aide to General Hardee. He then cooperated for the balance of the day with troops of a Texas cavalry unit in a series of attacks on Union positions. Ketchum clearly believed that his duty lay in supporting the brigade to which he was assigned, for he wrote, "Colonel Pond's fine brigade was badly cut up in a charge on a battery in one of these camps, which I have always thought could have been avoided had my battery not been withdrawn from the advance I was making on this camp."  

Captain T.J. Stanford, Corporal McGee's battery commander, entered behind an infantry brigade of Polk's corps. Due to the thickness of the undergrowth, he too found himself unable to keep up with the infantry. Although he had never been able to fire his guns in training, Stanford wanted to get into the fight. "Left to my own judgement," he reported, "I determined to advance in the direction of the enemy as indicated by the firing." Engaging the Federals first at 600 yards, he silenced an enemy battery, claiming that it was taken by Confederate infantry without firing a shot.
If Stanford is correct, then he was engaging the Union Thirteenth Ohio Battery, which did abandon its guns as soon as it came under artillery fire. For the balance of the day Stanford and his gunners occupied a series of positions under the orders of various generals, but did not serve with their assigned brigade.

Apparently the Confederate field artillery was in a state of disorganization during the entire day of April 6. The reports of all of the battery commanders show that, once the battle had begun, overall controls over the guns disappeared. The fact that general officers would allow batteries to find their own way into the fighting indicates that the whole assault was badly managed. Indeed, rather than a coordinated attack, the entire battle seems to have been a series of vicious fire-fights between sections of the opposing forces.

Confederate commanders often failed to use their artillery in situations where it could have saved many lives. Polk described such an engagement between the troops of Brigadier General A.P. Stewart's infantry and a Union battery. Although Stewart's brigade had started the battle with Stanford's battery under command, it was not accompanied by artillery when it ran into a Union battery of "heavy guns" supported by infantry. Stewart's solution to this problem was to order a frontal infantry assault by the Fourth Tennessee. Polk wrote:

In reply to an inquiry by their cool and determined brigade commander, General Stewart, "Can you take that battery," their colonel said, "We will try," and at the order forward they moved at a double quick to within 30 paces of the
enemy's guns, halted, delivered one round, and with a yell charged the battery, and captured several prisoners and every gun. 32

As Polk said, "It was a brilliant achievement, but an expensive one." The Tennesseans lost 31 killed and 150 wounded in an assault which could have been assisted by field artillery, had it been there. Situations like these developed because no system existed by which batteries could be coordinated and brought to fire on Union strong points.

As the Confederate attack pressed forward in individual engagements along a three mile front, the Federal forces were driven back. By the middle of the afternoon only the Union Sixth Division, commanded by Brigadier General B.M. Prentiss, remained close to its original position. Ordered by Grant to hold to the last, these troops acted as magnets, drawing Confederate troops from other parts of the field. 33 Prentiss had established himself along a sunken road behind the log chapel of Shiloh, and here he was attacked, again and again, by masses of Confederates. Almost every unit in the attacking force appears to have gravitated toward this position, later described as a "Hornets' Nest," and it was in this area that Johnston was killed.

One of Bragg's division commanders, Brigadier General Daniel Ruggles, claimed to have ensured the final collapse of Prentiss' position by ordering the concentration of a huge mass of field artillery which prevented the latter from being reinforced. "I
directed my staff officers at the same time to bring forward all
the field guns they could collect," he wrote. After describing
the gathering of eleven batteries, "for a brief period the enemy
gained ground," he said, "and when the conflict was at its height
these batteries opened upon his concentrating forces, enfilading
Prentiss' division on his right flank, producing immediate commotion, and soon resulted in the precipitate retreat of the enemy
from the contest." The implication of Ruggles' statement is
clear: the field artillery was decisive in the attack on the
Hornets' Nest. Unfortunately the role of the guns in this con-

The noted Civil War historian, Kenneth P. Williams, des-
cribed this concentration as a "giant battery of some sixty guns." 

Charles P. Roland, a biographer of Albert Sidney Johnston, des-
cribed a "great battery of sixty-two cannon" concentrated against
the sunken road. Similarly, Stanley F. Horn wrote of "blasts of
massed artillery" supporting the infantry assault which annihilated
Prentiss' division. If these authors are correct and Ruggles' report is an accurate description of what happened, then artillery
played a vital role in the greatest Confederate success of the
battle. It is suggested, however, that the control and coordination
required to carry out such a concentration would have been wholly at
variance with Confederate conduct during the balance of the battle.
It seems strange that batteries unable to find their own brigades
would suddenly be able to cooperate in a mass attack.

The reports of several of the battery commanders listed by Ruggles as having participated in this action do not reflect any awareness that they had just destroyed a Union division. Hodgson, whose Washington Artillery was cited by Bragg for distinguished service, apparently had nothing to do with Ruggles until the cessation of hostilities at the end of the day. At the time when, according to Ruggles, his battery was firing on Prentiss, Hodgson appears to have been shelling Union camps under Hardee's orders. 36 "At about 2 p.m., at the instance of General Hardee, I opened from the fifth camp we had entered fire upon a sixth camp, due north." Hodgson reported, "silencing a battery and driving the enemy from their tents." He then said, "This was about the last firing of my battery on the 6th instant." This report clearly shows that Hodgson did not believe he had participated in any decisive action. He then went on to state that the first time he came under Ruggles' orders that day was when the battery was ordered back from the Landing area to bivouac for the night. Stanford's report presents a similar picture. Although he too was listed by Ruggles as being part of his mass of field artillery, he failed to mention participating in any significant bombardment. 37 Stanford's report is supported by the McGee diary, and McGee devoted considerable space to his impressions of the battle. Captain Smith P. Bankhead, who was acting as Polk's Chief of Artillery during the battle, omitted any mention of a major
artillery concentration from his official report. 38

Writing to Ruggles a year later, however, Bankhead included
the following statement:

The effect of this tremendous concentrated fire was
very evident. The reserves, which could be plainly seen
going to Prentiss' relief, fell back in confusion under
the shower of shot, shell, and canister that was poured
upon them, while our infantry, encouraged by such heavy
artillery support, rushes forward with a shout and ca­
rried the position.

.... All I have been able to ascertain, upon consulta­
tion with battery commanders touching this remarkable con­
centration of artillery, is that it was not the result of
accident, but under and by the direction of one controlling
mind, as batteries were brought up from various positions
on the field and directed to this particular position. 39

This statement raises a number of questions. If this concentration
of artillery was so remarkable, why did Bankhead omit to mention it
in his official report? Further, why did other battery commanders
also fail to note their participation in so vital a phase of the
battle? Why did Bragg and Beauregard both omit any mention of arti­
illery support in their descriptions of Prentiss' surrender? Although
he was commanding in the area of Prentiss' surrender, Polk did not
speak of field artillery in his description of the final assault.
Instead, he attributed the Union collapse to a Confederate flanking
movement. 40 From the available evidence it seems clear that the con­
centration of artillery, at least as Ruggles described it, did not
occur.

Exactly why Ruggles wanted to assume the credit for Prentiss'
surrender is not clear, but there can be no doubt that his report created a false impression. If, as a number of historians have suggested, field artillery was decisive, the scarcity of corroborating evidence is strange. While an accurate reconstruction of the real role of field artillery in this action is difficult, it appears to have been less a mass firing, wheel-hub to wheel-hub, than a process of piecemeal arrival and engagement as auxiliary units. It may well have been true that Ruggles' staff officers brought up a number of batteries, but the results of their firing were attributable more to good luck than to organized control. It has already been established that some batteries operated on their own for most of the day's engagement. It is likely that they followed the movements of infantry units toward the Hornets' Nest and, once there, joined in the fighting. The aggressiveness of individual battery commanders could have placed them in positions where their fire provided effective support of the attacks on Prentiss, but they might have been unaware of its overall importance. It is quite possible that the individual batteries acted on the orders of the senior officer who happened to be nearest and that, in some cases, this officer was Ruggles. The stress by some historians on artillery concentration at this point in the battle has diverted attention from the real role of close support of infantry brigades which had been assigned to Confederate guns.

The Union had originally planned to attack the Confederates
at Corinth and had expected that artillery fire at close range would be a decisive feature of their advance. Colonel J.D. Webster, Grant's Chief of Staff, had written:

I apprehend that a large, if not the principal, part of the enemy's artificial defenses will consist in the rude abatis [breastworks of fallen timbers] so much employed heretofore. To dislodge them from this what means can be more effectual than a large artillery force with plenty of shrapnel and canister?41

Instead, the Federals found themselves on the defensive and, as has been noted, spent April 6 retreating toward Pittsburg Landing. On the whole, although many batteries made valiant efforts, the Union artillery could do little to stop the Confederate attack. Whether their organization of batteries on a divisional basis aided the defence is uncertain. In fact, most of their artillery appears to have operated in much the same way as that of the Confederates -- as individual batteries.

Sherman's division was an exception, however; for the Chief of Artillery, Major Ezra Taylor, employed his batteries to hold up the Confederate assault.42 By siting three batteries so that they had good fields of fire, Taylor had ensured that his guns could support the division against attack. His dispositions proved so sound that he was able to hold back the Confederate left wing for some time. Lieutenant John Fitch, who finished the battle in command of Battery E, First Illinois Light Artillery -- one of the batteries serving under Taylor -- reported that his unit had been
given only three days' drill since receiving its horses. Despite this lack of training, his battery — first under Captain A.C. Waterhouse, who was wounded and, later, under Lieutenant Abbott — put up a stubborn resistance to Confederate infantry attacks supported by artillery fire. It retired only when the Union infantry on its left gave way. Fitch described the action as follows:

The infantry on our left continued to retreat, and the enemy again outflanked us, this time advancing rapidly up the hill on our left. Lieutenant Abbott, now being wounded, I gave the order to retreat, which was effected under a close fire of musketry, when the enemy had approached to about 50 yards from our position. Many of our men and horses had been wounded, and I was obliged to leave on the field two 4½-inch and one 3½-inch guns.

Artillery fire alone could not stop the determined Confederate attacks. Again, this quotation illustrates the vulnerability of field artillery to infantry close-range fire. During the battle, this battery suffered a total of eighteen human casualties and, while Fitch did not say how many horses he left on the field, the teams from three guns must have been disabled.

At the time that Lieutenant Fitch was being assailed, another of Taylor's batteries was demonstrating that heavy enemy fire was not the only reason guns were lost. Captain Frederick Behr had hardly placed his guns in position when he was shot out of the saddle. This caused a general panic among his men. Leaving five of the six guns on the field, the artillerymen used the horses and caissons to escape to the rear. Sherman blamed this precipitate retreat for the collapse of his line and his forced withdrawal.
While most Union batteries fired at the enemy guns, their major efforts were vain attempts at stopping Confederate infantry attacks. In the first stages of the battle, Brigadier General J.A. McClernand used three of his four batteries to protect the infantry of his division. Placing one six-gun battery on his right flank and a battery of four 24-pounder howitzers on his left, he enfiladed the Confederates attacking the centre of his line. Despite these dispositions, he was unable to stop the enemy masses and the battery in the centre of his line was destroyed. McClernand related the event in this masterpiece of understatement:

[Captain J.B.] Burrow's battery opened a brisk fire from its position at the center, but from the near approach of the enemy, and the deadly fire opened on it by both infantry and artillery, was soon lost, including 70 horses killed .... The underbrush and trees bear abundant and impressive evidence of the sanguinary character of this engagement.

Similarly, McClernand's fourth battery, commanded by Captain James P. Timony suffered from close combat with the Southerners. In a vicious fight where whole trees were felled by the fire, this battery lost twenty-five men and four of its six pieces.

Brigadier General Stephen Hurlbut, commanding the Union Fourth Division, believed that infantry and field artillery had two separate tasks. Writing of an Ohio battery which had left the field when it first came under fire, Hurlbut explained:

That they were exposed to the fire of the enemy's artillery is true, and as long as the laws of optics remain I confess that I know of no way in which field artillery can
see an enemy's battery and do execution without being liable to be seen and reached by them. I have always supposed that artillery was expected to meet artillery....

Although he used his guns mainly to support his retreating infantry, Hurlbut expected the guns to look after themselves on the field.

Operating at close range near the Hornets' Nest, one Union battery used its canister very effectively against attacking confederate infantry. Leading his troops up a ravine through dense undergrowth, Patton Anderson suddenly came under the fire of Captain A. Hickenlooper's Fifth Ohio Battery, supporting a Union infantry regiment. Anderson reported:

I pushed forward, however, and had crossed the ravine and commenced the ascent of the opposite slope, when a galling fire from infantry and canister from howitzers swept through my ranks with deadly effect. The thicket was so dense that it was impossible for a company officer to be seen at platoon distance.

The enemy's canister was particularly well directed, and the range, being that of musketry, was well calculated to test the pluck of the sternest.

The immediate effect of this fire was to force the Confederates to withdraw after a number of troops had been killed by the canister. This action gained enough time to permit Hickenlooper to limber up and escape from the Hornets' Nest before Prentiss' surrender.

Throughout the offensive phase, almost all of the first day of battle, the Union troops retreated toward the Landing. The roads into that area became choked with troops and artillery trying
to escape the Confederate attack. Since the guns had nowhere else to go, the result was a forced concentration of artillery. Brigadier General William Nelson, the first division commander from the Army of the Ohio to reach Pittsburg Landing, with reinforcements late on April 6, reported that the guns were the only defence against "the audacious approach of the enemy". This final stand constituted the defensive phase of the battle of Shiloh, and illustrates the most significant role of the Union field artillery in the battle.

In his report of the conflict, Grant described Colonel Webster as being "in special charge of all the artillery" and cited him for distinguished service. Webster was credited with gathering "an entire regiment" of artillery and this must have been the concentration of guns reported by Nelson. Kenneth Williams stated that the massed Union artillery consisted of fifty guns but, as with Ruggles' concentration, the number is unsubstantiated. It is known that Grant's artillery included a siege train of 24-pounder rifled guns, not actually a part of his field artillery. These pieces were parked in the vicinity of the Landing and acted as the core of Webster's concentration. Webster did not write a report, unfortunately, so the details of his artillery organization are lost. Ezra Taylor, who had seen the batteries of his division decimated in the attacks of the morning, stated that Webster and Grant ordered him to collect all the Illinois batteries or fragments of batteries he could find and place them "at any point of
attack where I could use them to advantage." Further, Union battery commanders reported serving in the vicinity of the landing, but the degree of artillery organization was much less than Williams implied:

So now, as the battle raged about the little body of water which from that Sunday has been known as Bloody Pond, and the great assemblage of Confederate guns hammered relentlessly at the Hornets' Nest, Webster gathered batteries and guns from here and there and put them in an advantageous position for the defense of the landing. Just above this key place a wide and deep ravine opened into the river. For a distance it was full of backwater and quite impassible; then for a half mile it was still deep, abrupt, and wet, though traversable by infantry. On the good high ground overlooking this obstacle Webster put his guns, including three of a four-gun battery of the Fourth Division that had fired one hundred and ninety-four rounds per piece. In all, Webster assembled fifty guns, some of them moderately heavy siege weapons.

It is clear that Williams has seen this action as a massing of artillery where the guns functioned under tight control. But examination of artillery reports shows that the control was not tight. Ezra Taylor, for example, reported that he delivered his guns to Sherman at the Landing and that it was Sherman who put them into position. Lieutenant George Nispel, commanding Battery E, Second Illinois Light Artillery in McClernand's division, said that he was assigned to a position at the Landing by McClernand. Hurlbut too was in the vicinity of the Landing and he also had a hand in the placing of artillery. Lieutenant Edward Brotzmann, commanding Mann's Missouri Battery in Hurlbut's
division, reported taking a position near Pittsburg Landing but he took orders from Hurlbut. It is interesting that Brotzmann's figures for ammunition expended make it quite likely that his was the "four-gun battery from the Fourth Division" mentioned by Williams. Hurlbut's own report makes it clear that he considered that he himself was responsible for organizing the artillery at this position and made no mention whatever of Webster. Hurlbut also organized the fire from the two gunboats on the Confederates at the head of Dill's Branch, the ravine Webster's artillery was supposed to have covered. Hurlbut described the repulse of the Confederates:

I passed to the right and found myself in communication with General Sherman and received his instructions. In a short time the enemy appeared on the crest of the ridge, led by the Eighteenth Louisiana, but were cut to pieces by the steady and murderous fire of our artillery .... General Sherman's artillery also was rapidly engaged, and after an artillery contest of some duration the enemy fell back.

The identification of the siege guns makes it clear that Hurlbut and Williams were describing the same engagement. It is also clear, however, that, if Hurlbut is correct, the Union artillery was never massed. It is likely that what actually occurred was a gradual collecting of Union guns forced by the retreat into the congested Landing area. Here, under the orders of a number of senior officers: Grant, Hurlbut, Sherman, McClernand, and Webster, the batteries were employed on a divisional basis to fire in the direction of the enemy. Since it appears that the Confederate
attack was developing in the vicinity of Dill's Branch, the effect would have been to concentrate the fire of all the separate batteries on this area, creating the impression of a massed battery.62

No doubt the Confederates were subjected to the fire of many Union guns, but we do not know whether this was the decisive factor in calling off the attack on the Landing. Instead, it may be that the Union guns slowed down an attack which was already losing impetus and also that the Confederates were now suffering from fatigue as well as from enemy fire.

The third, or counter-offensive phase of the battle began on the following morning, April 7. Reinforced by the division from Crump's Landing as well as by elements of the Army of the Ohio, Grant recovered the camps he had lost. Here the Union field artillery provided support for the attacking infantry while the Southern gunners tried to stem their assault. The results of this day's battle reinforce the conclusion that the major role of the artillery was close range infantry support.

Captain John Mendenhall, Chief Of Artillery to Major General Alexander McCook's Fifth Division of the Army of the Ohio, used his guns to silence the Confederate artillery and then to destroy a force of Confederate infantry.63 "I moved briskly to the point designated," he said, "And as soon as our infantry could be separated to the right and left I opened upon the enemy with canister. After firing some five rounds I drove him back from his position, and moving forward occupied it myself, continuing the fire of
canister upon a thicket where he had sought shelter after abandon­
ing his guns." The effect of this type of fire is illustrated by
the following excerpt from a report of Mendenhall's First
Lieutenant, Charles Parsons:

Proceeding through the thicket from which the enemy
had emerged later in the day I found the bushes broken
down by our canister and the ground thickly strewn with
their dead.... I venture to mention the fact that with­
in the narrow area where I stood more than 100 dead were
still to be counted. [Some had already been buried.] The
position occupied by the enemy's battery silenced by
our own contained 27 dead horses and 7 dead bodies still
unburied.64

Similar results were reported by the other batteries attached to
this division, indicating that they did their most effective fir­
ing at very close range.

When the vigorous Union counter-offensive forced the Confed­
erates to withdraw, their artillery covered the retreat. While
supporting the Confederate Reserve Corps under Brigadier General
John C. Breckinridge, in an unsuccessful attempt to take a Union
battery, Stanford used canister to hold up the Federal advance for
half an hour, suffering many casualties in the process. Stanford
reported:

At no time was the distance [from the Union troops] more
than 300 yards, and this was reduced to 50 yards when the
last gun was discharged. A part of the time they filed
past in four ranks, with the intention of flanking us. It
was then [that ---] the grape [canister] had the most terri­
ble effect upon them. Large gaps were made by every gun at
each discharge .... My horses being nearly all killed, I
could only bring away two pieces, leaving four upon the
field.65
Throughout the two days' fighting the role of the field artillery is apparent: both Union and Confederate commanders used their guns to support their infantry and, in both cases, this was often done at close range. The Confederate artillery cooperated in the assault on April 6 although it was hampered by the terrain. While the guns contributed to his destruction, it is not clear from the available evidence, how much artillery fire was responsible for Prentiss' surrender. In the case of the Union stand at Dill's Branch the role of the artillery is easier to identify. Though they were not massed under a single commander, the Union guns seem to have stopped the Confederate attack. Perhaps Confederate fatigue and the coming of night may have assisted.

It is unwise to arrive at any final conclusion about the true effectiveness of the field artillery at Shiloh. The reports of the artillery commanders, however, indicate that the guns were most destructive when firing canister at close range. One conclusion can be drawn: if a battery was under attack at Shiloh and the infantry around it broke, the battery alone could not stop the enemy. In every instance where guns were forced to fire without protection on assaulting infantry, the battery suffered damage. If artillery was not protected by its own infantry, not even the deadly fire of its close range canister could save it. The many instances when Confederates suffered seriously from Union artillery fire and still continued their attacks prove that the guns must be viewed as auxiliaries, unable to dominate the field by themselves. Artillery fire
at long range was never a decisive factor at Shiloh. While many batteries fired at considerable distances, there is little evidence that they did much damage. Even the gunboats, though firing heavy shells, appear to have been of little value to the Union commanders.

In sum, Shiloh must be viewed as an artillery school where both battery commanders and generals became aware of the potential of the guns. It must be stressed that their large quantities of artillery presented the generals with unfamiliar problems and that only by the time the battle was over did they have some clear knowledge of what the guns could do.
NOTES TO CHAPTER I


2. For details of the actual strength of those Union and Confederate batteries for which such data is available, see Data, Appendix A. A full citation for all data is included in the introduction to each appendix.


6. See Data, Appendix A.


9. See Data, Appendix A.


12. Gibbon, *Artillerist's Manual*, p. 60. Technically a howitzer had a chamber in its breech that was smaller than the diameter of the barrel.
NOTES TO CHAPTER I

13 See Data, Appendix A.

14 Instruction for Field Artillery, pp. 2-3, lists 6 and 12-pounder guns and 12, 24, and 32-pounder howitzers as making up the field artillery of the United States Army in 1859. Birkhimer (Historical Sketch p. 283), lists all these types as well as the 12-pounder mountain howitzer in the various systems of field artillery in service after 1839.

15 Naisawald, Grape and Canister, pp. 537-552 (Appendix).

16 With any weapon, the basic training of the soldier includes continual practices, to make him operate it by instinct. In the case of muzzle-loading field guns, the problem was complicated by the difficulties created by making an error in loading. If some step in the complicated loading drill was omitted by the gun crew, a misfire took considerable time to remedy, and this delay could be fatal in a short range engagement.

17 This rate of fire is calculated on the basis of three shots per minute, double canister, each canister containing forty-eight one-inch iron balls (Gibbon, Artillerist's Manual, p. 35 [appendix]).

18 C.C. Jones, Historical Sketch of the Chatham Artillery During the Confederate Struggle for Independence (Albany: Joel Munsell, 1867), (microprint copy, U.B.C. Library), pp. 40-41; also OR, XX, pt. 1, 753. These are the only two references to any instruction manual used by the Confederate artillery.

19 OR, X, Pt. 1, 371.


21 Instruction for Field Artillery, p. 2.

22 OR, X, pt. 1, 393.

23 McGee Diary, April 5, 1862.

24 Roland, Albert Sidney Johnston p. 323n.
NOTES TO CHAPTER I

25 OR, X, pt. 1, 568.

26 Ibid., 609-610. Harper’s report also shows clearly that the corps artillery marched behind individual infantry brigades.

27 Ibid., 513.

28 Ibid., 528.

29 Ibid.

30 Polk reported: (ibid.), 411; "... One company of artillery -- that of Captain Stanford from the scarcity of ammunition, had never before heard the report of their own guns."

31 Ibid., 436.

32 Ibid., 409.

33 Williams, Lincoln Finds a General, III, 372; also OR, X, pt. 1, 278, Prentiss reported that he was ordered to "maintain that position at all hazards."

34 OR, X, pt. 1, 472. This is an amended report, the amendment approved by Bragg on April 21, 1863 (ibid., 474).

35 Williams, Lincoln Finds a General, III, 372; Roland, Albert Sidney Johnston, 339, Horn, The Army of Tennessee, p. 132.

36 cf, OR, X, pt. 1, 472, ibid., 514.

37 Ibid., 436.

38 Ibid., 413.

39 Ibid., 476.

40 Ibid., 409. Also see Map No. 2, Appendix D.
NOTES TO CHAPTER I

41 DR, X, pt. 1, 85-86.

42 Ibid., 273.

43 Ibid., 276.

44 Ibid., 277.


46 Ibid., 115-116.


48 Ibid., 208. Hurlbut was replying to a question regarding his demand that the battery (Myer's 13th. Ohio) be broken up and the commanding officer cashiered.

49 According to the report of Colonel J.L. Geddes, 8th Iowa, (ibid., 166), this regiment was detailed to support a battery by General Prentiss. Prentiss in turn (ibid., 278), identified his only battery as Hickenlooper's 5th Ohio.

50 Ibid., 498.

51 Ibid., 166.

52 Ibid., 323.

53 Ibid., 110.

54 Williams, Lincoln Finds a General, III, 374n.

55 DR, X, pt. 1, 274.

56 Williams, Lincoln Finds a General, III, 374.

57 DR, X, pt. 1, 274.
NOTES TO CHAPTER I

58 Ibid., 147.
59 Ibid., 247.
60 Ibid., 204.
61 Ibid., 205. Also see Map No. 2, Appendix D.
62 Ibid.
63 OR, X, pt. 1, 374.
64 Ibid., 375.
65 Ibid., 437. In this attack Stanford lost eighteen men.

66 Considerable controversy exists over the exact contribution rendered by the gunboats. John D. Milligan, Gunboats Down the Mississippi (Annapolis: United States Naval Institute, 1965), p. 61, writes: "The woodclads contributed importantly to this repulse." Hurlbut (OR, X, pt. 1, 205), agrees; Beauregard (ibid., 387), also supported this claim. Polk, however described their fire as "comparatively harmless" (ibid., 410) and he was in the area while Beauregard was not. No doubt the shell fire from the large naval guns was very impressive, but it was probably more noisy than dangerous.
CHAPTER II

PERRYVILLE

During the five months which elapsed between the battles of Shiloh and Perryville, Union authorities in Washington became concerned about the condition of their field artillery. At Shiloh, the Federal batteries had had a large variety of guns, both smooth-bore and rifled.

Brigadier General James Ripley, the Union Chief of Ordnance, complained that his army required "six hundred types of ammunition." He attributed the proliferation of projectiles to the introduction of new types of artillery which had not been subjected to preliminary testing. In the Army of the Ohio Captain J.B. Bartlett's battery was armed with non-standard types of guns. His 6 and 12-pounder Wiard rifles seem to have been the only guns of this type in the army; and yet ammunition for them had to be provided. Considering the number of Union forces operating in all theatres, the difficulties faced by ordnance officers can be imagined. The new types of rifled artillery were also causing problems. Some Union officers believed that they had failed to measure up to their early promise. Brigadier General Montgomery Meigs, the Union Quartermaster General, wrote to Secretary of War Edwin M. Stanton:

Artillery batteries manned by men as brave as ever served artillery — men who died at their posts — have been carried and captured by bayonet charges.
I can not avoid attributing this in a great measure to the too great use of rifled guns of small calibre, which, admirable for accuracy and range and effective at long distances, in the sharp conflicts of close battle produce little more effect than so many muskets.

Meigs believed that the Napoleon, with its larger bore, was more suited to close range shooting with canister, and urged that more of these guns be issued. Colonel Henry J. Hunt, commanding the reserve artillery of the Army of the Potomac, agreed with Meigs, although he also blamed poor training for some artillery problems. Although both Meigs and Hunt were writing about conditions in the eastern theatre, their conclusions about the value of rifled guns were relevant in the west. The Union ordnance department, and particularly Ripley, had been criticized for conservatism and for failing to take advantage of new weapons developments. In the case of rifled artillery some hesitation seems to have been justified. Meigs and Hunt, both experienced officers with artillery background, favoured the old-fashioned Napoleon.

Very little is known about the effect of Shiloh on Confederate tactical thinking but, after the battle, the artillery was re-organized. On April 17, 1862, it was decreed that all batteries which were reduced in strength would be armed with only four guns each. The order also stressed the need for uniformity in calibre, but batteries were allowed to retain a mixture of 6-pounder guns and 12-pounder howitzers nonetheless. This combination would provide the long range of the 6-pounder guns as well as
the canister capability of the howitzers — an indication that
the Confederates had few of the newer rifled guns. Although
the brass foundries of New Orleans could produce Napoleons, the
Confederates were still short of these guns in September, 1862,
an indication that the artillery problem in general was severe.7
In the west, guns captured from the Union were numerous. Between
August, 1862, and September, 1863, Bragg took from the Federals
eighty-one pieces. Confederate losses to the Union side during
this period are not known. The figure, therefore, is deceptive,
but it is known that the Union was a fruitful source of Ordnance
for the South.8

While few technical or operational details are available
for the period between Shiloh and Perryville, Corporal McGee did
provide some insights into Confederate battery life.9 He said
that one of his first tasks was to return to the Shiloh battle-
field and bring in any useful equipment he could find. Next, his
battery was re-armed and placed in one of the fixed fortifications
surrounding the town to wait for the Federals. The four 3-inch
rifles presented to the unit were probably captured from the
Yankees. In any event, as late as January, 1863, they were rare
in the Confederate artillery.

McGee reported the disciplinary measures used to tighten the
organization of the Confederate army, mentioning particularly the
whipping and branding of a deserter, and shootings for absence
without leave.
Not all of his time was devoted to things military. In his diary he described the social life which could be enjoyed by a Confederate soldier in a nation engaged in a major war. In the general northwest movement which constituted Bragg's invasion of Kentucky, the duties of an artilleryman do not appear to have been onerous. Although McGee sometimes endured hard marching, the impression he conveyed is of leisurely progress through peaceful rural territory. He and his fellow gunners passed a good deal of time in the company of young ladies during this trip. He described one instance when the battery entertained a number of Confederate damsels, naming its guns after some of the guests. McGee's gun was named for a Miss Mary Paine Manning who sealed the matter by firing from it a friction primer.

By September, 1862, after a difficult passage through the hills from north Georgia, the battery had moved into east central Tennessee and was headed toward the Kentucky border. McGee's entries now began to reflect awareness of another impending battle. Writing on October 6, he said:

... Melancholy thoughts force their way to the inward soul and cause the mind to ruminate sadly over some dear departed friend .... Tears course [sic] themselves adown my cheek, as I sit here, in the midst of 40 thousand soldiers, one of them myself, far away from the grave of my Mother and Father .... Alas! the stern realities of a horrid war surround me, and I must rise above this melancholy despondency to more manly courage and be ready to battle with the diresome calamities.
On the evening of October 7, his battery received orders to march to Perryville.

The battle of Perryville, on October 8, 1862, did not involve all of the Union and Confederate forces in this area; instead, it was primarily a fight between elements of Buell's Army of the Ohio and parts of two wings of Bragg's Confederates. Buell was moving toward a suspected Confederate concentration at Bardstown, Kentucky, his three corps travelling along closely parallel routes. As the army approached Perryville, the Third Corps, under Major General Gilbert, was leading the advance.

After a brisk skirmish on the evening of October 7, Gilbert's troops were able to seize a watercourse known as Doctor Creek, assuring the Union force of a water supply. To the Union troops the skirmish was the foretaste of a battle, so the remaining two corps took their positions on the morning of October 8.

The Union force was deployed on a line running north and south in front of the town of Perryville. The First Corps, commanded by Major General Alexander McCook, held the left of the line, across the old Mackville Pike. Gilbert held the centre and Major General T.L. Crittenden held the right, south of the town. The battle developed when a wing of Bragg's force, a division under Cheatham, attacked McCook's left flank. A freak of acoustics prevented the balance of the Union force from knowing that the battle was under way and McCook's soldiers were badly mauled. Buell, at Gilbert's headquarters, knew nothing of
this major attack until it was well developed and McCook's Tenth Division, composed of raw troops, was rolled back and its commander, Brigadier General J.S. Jackson, was killed. The Confederate success was extended when Major General S.B. Buckner's division attacked the gap between McCook and Gilbert. Only a vigorous Union defense and the belated arrival of more of Gilbert's troops prevented a total disaster. The following day the forces disengaged and the Confederates retreated in the face of the superior numbers of the aroused Union force.

The reports of the battle do not indicate that any new developments in the role of field artillery had taken place since Shiloh. Instead, Perryville illustrated the way the guns were used to support the infantry. Although statistical data for most of the batteries has not survived, the reports of the infantry commanders reveal a good deal about their method.

Table IV shows the relative numbers of Union and Confederate batteries actually engaged at Perryville. All told, the Union had more than double the number of Confederate batteries, but many were with disengaged elements of their army.

<table>
<thead>
<tr>
<th>TABLE IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF BATTERIES PRESENT AT PERRYVILLE AND NUMBER ENGAGED</td>
</tr>
<tr>
<td>Total Union</td>
</tr>
<tr>
<td>Number of batteries</td>
</tr>
</tbody>
</table>
It is clear that the forces actually engaged had an equal number of batteries, but no data is available by which to determine which force had the greater number of guns in the field. On the basis of data from other battles, in which the Union always had artillery superiority, it seems likely that here, too, they had more pieces.

The Confederate batteries identified at Perryville include ten which were veterans of Shiloh. Of that number, seven had been commanded by the same officer for at least six months, while all were commanded by men who had "seen the elephant" at the earlier battle. Only one Union battery commander, Lieutenant Charles Parsons, can be identified positively as having been present at Shiloh but his battery was composed of levies from a raw infantry division.12 Brigadier General U.R. Terrill, who commanded a brigade in Jackson's division, had commanded a battery with distinction at Shiloh and had been given Parsons' improvised battery as support for his brigade. Undoubtedly some of the Union batteries at Perryville were manned by veterans. None appear to have been exposed to a battle as severe as Shiloh, however.

Writing about the role of the Confederate artillery in the attack on McCook, Ralph Wooster states:

In the afternoon attack, directed chiefly against McCook's Corps on the Union left wing, Confederate artillery played a vital role. Seldom, if ever, were the guns of Bragg's army better served. The eleven Rebel batteries engaged, each attached to a brigade, provided a devastating fire as the Union lines were pushed back.13
If Wooster is correct, the Southern gunners helped materially to win the battle. It can be shown, however, that the role of these guns was much less important: First, the artillery attached to Cheatham's division is supposed to have made an important contribution in the attacks on McCook's left. If this is true, the reports of the Confederate infantry commanders who actually took part in the attack, capturing Parsons' battery of eight Napoleons, do not agree. Colonel George C. Porter, commanding the Sixth Tennessee in Brigadier General George Maney's brigade, reported forming his line in bush so thick that it was even difficult to manoeuvre infantry. He then attacked across an open field, straight into the mouths of Parsons' guns. In spite of a heavy fire of canister and shell, the Southerners managed to take the position — but without artillery support. Major George Kelsoe described the role played in the assault by his Ninth Tennessee Regiment:

We were ordered forward, pressing up a steep declivity by the flank, and took our position under a most galling fire. Immediately after getting under fire we were ordered to charge a battery of seven guns immediately to our front, the three left guns of the enemy covering our right wing. It was carried at once, the men all seemingly determined not to halt for any obstacle.

Similarly, Lieutenant Colonel W. Frierson of the Twenty-Seventh Tennessee reported attacking this position under the withering fire of Napoleons. None of the reports mentioned any artillery support from the Confederate side. Further, the McGee diary
placed Stanford's battery -- a part of Cheatham's artillery -- over in the vicinity of the Union centre. Here the artillery of Rousseau's division had engaged in a long range artillery contest with Confederate batteries shortly before noon, and McGee reported having participated in such an exchange. If McGee was correct, the batteries supposedly supporting the assault on McCook were actually half a mile closer to the centre. McCook and Rousseau both cited determined Confederate infantry attacks as the cause of the Union set-back, but did not mention artillery fire.

As the fragments of Jackson's division fell back toward Rousseau's lines, Rousseau, becoming aware that his flank was in danger, placed two batteries of Colonel John C. Starkweather's brigade in position to halt the Confederate onslaught. The fire of these guns stopped the Rebels for a time but, in the face of determined attacks, the Union line had to retire. Although Captain Ashael Bush's Fourth Indiana Battery lost thirty-five horses in this fire fight, he was able to get his guns back to a new position. When the Confederate left, under Hardee, entered the fray, it pressed between the right flank of McCook's corps and Gilbert's left.

Here the brigade of Colonel Daniel McCook, of Brigadier General Philip Sheridan's Eleventh Division, bore the brunt of the rebel assault. These troops were the Federals who had earlier secured the water supply at Doctor Creek. In spite of casualties from Confederate batteries, McCook stated that he only pulled back when
ordered by Sheridan. It is true that Colonel McCook reported the
Confederate use of artillery against Rousseau, but again, neither
he nor Rousseau indicated that it was an important factor in the
Union withdrawal.

Hardee credited "a crushing fire from the artillery" with
aiding his assault against the Union lines; and it is clear that
this attack did result in the withdrawal of Colonel McCook and
Rousseau. 21 The total significance of the artillery fire, however,
cannot be established. Hardee's report proves that artillery was
used against the Union centre, but it does not establish that it
broke the line. Brigadier General Bushrod Johnson, who commanded
one of Hardee's brigades, described the attack as being supported
by the fire from ten Confederate guns, but they do not appear to
have succeeded in silencing the Union batteries. Johnson wrote:

Balls and shells here continued to fall thick and fast
from the enemy's guns, while our own batteries replied
with great rapidity until after dark and the ammuni­
tion of our batteries was exhausted, when they were
withdrawn .... 22

This quotation does not give the impression that the Confederate
fire was particularly crushing. The Union guns appear to have
continued the fight as long as daylight and ammunition held out.

The purpose of this argument has not been to discredit the
role of the Confederate artillery in the various phases of the
battle, but to question whether it was decisive. Union and
Confederate reports make it clear that this area was carried by
the infantry without artillery support. That the Confederate artillery could even enter the vicinity from which Maney's troops assaulted Parsons is doubtful. Colonel Porter described it as "a thick wood, covered with brush and undergrowth." Yet here, according to Wooster, the Confederate guns were "particularly effective." Wooster appears to have transformed Hardee's general statements about the role of his batteries into a crushing artillery success, but they did not enter the action until after Cheatham's troops had been engaged for some time. If the destruction of Jackson's division is considered to be the major Confederate victory of the day, then the guns were not effective at all. In the other fighting, between Rousseau's and Sheridan's reinforcements and the Confederates from Hardee's wing, the picture is not so clear. Describing his withdrawal, Rousseau indicated that Confederate artillery was not vital. Riding up to Captain Cyrus Loomis, who commanded the First Michigan battery, he asked him why he was holding his fire:

He replied that he was ordered by General McCook to reserve what ammunition he had for close work. Pointing to the enemy advancing, I said that it was close enough, and would be closer in a moment. He at once opened fire with alacrity and with fearful effect upon the ranks of the enemy. It was admirably done; but the enemy moved straight ahead, his ranks now raked by the battery and terribly thinned by the musketry of the Seventeenth Brigade, but he scarcely faltered; and finally hearing that reinforcements were approaching, the brigade was ordered to retire and give place to them, which it did in good order, as did also Captain Loomis.
This report does not sound like a rout in the face of devastating artillery fire.

As far as field artillery is concerned, Perryville was not an important chapter in its history in the western theatre. The Union troops demonstrated that, even with the fire of a heavy battery of Napoleons, they could not stand against the attacks of Cheatham's veterans. The evidence is that, instead, the artillery was auxiliary, adding to the fire power of both Union and Confederate forces, but having no material influence on the outcome of the battle.
NOTES TO CHAPTER II

1 Ripley to Colonel J.C. Kelton, August 27, 1862, September 11, 1862, (OR, XX, pt. 2, 111-112). In these letters Ripley stressed the need for uniformity of calibre in the field artillery, as well as the importance of regular inspections of the batteries.

2 See Data, Appendix A.


4 Ibid., 239.

5 Robert V. Bruce, Lincoln and the Tools of War (New York: The Bobbs-Merrill Co. Inc., 1956), p. 70, writes: "But if a new weapon promised to be valuable and was not prohibitively expensive, the Chief of Ordnance, especially the start of a war, should have racked his brains for a way to produce it outside of a regular source .... Ripley did no such thing. Instead of seeking out better designs, he applied his ingenuity, which was considerable, to fighting them off."

In the light of the dissatisfaction shown with the new types of rifled guns, it would appear that Ripley's conservatism was justified.

6 Special Orders No. 30, Dept. of the Mississippi (OR, X, pt. 2, 426).

7 J. Stoddard Johnston, "Bragg's Campaign in Kentucky. From Chattanooga to Munfordville," J. Stoddard Johnston Military Papers, Filson Club, Louisville, Kentucky. Johnston recalled that in September 1862 the Confederates had very few Napoleons in their service, although they "afterwards became the most numerous and popular class of artillery." He said that the Napoleons of Captain Felix H. Robertson's battery were then the only ones in the army.

8 OR, XVI, pt. 1, 1097.

9 McGee Diary, April 10 - October 8, 1862, passim.

10 The general description of the battle is taken from the following sources. Williams, Lincoln Finds a General, IV, 107-135, and OR, XVI, pt. 1, 1023-1031, 1089-1097.
NOTES TO CHAPTER II

11 Ibid., 1034, 1035, 1036, 1045, 1055, 1059, 1108, 1120, 1122, 1125, 1131, also ibid., pt. 2, 592, 594, 595.


14 OR, XVI, pt. 1, 1114-1115.

15 Ibid., 1116.

16 Ibid., 1117. Frierson was wounded in the attack on Parsons, so he cannot provide as conclusive evidence as the other two commanders.

17 McGee Diary, October 8, 1862, and OR, XVI, pt. 1, 1045.

18 Ibid., 1040, 1046.

19 Ibid., 1046-1047, also report of Capt. Peter Simonson, Fifth Indiana Battery, (ibid., 1055-1056).

20 Ibid., 1084. Wooster, "Confederate Success at Perryville," 321n., incorrectly identified McCook as being part of General McCook's corps (cf. OR, XVI, pt. 1, 1083).

21 Ibid., 1121.

22 Ibid., 1127.

23 Ibid., 1115; cf. Wooster, "Confederate Success at Perryville," 320n. Polk, in his report makes it clear that the brigades of Cheatham's division mounted "steep and difficult cliffs" in order to attack the Federals (OR, XVI, pt. 1, 1111) hardly a likely position for Confederate artillery.

24 Ibid., 1047; also report of Col. J.S. Fulton of Bushrod Johnson's brigade, who clearly indicated that Cheatham's division attacked first. He also complained that the fire of the Washington Artillery was actually devoted to his regiment rather than to the Yankees, (ibid., 1133).

25 Ibid., 1047.
CHAPTER III
MURFREESBOROUGH

Nearly four months passed between the battles of Perryville and Murfreesborough. During this time, the Union Commander, Buell, was replaced by Major General U.S. Rosecrans and the Army of the Ohio was reconstituted as the Fourteenth Army Corps, Department of the Cumberland. The Confederates under Bragg had retreated from Kentucky and concentrated near the town of Murfreesborough on the west fork of Stone's River. This town, twenty-eight miles from the Union supply depot at Nashville, was the key to the control of middle Tennessee. Situated on the Nashville and Chattanooga Railroad, it straddled Rosecrans' most feasible line of advance into the South. On December 31, 1862, when the series of battles for control of the town began, Murfreesborough was being used as a principal Confederate Headquarters and supply depot.

Five weeks after he had replaced Buell Rosecrans began to make a series of changes in field artillery organization and equipment. He informed Secretary of War Edwin M. Stanton: "the army has about one third the artillery it should have. He asked permission to increase the number of guns in thirteen batteries from four to six each and also to increase their officer and enlisted strengths. He also requested that the three batteries of the Fourth United States Artillery be allowed to recruit up to 142 rank and file each. Shortly before the battle of Murfreesborough,
Rosecrans requested some special light artillery but this provoked General Ripley to remind the Department Ordnance Officer that he had no authority to provide non-standard equipment. Rosecrans also regularised the position of chief of artillery throughout his army. On December 25 he ordered all subordinate corps and division commanders to appoint such officers and required the latter to submit semi-monthly reports. The order made no reference to any command duties, although he specified that the senior artillerist in each division was to be the chief.

Little information about the Confederate artillery during this period has survived. In describing the concentration of Confederate forces at Murfreesborough, Union intelligence credited Breckinridge with abundant artillery, but also reported that he had arrived without horses for his guns. Unfortunately, no information has been discovered which would show whether the battle of Perryville resulted in any changes in the general structure of the Southern artillery.

Breckinridge's Chief of Artillery, Major Rice Graves, understood the importance of training. On November 11 he issued instructions for battery drills. After a morning of such training when the whole unit -- guns, caissons, limbers and all -- would work together, the gunners and drivers were to train separately. Graves' stress on training in harnessing the horses illustrates a problem which seems never to have been solved by Civil War artillerists. If the battery
was to fire in close support, it had to be within close range of the enemy. This placed it under direct fire from both enemy musketry and artillery. Since the battery was immobile without them, it was necessary, of course, to have the teams which pulled the guns and limbers nearby. The harnessed horses made a large target and were very vulnerable to enemy fire. Due to dependence on his teams, the battery commander was placed in a very difficult position. If his forces were advancing, his horse casualties could probably be replaced by the teams of his caissons, usually parked behind the front line. If, however, he had to use his guns in defense, he had to be careful to pull back before the enemy shot down his teams. Batteries were lost time and again because the commanders misjudged the moment to retire. If the battery had to stay and the attack was not stopped, it was almost axiomatic that the guns would be lost. By stressing the training of drivers, Graves was obviously trying to ensure that when one of his batteries decided to move, no time would be lost putting the teams into position.

The battle of Murfreesborough, or Stone's River, was really a series of separate engagements, interspersed with periods of relative quiet. By December 30 Rosecrans had moved his army down the Nashville turnpike to a position centred about two miles northwest of the town of Murfreesborough. Here he deployed his army in three wings, the right under McCook, the centre under Thomas, and
the left under Crittenden. Facing the Federals on both sides of Stone's River were Bragg's two corps under Hardee and Polk. A battle developed on December 31 when, in an attempt to envelop the Union right wing, Hardee attacked McCook. Although successful at first, Hardee was unable to complete the destruction of the Union right because Rosecrans marshalled reinforcements with such speed. Breckinridge's division of Hardee's corps also made a tentative thrust from the other end of the line against the Union left, but accomplished nothing. Despite Polk's entrance into the battle, neither his troops nor those of Breckinridge played a significant part; the brunt of the fighting was borne by Hardee's two flank divisions. Little happened on New Year's Day, 1863, except for some reorganization on both sides. The Union occupied high ground on their left which was to become a decisive position the next day. On the 2nd an attack by Breckinridge on the Union left was repulsed by massed artillery and infantry located on this prominence. Fighting continued on the 3rd, when an attack by Thomas on the Confederate fortifications pushed back their lines. Bragg withdrew on the night of the 3rd, leaving Rosecrans to occupy Murfreesborough.

In contrast with the battles of Shiloh and Perryville, considerable information on the employment of field artillery at Murfreesborough has survived. It seems likely that practice in filling out the returns and inspection reports, now being demanded by both sides, had given battery commanders a new sense of what
was relevant in a military report. In any event, by the time of Murfreesborough, a sense of professionalism pervaded their accounts. Although details may have been present in earlier reports, they were buried in a mass of rhetoric. By this time the artillerists appear to have been more concerned with their performances as gunners and less as participants in a civil war.

Once again the battery served as the basis of field artillery organization for both sides. Although two batteries of Confederate artillery together acted under the direct orders of the commanding general, there is nothing to indicate that this was considered a permanent arrangement.

**TABLE V**

NUMBER OF UNION AND CONFEDERATE FIELD ARTILLERY BATTERIES PRESENT AT MURFREESBOROUGH WITH BREAKDOWN OF NUMBERS OF GUNS

<table>
<thead>
<tr>
<th></th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-gun batteries</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>6-gun batteries</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Present but no. of guns unidentified</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

Table V shows that, in the number of batteries, the Union had a distinct advantage. The method of reporting used by the Union chief of artillery accounts for the large number of unidentified Union batteries,
but, on the basis of Rosecrans' request for more six-gun batteries, it may be assumed that the majority of them had six guns.

Equipment differed considerably on both sides. Rifled cannon did not appear in any quantity in the Confederate artillery but made up slightly more than half of the identifiable Union guns. For the first time the reports of Confederate battery commanders indicated that they were outgunned and outranged by Union rifled pieces.8

TABLE VI
RIFLED GUNS IDENTIFIED IN UNION AND CONFEDERATE ARMIES AT MURFREESBOROUGH

<table>
<thead>
<tr>
<th>Type of gun</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-pounder Parrott</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>6-pounder James rifle</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>3-inch Ordnance rifle</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12-pounder Wiard rifle</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6-pounder Wiard rifle</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Unidentified rifled guns</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Total rifled guns present</strong></td>
<td><strong>72</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

Whether the number of rifled guns identified in both armies is a reflection of an artillery policy is not clear. It is known, at least, that except in special circumstances, the policy of the Union Ordnance Department in the summer of 1862 was to issue only 12-pounder Napoleons and 3-inch rifles.10 In the presence of so much obsolescent and non-standard rifled artillery in Rosecrans' army, the conclusion that the western theatre was neglected is unavoidable.
In the case of smooth-bore guns, both armies still had a large number of older types. Unfortunately, again, the absence of data from a number of Confederate batteries leaves some questions unanswered.

**TABLE VII**

**SMOOTH-BORE GUNS IDENTIFIED IN BOTH ARMIES AT MURFREESBOROUGH**

<table>
<thead>
<tr>
<th>Type of gun</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-pounder Napoleon</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>12-pounder Howitzer</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>6-pounder Smooth-bore</td>
<td>32</td>
<td>12</td>
</tr>
<tr>
<td>Unidentified (may have included some rifled pieces)</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>66</strong></td>
<td><strong>71</strong></td>
</tr>
</tbody>
</table>

Table VII shows that, in spite of Ordnance policy, the Union still had to reply on obsolescent 12-pounder howitzers rather than the new Napoleons. Similarly, the presence of so many 6-pounder guns which had already completely disappeared from the artillery of the Army of the Potomac, is an indication that the Department of the Cumberland was a forgotten area.

There can be no doubt that the Confederate army entered the battle of Murfreesborough decidedly poor in artillery. An estimate, made necessary by the absence of data, gives the Confederates 106 guns of all types, compared with Rosecrans' 131. In the earlier
battles studied there is no evidence that a deficiency in artillery hampered the Confederates, and this appears to have been true at Murfreesborough.

Essentially the gunners of both sides faced two problems: the fire of enemy infantry, and counter-battery fire from the opposition artillery. The guns of both sides functioned both to support attacks and to sustain defences, but the Confederate batteries operated on the offensive during most of the engagements. The battles on December 31 and January 2 provide more interesting examples of the employment of artillery than on January 3.

On the morning of the 31st, the Confederates launched an attack against the right and centre of the Union line. The artillery in the corps of both Hardee and Polk acted in support of this attack, but the guns were absent in the areas of most conspicuous success. Attacking on the left of his line with two divisions, Hardee operated with a potential artillery force of seven batteries. Of these, one, under Major-General J.P. McCown, was left out of the battle while two of its rifled guns cooperated in a cavalry attack on the Union baggage trains. At the same time, the heaviest battery in Major-General P.R. Cleburne's division remained detached in support of Breckinridge's position on the extreme right of the Confederate line. With the five remaining batteries, Hardee mounted his attack against the divisions of McCook's corps.

Although McCown's Chief of Artillery indicated that the ground, wet with recent rains, had lessened the usefulness of the guns, the
reports show clearly that they were expected to support the infantry.\textsuperscript{16} One of McCown's batteries, separated from the division after the battle began, provided a graphic example of the sort of support that was often rendered by field artillery. Captain John T. Humphreys, commanding a 6-gun battery of Arkansas troops, began the battle by moving forward in support of his brigade, but the condition of the ground prevented him from staying with his assigned formation. Losing his way, he turned east, toward the Cowanhouse, and opened fire on a battery. His action provoked the response of a mass of Union pieces holding the edge of a wood about 500 yards from his position. Almost immediately his own battery began to suffer casualties and his effort was further hindered because the ammunition of two guns was the wrong size. Enemy fire disabled a third piece, and then a fourth, leaving him with one 6-pounder and a 3-inch rifle to face an estimated sixteen Union pieces.\textsuperscript{17} Yet Hardee stated that the fire of this battery covered two of McCown's brigades when the attack was temporarily stopped by a Union strong point.\textsuperscript{18} Although Humphreys reported that enemy artillery fire was very heavy, he suffered only eight casualties among his cannoneers. His horses appear to have been badly shot up, however, for he described the killing of five in a single shell burst. While he attributed the scarcity of human casualties to divine intervention, the fact that the gunners were a less compact target than harnessed teams was, no doubt, also a factor. Shell fire could have its comic effects as well: a burst removed the trousers of one of his
Cleburne's artillery, advancing to the right of McCown and closer to the centre of the field, also acted in close support. Brigadier-General Bushrod Johnson's brigade provided a good example of the use of artillery fire to aid an infantry assault when it ran into a strong Union position in the vicinity of the Cowan house. Johnson's infantry, with Captain Putnam Darden's Jefferson artillery in the rear, came under fire from a Union battery 400 yards to their front. Moving to a flanking position on a piece of high ground, Darden opened on the enemy guns. Firing over the heads of the infantry he was unable to use canister but he forced the enemy with "shell, shrapnel and solid shot" to cease fire.

The artillery attached to Polk's corps performed in much the same way as the batteries already described, but the density of the woods seems to have limited their employment more than it had in the case of Hardee who was farther to the left. Describing the day's battle, General B.F. Cheatham reported:

On Wednesday there was but little done by my artillery on account of the impossibility of advancing it through the cedars and pedregal on my left. Captain [Lieutenant] Turner's battery was brought into action on that day by General Maney and did good service.

Lieutenant William B. Turner, commanding Smith's Mississippi battery as he had at Perryville, was armed with two Napoleons and
two 12-pounder howitzers. He attacked and silenced a Union battery near the brick kiln south of the Wilkinson Turnpike.  

Brigadier-General George Maney, his brigade commander wrote:

For a short time the artillery fire was hot and spirited, but Turner's Napoleons and 12-pounder howitzers, being in easy range and aided by advantage of position, were more than the enemy could stand. His battery was soon silenced and his infantry in retreat under our fire.

Turner reported using all types of ammunition and Bormann time fuses in his firing on both the 31st and on January 2, but that he did not need to use the adjustable sights provided for his pieces.

The cedar braks described by Cheatham impeded the Rebel gunners while providing a natural fortification for the defenders. If Confederate artillery was not decisive in this engagement it was, in part, because of the terrain. The artillery of McCook's three divisions faced the heaviest Confederate attacks on the morning of the 31st and supported the infantry, although with little success. McCook had more guns than either of the other two Union corps, but the collapse of his right flank made the artillery losses severe.

The fate of a battery of Brigadier General R.W. Johnson's Second Division illustrates the fact that parts of the corps were not on the alert when the Confederates attacked. Captain W.E. Edgerton, commanding Battery E of the First Ohio, had just sent half of his teams to water. While he denied it in his report, it appears that he actually sent his teams away after the pickets had raised the alarm. In any event, the infantry brigade collapsed and the battery
was captured. Although the gunners were able to fire canister at their attackers, the Confederates swept over the position and captured all of the guns. Casualties included thirty-five men and seventy-five horses, another illustration of the vulnerability of the teams. 27

A second Ohio battery, commanded by Lieutenant Edmund Belding, also suffered heavily in the attack on Johnson's division. Supporting Brigadier General August Willich's brigade, the battery was forced to withdraw when McCown's Confederates routed the supporting infantry and captured General Willich. Although he lost four of his six pieces in this attack, Belding drew warm praise from Colonel W. H. Gibson who succeeded to the command of the brigade. Gibson wrote:

Lieutenant Belding moved back with four guns, but was so hotly pressed that he could not put them in position with safety. He had done nothing in his original position, because the lines falling back in our front were between his guns and the enemy's line. He and his men stood at their pieces until the enemy's line were within 50 yards, when they fell back, leaving two guns on the field, owing to the killing of horses attached to one and the breaking of the pole of the other. 28

In spite of the damage done to the battery by the attacking Confederates, Belding appears to have been a very aggressive leader. After he took his two salvaged guns slightly to the rear he re-fitted one and joined the battery of Captain Peter Simonson who was attached to the Third Brigade of the division. Firing canister at the Confederates, Belding's single gun is reported to have killed at least one
hundred of McCown's men at a second line of defence.29

The artillery of McCook's entire wing was unable to do much to stop the Confederate attacks. Again and again, batteries were forced to withdraw as heavy columns of attackers pressed back their infantry. Once again, as at Perryville, the Union gunners demonstrated their inability to stop attacks without infantry support. All along the line, from the extreme right, where Jefferson C. Davis lost five of the sixteen guns assigned to his division, to the left, where Philip H. Sheridan lost eight of his eighteen, McCook's artillery was badly damaged.30

When the Union line was finally stabilized and reinforcements from other divisions in the army entered the battle, Union field artillery helped the infantry hold its ground. One example of the aggressive support which could be given by a field battery was reported by Captain Lyman Bridges, an officer commanding a battalion of the Pioneer Brigade which reinforced McCook late in the day. Under command of this brigade was Captain James Stokes' Chicago Board of Trade Battery, armed with 6-pounders and James Rifles. Cooperating with the infantry, the battery effectively stopped a heavy Confederate attack. Captain Bridges wrote:

The enemy again rallied his forces at 5 p.m., advancing a brigade upon my left flank through a skirt in the wood, attempting a surprise. My pickets being fired upon by the enemy, who took advantage of a train of ambulances being in the vicinity, ... I ordered this battalion to change front and commence firing. Lieutenant Stevens, of Stokes' battery, opened fire upon him simultaneously with grape and canister. Our new line fortunately rested upon the crest
of the hill. Each volley by us thinned his ranks. He advanced perhaps 40 paces, discharging repeated volleys of musketry, but his repulse was complete.\textsuperscript{31}

Once again, this incident shows that aggressive firing by a combination of infantry and artillery could effectively stop an attack. It must be remembered, however, that this repulse took place late in the day when the attacking Confederates had already been under fire for hours.

The fight on December 31 showed how the guns could be used as support weapons. While the Union lost heavily -- twenty-eight guns, by their own count -- they were still able to give good support to the infantry and appear to have done so with determination. As at Shiloh and Perryville, the presence of the artillery did not deter the Southerners. Instead their infantry attacks were pressed home, and only weakened in proportion to the effort required to beat down each successive Federal defensive stand.

In the fighting on January 2 field artillery played a more significant part. This engagement also reflected two different concepts of the role of artillery -- whether or not it should provide close support for infantry. In essence, Breckinridge was ordered to attack a piece of high ground which had been occupied by the Union during the one-day lull following the engagement of December 31. Bragg reported:

\begin{quote}
Lieutenant-General Polk's line was both commanded and enfiladed. The dislodgement of this [Union] force or the withdrawal of Polk's line was an evident necessity. ....
\end{quote}
Orders were accordingly given for the concentration of the whole of Major-General Breckinridge's division in front of the position to be taken, the addition to his command of ten 12-pounder Napoleon guns, under Captain Felix H. Robertson, an able and accomplished artillery officer, and for the cavalry forces of Wharton and Pegram, about 2,000 men to join in the attack on his right.

The plan for the attack included a covering barrage from the artillery of Polk's corps, to begin half an hour before the attack was to start.

In this action, Confederate artillery support seems to have followed these phases: first, a preparatory barrage; second, support of the attack; and, finally, the holding of Breckinridge's line against a Union counter attack. In each phase, although it failed to break the Union line, artillery fire supported the infantry.

Polk used three batteries to fire into the woods in cooperation with Breckinridge's attack, and reported that they succeeded in clearing the woods which flanked the Confederate assault. But this provoked a Union counter attack and ended with Polk's forced withdrawal. Stanford, who was acting as Cheatham's Chief of Artillery, described the Union fire as "a concentration of shot and shell such as I never before witnessed."

In planning the attack itself, a difference of opinion developed between Breckinridge and Robertson. Breckinridge apparently construed Bragg's instructions to mean that he was to have Robertson's two batteries under his direct command and proposed to Robertson
that his guns should accompany the infantry. Robertson reported:

This I declined to do, stating as a reason the danger both of confusion and loss from such an arrangement. He [Breckinridge] then desired me to form and advance behind his second line of infantry. I then repeated the general's orders to me, viz, to wait until the infantry occupied the crest, and then to rush up and occupy it. Knowing the disposition of all commanders to use artillery, I spoke to General Breckinridge and earnestly protested against crowding a field so contracted as the one in which we were to operate with small guns, stating that, in case of a repulse, we would inevitably lose some if they were carried on the field. 35

In spite of Robertson's protests, the infantry attacked with the divisional artillery in close support, following in rear of the second line of two brigades. 36 When the attack actually went home, Robertson's predictions of the fate of the division's guns were fulfilled. Despite an initial success, the attacking infantry was unable to hold its positions and, in the retreat, the artillery had heavy losses. Lieutenant W.C.D. Vaught, commanding the veteran Washington Artillery, actually gained the high ground Robertson mentioned and stayed there until he ran out of ammunition. Being unable to fire his own guns, he reported that he manned Mose's Georgia Battery while its own gunners lay down under fire. 37

Lieutenant John W. Mebane, who succeeded to the command of Wright's Tennessee battery, was less fortunate than Vaught. Advancing behind Brigadier-General William Preston's brigade, his battery began to suffer casualties almost as soon as it began to move. Galloping into action, one of his 6-pounders was temporarily disabled when a lead horse was killed, immobilizing the gun and limber.
Shortly afterwards Mebane himself was wounded by a shell fragment and had to retire for first aid. In the meantime, his battery finally gained the crest of a small hill, just in time to meet the infantry on their way back, hotly followed by a Union counter-attack. Here the battery came into action under the orders of Major Rice E. Graves, firing into the enemy from a distance of seventy-five yards. Mebane reported:

Here it was that Captain Wright fell, mortally wounded, and three men carried his body to the rear. Just after Captain Wright fell, Major Graves gave the command, "limber to the rear," and just as the pieces were limbered up he gave the command to unlimber and fire double charges of canister, which command was obeyed by firing about one round to the piece, when the command, "limber to the rear" was again given by Major Graves; but only two of the pieces were ever limbered up and the others fell into the hands of the enemy.38

This quotation shows that the inability to resist infantry attacks was not restricted to Union batteries at Murfreesborough. Apparently Robertson's predictions were correct.

When it became apparent that the assault was not going to succeed, Confederate artillery played a vital role in stabilizing the retreating line. Breckinridge admitted in his report that the failure of Robertson's battery to go forward prevented a "vain contest" with the opposition artillery.39 The position taken by Robertson's battery and the guns from the division artillery which still had ammunition, combined to form a strong point where the defeated infantry could rally. Robertson reported:

In more than one instance I found it necessary to cock my revolver and level it in order to bring men to a realizing
sense of their duty. I am clearly of the opinion that if there had been no artillery on that field the enemy would have gone into Murfreesborough easily that evening. There was no organization that I could see or hear until after the enemy had been checked, save in the artillery. Certainly he had no doubts about the value of field artillery in preventing a defeat from becoming a disaster. It should be noted that, as a result of this engagement, Robertson was promoted to major, a rank he would hold at Chickamauga.

The Confederate attack on January 2 hit part of Crittenden's command, whose Chief of Artillery, Major John Mendenhall, used his batteries in mass to stop the assault. He wrote:

During this terrible encounter of little more than an hour in duration, forty-three pieces of artillery belonging to the left wing, the Board of Trade Battery of six guns, and the batteries of General Negley's division, about nine guns, making a total of about fifty-eight pieces, opened fire on the enemy. The enemy soon retired, our troops following; three batteries of the left wing, besides those of General Davis, crossed the river in pursuit. This action resulted from a brilliant piece of improvisation by Mendenhall. When the first wave of the Confederate assault forced the outlying Union brigade to retreat, Mendenhall gathered all the batteries in the area and concentrated them on the high ground. But this took time, and never were all the guns perfectly aligned.

The artillery of Crittenden's Third Division was forward, in support of the infantry, when the Confederates advanced. To support Negley's division, Captain George R. Swallow, commanding the Seventh Indiana Battery, had been posted in a position near the
ford of Stone’s River. In company with two other batteries, he was forced to withdraw, firing his guns as he went. He used the technique of fixing prolongues, attaching a rope to the trail of each of his guns in order to avoid the loss of time required by limbering up. Averting a minor panic in his battery, Swallow fell back to the main line of Union guns beside the regular battery of Lieutenant Charles Parsons. Parsons recalled:

I advanced the four rifles, holding my howitzers in reserve for the shortest range. The batteries around me were silenced far too soon, for when my rifle ammunition was exhausted I discovered that some scoundrel had led off my caissons, and I was left with only my howitzers to reply to the enemy’s concentrated artillery fire. Fortunately Captain Swallow’s battery came up, and with the assistance of Captain Stokes’ battery, the enemy’s guns were silenced.\textsuperscript{42}

Whenever a concentration of artillery appears to have been decisive in a battle, the reports of the battery commanders usually give a different picture than do the reports of the senior officers. In this case, too, closer examination indicates that the artillery was more dispersed than Mendenhall admitted. If the reports of Rosecrans and Mendenhall are read without checking their statements against the reports of the battery commanders, the impression is of a mass of guns firing, wheel-hub to wheel-hub.\textsuperscript{43} It is suggested that this picture is an exaggeration and that a correct reconstruction of the situation would place a number of batteries relatively close to each other, all firing at the enemy, but by no means together. The achievement of Mendenhall in actually gathering the artillery into positions where the guns could fire was brilliant, but assembly
did not take place exactly as he described it.

The concept of a loose artillery organization is reinforced by the case of Captain Stokes, whose Board of Trade Battery had acted in such close support on December 31. When Stokes opened fire on January 2, he did so into the back of another Union battery. Major Seymour Race accused him of using canister against an enemy over 2200 yards away. While Stokes himself does not mention the incident, it was reported both by Mendenhall and by Captain Cullen Bradley, commander of the injured battery.

The role of the artillery of both armies on January 2 was essentially the same. The batteries of the Confederate Artillery fired to prepare a position for attack and then moved to support their infantry. The Union guns fired to repel an attack and moved to support their infantry also, but the difference seems to lie in their control. Both Robertson and Mendenhall seem to have acted along similar lines, using their guns with effect without actually placing them up with the forward infantry. In contrast, Breckinridge took his batteries right up to the forward lines, with disastrous results. The evidence coming from a mass of battery reports indicates that most of the Union guns firing on January 2 acted under the control of Captain Mendenhall, although the action of Stokes' battery shows that controls were loose. It appears that Robertson too had evolved a concept of artillery support different from the standard Confederate practice, but exactly what its effect on artillery organization might have been is not clear.
The controversy between Breckinridge and Robertson reflects a fundamentally different concept of the role of guns. Instead of viewing them as personal weapons of the brigade and divisional commanders, Robertson seems to have seen the guns as a special arm, to be employed by an expert, and not committed piecemeal to enemy fire when they were especially vulnerable. Similarly, the fact that Mendenhall was able to organize the cooperation of his corps artillery show that, although it appears to have had a number of flaws, some form of artillery organization existed.

The role of artillery at Murfreesborough then, was infantry support and counter-battery fire, although the claims of batteries who reported silencing enemy guns are hard to substantiate. In every case, when guns were lost, they were captured by infantry assault and this occurred only when the infantry supporting the battery gave way. The fact that Captain Humphreys could operate for several hours under the combined fire of sixteen Union guns and suffer only eight human casualties shows that the fire of artillery against other guns was often ineffective.

Rosecrans included an estimate of the number of rounds of artillery and musketry ammunition that were required to inflict a single casualty on the Confederates. He wrote:

Of 14,560 rebels struck by our missiles, it is estimated that 20,000 rounds of artillery hit 728 men; 2,000,000 rounds of musketry hit 13,832 men, averaging 27.4 cannon shots hit 1 man; 145 musket shots to hit 1 man.46
It would be valuable to know how Rosecrans actually derived the estimate of the number of men hit by artillery fire. He may have included in his artillery ammunition expenditures the amount lost with the captured batteries. The comparison of ammunition expended by both sides is, however, revealing.

**TABLE VIII**

**AMMUNITION EXPENDED BY BATTERIES AT MURFREESBOROUGH**

<table>
<thead>
<tr>
<th></th>
<th>Average rounds of ammunition fired</th>
<th>Number of batteries in sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union</td>
<td>781</td>
<td>26</td>
</tr>
<tr>
<td>Confederate</td>
<td>385</td>
<td>8</td>
</tr>
</tbody>
</table>

It is clear that the Union artillery fired more than twice as much ammunition as did their attackers. In fact the averages shown are weighted by Union batteries which fired only a few rounds before being overrun.

Union gunners appear also to have suffered more casualties than did their opponents. The disparity is understandable if it is borne in mind that few Confederate batteries were actually engaged with the enemy at close range. The one battery reporting complete casualty figures from Breckinridge's assault on January 2 suffered 45% casualties, indicating that close contact with the enemy was an important factor. Many batteries which suffered large numbers of
casualties are not included because it is impossible to determine their effective strength before the battle. Furthermore, the number in both samples may not be an accurate reflection of fact.  

TABLE IX

AVERAGE PERCENTAGE CASUALTIES REPORTED FROM FIELD ARTILLERY

<table>
<thead>
<tr>
<th></th>
<th>Average % casualties</th>
<th>No, in sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union</td>
<td>18.2</td>
<td>7</td>
</tr>
<tr>
<td>Confederate</td>
<td>14.4</td>
<td>6</td>
</tr>
</tbody>
</table>

A statistical comparison of the relative casualties of infantry and artillery at Murfreesborough is difficult. In the first place, as far as can be determined, the weight of the Confederate main assault on December 31 was unsupported by artillery at close range. Most batteries from this area reported being separated from their brigades. Similarly, figures are available for only one of the batteries which supported Breckinridge on January 2. The number of Union batteries reporting percentages of casualties is also too small for meaningful comparison.

In his description of Murfreesborough, Kenneth Williams stated the case for any support weapon:

Though the guns had swept the field, they could not hold it. It took the rifles and bayonets of Davis and Hascall to do that.

This is as good a description of the role of Union artillery at
Murfreesborough as exists. The Federal gunners could break up the attack by Breckinridge's troops, but it required infantry on the ground to exploit the repulse. But it does not explain why Breckinridge failed to take the position. At Perryville, Cheatham's troops had assaulted into the muzzles of Union Napoleons strongly supported by infantry and were successful. Other factors may also have been responsible for the Southern repulse at Murfreesborough but cannot be identified. Perhaps leadership and poor morale contributed as much to Breckinridge's failure as did Union artillery.
NOTES TO CHAPTER III

1Rosecrans to Stanton, December 7, 1862, OR, XX, pt. 2, 128.

2Ripley to Lieut. T. Edson, December 1, 1862, ibid., 111.

3Special Orders No. 45, Dept. of the Cumberland, ibid., 235.

4Rosecrans to Col. J.C. Kelton, November 8, 1862, ibid 26; also Maj. Gen. J. Negley to Rosecrans, November 14, 1862, ibid., 49.

5Ibid., p. 399.

6Ibid., pt. 1, 190-196; also ibid., 663-670; see also Maps, Appendix F.

7See Data, Appendix B. For full citation see, Introduction, Appendix B.

8OR, XX, pt. 1, 855, report of Lieut. T.J. Key, Helena Artillery. Key wrote: "The contest was unequal and desperate. Their rifle guns could throw canister as far as ours could sperical case, and in order to prevent annihilation we were forced to withdraw." In fact, all reports indicated that the major failing of rifled guns was their inability to fire canister with effect. This quotation is the first to use artillery superiority as an excuse for withdrawing.

9See Data, Appendix B. The large number of Confederate Batteries for which no data is available makes a valid comparison difficult. No doubt the Confederates had more rifled guns than the table shows, but the absence of references in battery reports indicates that they were in a minority.

10Ripley to Stanton, July 14, 1862, Ord. Rec., III, 237. Although this letter refers to a situation in Virginia, it shows that Union Ordnance policy did not favour the types of rifled guns found in the Department of the Cumberland. The presence of so many James rifles, bored-out 6-pounder smooth-bores, is significant since by this time they had been proven to be inefficient and dangerous. The full details of the controversy surrounding the James rifles can be found in ibid., 206-219.

11See data, Appendix B.

12Naisawald, Grape and Canister, pp. 553-555, shows that at Gettysburg, the Union Artillery was armed almost exclusively with Napoleons and 3-inch Ordnance rifles. No 6-pounders, and only four James rifles are listed.
NOTES TO CHAPTER III

13. See Data, Appendix B. Estimate based on allowing four guns for each Confederate battery where the total number of guns could not be identified.

14. Ibid.


16. Ibid., 926.

17. Ibid., 956.

18. Ibid., 775. Hardee wrote: "Ector and Harper were ordered to fall back under cover, while [J.T.] Humphrey's battery bravely engaged sixteen pieces of the enemy until our infantry was sheltered."

19. Ibid., 957.

20. Ibid., 894.

21. Ibid., 708.

22. Ibid., 742. Also see Maps, Appendix F.

23. OR, XX, pt. 1, 735.

24. Ibid., 741.

25. See Maps, Appendix F.

26. OR, XX, pt. 1, 301. His First Lieutenant, writing on January 8, said that the pickets had given the alarm, but that no enemy could be seen. (Ibid., 302).

27. See Data, Appendix B.

28. OR, XX, pt. 1, 305.

29. Ibid., 315.

30. Ibid., 342 (Table); also Data, Appendix B.

31. OR, XX, pt. 1, 246.
NOTES TO CHAPTER III

32 Ibid., 668.
33 Ibid., 691.
34 Ibid., 733.
35 Ibid., 759-760.
36 Ibid., 785.
37 Ibid., 803.
38 Ibid., 824.
39 Ibid., 786.
40 Ibid., 761.
41 Ibid., 756.
42 Ibid., 525.
43 Ibid., 195, Rosecrans wrote: "General Crittenden immediately directed his Chief of Artillery to dispose the batteries on the hill on the west side of the river so as to open on them, while two brigades of Negley's division, from the reserve, and the Pioneer Brigade, were ordered up to meet the onset." Also cf. Ibid., 456.
44 Ibid., 474.
45 Ibid., 479.
46 Ibid., 197.
47 Ibid., 242; also Data, Appendix B.
48 Ibid.
49 Ibid.
50 Williams, Lincoln Finds a General, III, 280-281.
CHAPTER IV

CHICKAMAUGA

In the eight month period before the battle of Chickamauga, the Union field artillery recovered from the mauling of Murfreesborough. Both armies increased the number of their guns and vied for control of East Tennessee. Chickamauga represents the apex of Confederate military strength in this area, and this was the last time that a Union army was defeated in the western theatre. The well kept records and reports for this battle show that both the Army of Tennessee and the Army of the Cumberland were now composed of hardened veterans of both battle and administration.

In the interval between January and September, 1863, the two armies did a considerable amount of maneuvering in Tennessee. Union records show that between April and August, the Army of the Cumberland drew a total of 9,257 horses and 5,789 mules, indicating that hard marching was being done. Indeed the roads in this area must have been paved with the carcasses of the Union transport, since the number of animals cited represented replacements for beasts already in service. The Confederates too suffered a shortage of animals. On August 11, Bragg, admitting that the order was a hard one, instructed Brigadier General E.C. Walthall to impress 200 horses "suitable for artillery purposes." Since Shiloh, the
Confederates had favoured four-gun batteries, and it is possible that the shortage of horses may have been a factor.

Although the Union troops were not short of guns, this was a continuing problem for the South. Seventy-eight had been captured on December 31, 1862, at Murfreesborough and, to build morale, Bragg presented to a number of brigades four-gun batteries inscribed with the names of Confederate heroes. Gun shortages remained, however.

In the meantime, Corporal McGee continued to march with his battery. His diary during this period gave few details of his training, although it did mention target practice. On August 6, for example, the batteries attached to Cheatham's division all fired at long range targets. McGee's battery, armed with 3-inch Ordnance rifles, fired at a mark 1400 yards away and, in two tries, not one of the four guns hit it. McGee succinctly reported: "Our battery condemned. We will get a new battery of Napoleon guns." Unfortunately the promised Napoleons failed to appear before the battery was once again engaged at Chickamauga.

After a bout of sickness called "cholera morbus," McGee marched north with his fellow gunners from Rome, Georgia, toward the Tennessee border, and, by September 8, were in the vicinity of Chickamauga Creek, twelve miles from Chattanooga.

The battle of Chickamauga was fought on September 19 and 20, 1863. On the first day Rosecrans' leading divisions clashed with
Brigadier General Nathan Bedford Forrest's Confederate cavalry and part of the Reserve Corps. The battle developed along the Lafayette Road, both armies gradually becoming heavily engaged. The Confederate attacks were heaviest on the Union Fourteenth Corps, under Thomas, and were immediately successful. The battle on that day closed with a vigorous Confederate assault which rolled back the Union left and centre. The following morning renewed Confederate attacks drove the Union left further back, to a feature known as Snodgrass House. An error on the Union right, coupled with renewed Confederate assaults, resulted in the destruction of two Union divisions, and the retirement of two more from the battle. By 2.30 p.m. Rosecrans had withdrawn to Chattanooga, leaving Thomas in command of the remaining formations. Only the timely arrival of the Union Reserve Corps prevented a total disaster, allowing Thomas to hold his position until the end of the day.

Both sides had a good deal more artillery than they had had at Murfreesborough. Once again, the guns were divided into four and six-gun batteries, and once again the Confederates favoured the four-gun formation.

### TABLE X

**NUMBERS OF GUNS PER BATTERY IN THE FIELD ARTILLERY AT CHICKAMAUGA**

<table>
<thead>
<tr>
<th>Guns per battery</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 guns</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td>4 guns</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>Other numbers</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total Batteries</td>
<td>32</td>
<td>35</td>
</tr>
</tbody>
</table>
The large number of six-gun batteries indicates Union artillery superiority although Bragg had a larger total of batteries. Even though the number of guns in a battery might vary from ten, in a special purpose Union unit, to two in a Confederate battery, these extremes were exceptional.

One major difference between the Union and Confederate field artillery at Chickamauga was in the numbers of rifled guns.

TABLE XI

TYPES OF RIFLED ARTILLERY IDENTIFIED AT CHICKAMAUGA

<table>
<thead>
<tr>
<th>Type of Gun</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-pounder Parrot</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>3-inch Ordnance rifle</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>James rifle</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Blakeley rifle</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

| Total Rifled Guns    | 98    | 28          |

As at Murfreesborough, the Union possessed many more of the new rifled artillery than did the Confederates. The table also reflects a considerable increase in total numbers of rifled guns in the armies since January, 1863. The single Blakeley rifle represents ordnance procured by the Confederacy from England. Unfortunately no details of its performance have survived, but it had a reputation for being a fine gun. No doubt the lesser industrial capacity
of the South was partly responsible for the small numbers of rifled guns in the Confederate army. The difficulties in making ammunition for these types may have been too great to justify the diversion of valuable resources. McGee's reference to the target range also showed that the rifled guns in the Confederate service were not particularly accurate.

The Rebel artillery actually had more smooth-bores than did the Union. Table XII shows the distribution of these types between the two armies:

TABLE XII

<table>
<thead>
<tr>
<th>Type of Gun</th>
<th>Union</th>
<th>Confederate</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-pounder howitzer</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>12-pounder Napoleon</td>
<td>58</td>
<td>39</td>
</tr>
<tr>
<td>12-pounder howitzer</td>
<td>16</td>
<td>34</td>
</tr>
<tr>
<td>6-pounder gun</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>12-pounder Mountain howitzer</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Smooth-bores</strong></td>
<td><strong>90</strong></td>
<td><strong>104</strong></td>
</tr>
</tbody>
</table>

Although they had obtained more since Murfreesborough, the Confederates were still suffering from a deficiency of Napoleons. The presence of obsolescent guns like the 6-pounder and the 24-pounder howitzer shows that the western theatre was still receiving old-
style equipment. The Union still maintained its artillery superiority but table XIII indicates that the Southern artillery had been heavily augmented since Murfreesborough.

**TABLE XIII**

NUMBER OF GUNS PRESENT AT MURFREESBOROUGH AND AT CHICKAMAUGA

<table>
<thead>
<tr>
<th>Army</th>
<th>Number at Murfreesborough</th>
<th>Chickamauga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union</td>
<td>131</td>
<td>188</td>
</tr>
<tr>
<td>Confederate</td>
<td>106</td>
<td>132</td>
</tr>
</tbody>
</table>

| Union Superiority | 25 | 56 |

The growing Union artillery superiority undoubtedly reflects the increasing production of Northern industry.

The control of these Union and Confederate guns was divided between the various chiefs of artillery and the brigade and division commanders. The exact status of a chief of artillery is not clear, but in previous battles these officers had acted in a very limited command role. The only clear-cut example of a chief of artillery actually commanding a large number of guns was the case of Mendenhall at Murfreesborough, and his task was improvisation. At Chickamauga a number of situations arose where artillery officers commanded more than one battery but, in general, these units continued to be assigned to the brigades. It is clear that artillery was never considered to be an independent arm,
capable of protecting itself from enemy infantry or cavalry.

The Artillerist's Manual states:

Artillery cannot defend itself when hard pressed, and should always be sustained by either infantry or cavalry. The proposition made to arm the cannoneers with small-arms, such as revolvers, short rifles &., is calculated to do more harm than good. They should be taught to look upon their pieces as their proper arm of defense, to be abandoned only at the very last moment.13

Clearly this pre-war text intended the guns to act in cooperation with other troops and they did so throughout the Civil War.

The role of artillery at Chickamauga has two facets: the familiar, close range task and long distance counter-battery duty. It is probable that this counter-battery task was present at other battles. Indeed it appeared in several situations, but Chickamauga is the first time that long range counter artillery fire is stressed in the battery reports. As with the other battles, the artillery actions described here are chosen because they were representative.

The first Union formations to encounter the Confederates on September 19 were two divisions of Thomas' Fourteenth Corps. Brigadier General Absalom Baird, commanding the First Division, described the terrain as "a thick wood interspersed with thickets and openings...." This must have influenced his artillery dispositions for he reported:

The artillery could not advance in line with the infantry, nor, indeed, could it have been used except at
rare intervals. It could not, at the same time, be left behind for want of protection, and it was directed to follow closely the brigades, making its way through the trees.\textsuperscript{14}

Obviously Baird had a difficult tactical problem, since here his batteries were a hindrance rather than a help. This quotation also illustrates the failure of commanders to choose lines of advance where their batteries could give support. Colonel B.F. Scribner, commanding one of Baird's brigades, had just reached an opening in the trees, a corn field, when the predictable happened. "The enemy charged down upon me along my whole line, pouring in canister and shell," he wrote.\textsuperscript{15} The gallant Lieutenant Van Pelt was shot down at his guns, having fired 64 rounds into the midst of the enemy as they came charging down the hill, the two regiments on the right and left of the battery at the same time pouring in a well-directed fire...." Scribner then continued to explain the reasons for his rout: "The nature of my line, being in a right angle, the intricacies of the woods, overwhelming numbers, and the impetuosity of the [Confederate] charge, rendered it impossible to withdraw in order." Clearly, close range Confederate artillery fire, coupled with a determined infantry attack, had routed the Federals. The Southern guns must have been far forward in order to use canister as they did, since it lost its effect after 300 yards.

Battery H, Fifth U.S. Artillery, a veteran of every battle from Shiloh onward, suffered a similar fate. Caught in the same woods,
it was over-run by charging Confederates, and had no chance to escape. Brigadier General John King, another of Baird's brigadiers, described the destruction of this battery. King related:

I immediately gave orders for the battery to limber up, but it could not be done as the horses as they were brought up to the guns were shot down. The officers and men, finding it impossible to retire, remained at their pieces (firing) until they were forcibly taken from them by the enemy.16

The results of this attack cost Battery H all of its guns. They were recovered later, however, in a counter-attack.17

When the circumstances were more favourable, Union batteries were able to render important support to their infantry. When Brigadier General Jefferson C. Davis' division of Twentieth Corps was attacked by heavy columns of Confederates later on September 19, he was supported by a specialized Union formation. Colonel John T. Wilder's brigade of mounted infantry was supplied with a ten-gun battery, and his other troops were armed with Spencer repeating rifles. He used his fire power to help Davis rally his shaken division.18 "General Davis now rallied his men, who gallantly advanced on my right under a galling fire, but were soon driven back again to my right," Wilder recalled. When the attacking Confederates followed Davis' troops into the open, Wilder used his battery to fire canister into the Rebels who sheltered in a ditch in the centre of the field. He wrote:
In the various repulses we had thrown into the Rebel columns, which had attacked us closely massed, over 200 rounds of double-shotted 10-pounder canister, at a range varying from 70 to 350 yards, and at the same time kept up a constant fire with our repeating rifles, causing a most fearful destruction in the rebel ranks.

He concluded: "After this we were not again that day attacked."

Confederate reports did not mention the fire from repeating rifles in this position but Brigadier General William Preston described it as a "sanguinary conflict" and Colonel Robert Trigg, who participated in the assault, mentioned a "destructive fire of grape and canister."[^19]

In the final attack on the night of September 19, the Confederates used their artillery in what can only be described as extremely close support. Cleburne, now commanding as a major general, attacked the Federals left and centre, using his guns against hastily constructed Union defences. Coming under a heavy fire from the small-arms and artillery of the defenders, Cleburne ordered two of his batteries run forward by hand, where they fired into the Yankees from a distance of 60 yards.[^20] Only the darkness and confusion kept Cleburne from exploiting his assault, for the Union defenders fled from their breastworks.

Supporting this same attack, Cheatham's division used its guns to halt a Union counter-attack. Maney, still commanding his brigade as he had at Murfreesborough, recalled:

> The enemy, pressing forward on what he deemed our yielding lines, was met by shot and shell, and then double charges
of canister belched in quick succession from four as good
guns, and, in my judgement as gallantly manned and served,
as any our service can boast. Three times his lines were
broken and shattered before their deadly discharges, and
finally he abandoned in disorderly rout all efforts to
capture them.  

The commander of this battery, Lieutenant William B. Turner,
believed that "the repulse of the enemy was effected by my battery
alone." Since he had been serving his guns since Shiloh, and had
considerable experience on which to base his opinion, Turner's
judgement was probably correct.

Counter battery fire at long range was also employed by the
Union on September 19. Captain Lyman Bridges, who had commanded a
battalion of the Pioneer Brigade at Murfreesborough carried on a
successful two hour duel with an unidentified Rebel battery at
1500 yards. In the course of the engagement, both batteries were
reinforced by more guns, but the contest ended when the Confederates
retired with "heavy loss." During the fight, the rebel artillery
used shells, shot and shrapnel, but Bridges did not indicate how
many of his eleven casualties were caused by this fire. It is
suggested that, if guns could fire at each other for two hours, and
still remain operational, long range fire could not have been parti-
cularly lethal.

The battle continued on the morning of September 20, when the
Confederates renewed their assaults all along the line. Infantry
assault the previous day had forced the Union left back into a
horseshoe-shaped formation. These renewed attacks on a broad front caused further retreats. This forced withdrawal put the guns of Crittenden’s Twenty-first Corps into a tight mass on the high ground behind Snodgrass House. Mendenhall, a major now, was unable to duplicate the concentrated fire of Murfreesborough since, as he said, the conditions in his front made it very difficult to post artillery in positions of advantage. Somehow the Confederates managed to break through the infantry lines, creating havoc among the massed guns. Mendenhall wrote:

Some rebel sharpshooters got into a point of woods to our right and front and began firing at the artillery, and soon some of the pieces began to retire without orders. I rode back and ordered them to return, and while I was so employed a stampede took place in our front, and in a few moments the rebels were in among the guns. How they got by our troops I have no idea.

Here the corps artillery lost fifteen of its twenty-six guns and Mendenhall was “agreeably surprised that any got away.” In view of his previous record at Shiloh and Murfreesborough, it seems unlikely that this loss of artillery can be attributed to him. Instead, the collapse resulting from the unexpected withdrawal of one Union division probably caused the “stampede” in Mendenhall’s front.

While the Union line was being heavily attacked, the Confederate artillery was preventing the arrival of reinforcements. Major S.C. Williams, commanding a battalion of three batteries, one of two such formations in the Confederate forces, fired at the Union columns. Major Thomas K. Porter, Chief of Artillery to Lieutenant General
James Longstreet's corps reported:

Major Williams was then ordered to take position about 1000 yards from where they [the Union troops] were crossing and open fire with his three batteries. This he did with great execution, silencing the enemy's artillery and cutting off the re-enforcements, and enabling the infantry to capture between 500 and 600 prisoners.25

This use of artillery represents a real evolution of fire control when it is compared to the Confederate tactics at Shiloh. Here the guns, being deliberately withheld from the close fighting, were able to provide useful support when they were needed. This is not representative of general artillery policy during this battle, however, for most batteries supported their assigned brigades. Since Porter was trained in the Virginia theatre, it is possible that he ordered Williams to conform to Army of Northern Virginia artillery policy.26 Williams, in his own report, mentioned that "not more than one-fourth of the projectiles fired exploded," indicating that the effect of his long range fire must have come from solid shot.27 At any rate it shows that the Southerners were having problems with their artillery ammunition, although it does not appear to have affected their role.

The Union artillery took advantage of the improvised abatis which they had constructed during the previous night. In the areas where the line did not collapse the guns were forced to work against close range enemy fire. This forced the development of a technique whereby damaged equipment was cannibalized in order to keep the guns
in action. Brigadier General John C. Starkweather, commanding the
Second Brigade in Baird's division, described how he kept his guns
firing:

While working the battery at this point my guns, caissons, and limbers, were from time to time made
unservicable from the shot and shell of the enemy's
batteries, and from the fire of his infantry; so that
I retired guns, limbers, and caissons when necessary,
refitting and replacing those portions thereof damaged
from the two guns left unused.28

When Starkweather was finally ordered to withdraw toward Chattanooga
at dusk on September 20, he was down to three rounds of canister,
and almost no infantry ammunition.

It is difficult to assess the effect of artillery fire in
terms of the casualties it produced. The Union Medical Director
reported that: "The wounds received were caused by a variety of
missiles, but those from the rifled musket were perhaps more numerous
in proportion than usual for so great a battle."29 While this state­
ment is based on the examination of 4,000 wounded it does not reflect
the true situation. It has been shown that artillery was most
efficient at close range, and here canister was used. It is sugges­
ted that cursory examination of bodies would not reveal the differ­
ence between a canister shot and a musket ball, and that few men
shot at by canister were merely wounded. In other battles canister
piled up an impressive toll of dead. Lieutenant T.J. Key,
commanding Calvert's Arkansas Battery as he had at Murfreesborough,
reported the results of close range fire with canister. "About
5 o'clock the same day [September 20] Brigadier General [Lucius] Polk's brigade assailed the enemy in his breastworks. Key recalled: "I caused my guns to be run by hand upon a small elevation to within 170 yards of the enemy's fortifications." Using double canister Key blasted the defenders from their position.

"To form a correct estimate of the execution done by this battery," he concluded, "I will mention that a lieutenant, (a prisoner) of the Sixteenth U.S. Regulars states that two shots of canister from my guns killed and wounded 38 of his company, killing his captain."

It is clear that canister was the major casualty producer among the various types of field artillery ammunition used. The inability of artillery to keep up with the infantry in assaults is partially responsible for the fact that all batteries suffered lighter casualties than did their assigned infantry.

**TABLE XIV**

**COMPARATIVE CASUALTY PERCENTAGES IN UNION INFANTRY AND ARTILLERY**

<table>
<thead>
<tr>
<th>Division</th>
<th>% Infantry</th>
<th>% Artillery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Division 14 Corps</td>
<td>47.1</td>
<td>25.9</td>
</tr>
<tr>
<td>1st Division 21 Corps</td>
<td>37.2</td>
<td>9.4</td>
</tr>
<tr>
<td>2nd Division 21 Corps</td>
<td>28.4</td>
<td>12.7</td>
</tr>
<tr>
<td>3rd Division 21 Corps</td>
<td>22.5</td>
<td>21.7</td>
</tr>
<tr>
<td>Average Casualties</td>
<td>33.8</td>
<td>17.4</td>
</tr>
</tbody>
</table>
This uniformly higher total can be explained by the role of artillery. Since the guns were used as support weapons, they were rarely in front of their infantry, so the foot troops had to bear the brunt of enemy fire.

The position of the Union artillery, almost always on the defensive during the battle, allowed them to fire more ammunition. The Federal gunners expended an average of 541 rounds in comparison with an average expenditure of 138 rounds by the Rebels. The terrain, coupled with rapid Confederate advances, probably accounted for the smaller expenditure of ammunition. As at Murfreesborough, the Federal Gunners fired more often, but this did not prevent a Confederate victory. Rosecrans, reporting the services of his artillery, recalled:

Our artillery fired fewer shots than at Stone's River, but with even greater effect. I cannot but congratulate the country on the rapid improvement evidenced in this arm of the service. Our loss of pieces is, in part, attributable to the rough, wooded ground in which we fought and the want of experience in posting artillery, and partly to the unequal nature of the contest, our infantry being heavily outnumbered.

This does not completely explain the losses in Union guns; for Mendenhall, who lost fifteen, was as experienced an artillerist as served the Union. Similarly the batteries in Fourteenth Corps were veterans, and the commander was an old artillery officer. The truth is that Rosecrans was beaten at Chickanooga by the same aggressive Confederate infantry as had mauled McCook at Perryville and Murfreesborough. The gallant brigades which attacked in spite
of well posted Federal guns often met with signal success.

Bragg did not mention the Confederate artillery in his report of the battle so perhaps he did not consider it to have been a significant factor in his victory. Perhaps too, the guns were generally considered to be part of their brigades, needing no separate mention. Bushrod Johnson, now commanding a Confederate Division wrote:

I beg leave to call attention to the efficient use made of artillery in my command. My purpose, in accordance with preconceived notions was to keep my artillery employed to the utmost practicable extent, in conjunction with my infantry, and my little experience on this battle-field determines me on all like occasions to improve on my practice of this day.34
NOTES TO CHAPTER IV

1 OR, XXX, pt. 3, 63.


3 K. Falconer to E.C. Walthall, March 23, 1863, ibid., Braxton Bragg to W.J. Hardee, April 8, 1863, (ibid).

4 McGee Diary, August 6-7, 1863.

5 See Map No.1, Appendix G.

6 This general description of the battle is taken from Williams, Lincoln Finds a General, V, 239-269; OR, XXX, pt. 1, 47-64; ibid., pt. 2, 26-37.

7 See Data, Appendix C.

8 Ibid.

9 Ibid.


11 See Data, Appendix C.

12 Ibid., also Data, Appendix B.


14 OR, XXX, pt. 1, 275.

15 Ibid., 286-287.

16 Ibid., 309.

17 Ibid., 401.

18 Ibid., 448.

19 Ibid., pt. 2, 414, 430.
NOTES ON CHAPTER IV

20 Ibid., 154.
21 Ibid., 95-96.
22 Ibid., 105.
23 Ibid., pt. 1, 374.
24 Ibid., 623.
26 Porter was part of Longstreet's staff, and had only arrived on the field on September 19.
27 OR, XXX, pt. 2, 450n.
28 Ibid., pt. 1, 301.
29 Ibid., 227.
31 Ibid., pt. 1, 169, 170, 784, 785, also Data, Appendix C.
32 See Data, Appendix C.
33 OR, XXX, pt. 1, 62.
34 Ibid., pt. 2, 465.
CONCLUSION

Three factors influenced the role of field artillery in the West. Terrain, technology, and tactics made it a close support weapon. While other imponderables such as morale and leadership also affected artillery action in individual situations, the factors mentioned seem to have been most influential.

Terrain had an effect upon the ways guns were used in each battle. The lack of roads and the dense undergrowth both at Shiloh and Chickamauga hampered the movement of the batteries in support of the infantry. At Perryville, the dense bush on the Union left forced the Southerners to make their attack without the support of their batteries. Similarly, at Murfreesborough, the Cedar Brake seems to have inhibited the movement of both Union and Confederate guns. Nor is there evidence that commanders planned their routes into action in order to ensure that they could be supported by artillery. Instead, the impression is strong that they merely fought the enemy where they found him, and expected the guns to move in as best they could. Terrain appears to have been responsible for the independent operation of the southern batteries at Shiloh. At Chickamauga, however, where the terrain was equally as broken, battery commanders maintained tighter control. Perhaps this was because they were most experienced. Certainly, the standard of personal initiative and
aggressiveness displayed by artillerists faced with difficult
ground was admirable. In every battle they seem to have done their
best to keep up with the infantry.

Technology, the physical capabilities of field guns, also
had a bearing on their role. It has been demonstrated that arti-
llery was most devastating when firing canister at close range.
A partial explanation of the lessened effect of long range fire is
found with the ammunition. Shells or case shot used a black powder
bursting charge, and this does not appear to have been effective.
The low velocity of black powder explosives meant that the cases of
the shells shattered into a few large fragments, limiting their
lethal effect. Similarly the bursting charge of the various shrapnel
projectiles was subject to the same limitations. Artillery shell
fire was not to become really lethal until the perfection of high
explosives. These also markedly increased the range of the guns.
Since technology forced artillery to work at close range, it shows
that the common brigade-battery assignment was a logical result of
the capability of the guns.

Artillery appears to have been more effective in its defen-
sive role, than in the attack. This may be partly the result of
the common tactical doctrine of meeting the enemy wherever he was
to be found. The penchant for frontal assaults also limited the
use of the guns since in most cases they had to follow behind the
attacking infantry, making it difficult for them to fire in support.
In the defensive role, the guns were often already in position and
their field of fire was not blocked by their own infantry. This allowed the artillery to fire without danger of hitting their own men. Although the guns were more effective in their defensive role, they often failed to halt infantry attacks. The determined assaults of the Confederate infantry often overwhelmed Federal batteries, despite the efforts of the guns. While the tactic of frontal assault resulted in many casualties from canister, it was undoubtedly effective. The heavy casualties resulting from these attacks makes one wonder if perhaps a better way could have been evolved.

In sum, the major role of field artillery in the West between April 6, 1862, and September 20, 1863, was infantry support, the long range counter-battery role being decidedly secondary. Further research might explain the reasons for the success or failure of artillery to stop infantry attacks, for this was the great variable in the analysis of the significance of the guns in battle.
Since the data shown in Appendices A-C, represents a large number of individual citations from the Official Record, the citations for each Appendix are listed below. Where a conflict arises between two reports over casualty figures or numbers of guns, the higher figure is taken.


The maps which comprise Appendix D-G are sketches adapted from the West Point Atlas of the Civil War, edited by Col. Vincent J. Esposito (New York: Frederick A. Praeger, 1962), plates 32-38, 79-83, 110-115. Topography was checked with, The Official Atlas of the Civil War (New York: Thomas Yoseloff, 1958), passim. Since conflict exists about troop positions and features, I have placed formations in what is, in my judgement, approximately correct positions, based on the
Official Record. Since these maps are not to scale, their only purpose is to amplify the arguments presented in the text.
## APPENDIX A. TABLE I, ARTILLERY STATISTICS: SHILOH
### 6 - 7 APRIL, 1862

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>MEN</th>
<th>HORSES</th>
<th>CAS.</th>
<th>CAS.</th>
<th>FIRED</th>
<th>HZR.</th>
<th>PAR.</th>
<th>PAR.</th>
<th>JAMES</th>
<th>JAMES</th>
<th>HZR.</th>
<th>NAP.</th>
<th>OTHER</th>
<th>S.B.</th>
<th>TOTAL GUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>D, 2nd ILLINOIS</td>
<td>J.P. TIMONY</td>
<td>25</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Division</td>
<td>D, 1st ILLINOIS</td>
<td>E. McALLISTER</td>
<td>13</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>ARMY OF THE</td>
<td>14th OHIO BTY.</td>
<td>J.B. BURROWS</td>
<td>28</td>
<td>70</td>
<td>70</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>TENNESSEE</td>
<td>12th ILLINOIS</td>
<td>G. NISPEL</td>
<td>89</td>
<td>5</td>
<td>11</td>
<td>11</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
<td>591</td>
</tr>
<tr>
<td>TOTAL: 20 GUNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second</td>
<td>H, 1st MISSOURI</td>
<td>F. WELKER</td>
<td>17</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
</tr>
<tr>
<td>Division</td>
<td>K, 1st MISSOURI</td>
<td>G. STONE</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>D, 1st MISSOURI</td>
<td>H. RICHARDSON</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>A, 1st ILLINOIS</td>
<td>P.P. WOOD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL: 22 GUNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third</td>
<td>I, 1st MISSOURI</td>
<td>C. THURBER</td>
<td>144</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Division</td>
<td>9th INDIANA</td>
<td>N.S. THOMPSON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Either 9 or 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth</td>
<td>MANN'S MISSOURI</td>
<td>E. BROTZMAN</td>
<td>92</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Division</td>
<td>2nd MICHIGAN</td>
<td>C.W. LAING</td>
<td>61</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL: 16 GUNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fifth</td>
<td>13th OHIO</td>
<td>J.B. MYERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Division</td>
<td>B, 1st ILLINOIS</td>
<td>S.E. BARRETT</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL: 18 GUNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sixth</td>
<td>E, 1st ILLINOIS</td>
<td>A.C. WATERHOUSE</td>
<td>18</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Division</td>
<td>5th OHIO</td>
<td>A. HICKENLOOPER</td>
<td>149</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL: 12 GUNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: 10 GUNS</td>
<td>H, 1st ILLINOIS</td>
<td>A. SILFVERSPARRE</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>I, 1st ILLINOIS</td>
<td>E. BOUTON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8th OHIO</td>
<td>L. MARKGRAF</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>F, 2nd ILLINOIS</td>
<td>J.W. POWELL</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>B, 2nd ILLINOIS</td>
<td>R. MADISON</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

LEGEND: HZR.- howitzer  PAR.- Parrott rifle  NAP.- Napoleon  S.B.- smooth-bore
<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>MEN</th>
<th>HORSES</th>
<th>MEN: %</th>
<th>HORSES: %</th>
<th>ROUNDS FIRED</th>
<th>GUNS: 12.pdr.</th>
<th>12.pdr.</th>
<th>6.pdr.</th>
<th>6.pdr.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST CORPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td>FIRST Div.</td>
<td>BANKHEAD'S</td>
<td>S.P. BANKHEAD</td>
<td>93</td>
<td>81</td>
<td>24</td>
<td>30</td>
<td>25.7</td>
<td>37.0</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STANFORD'S</td>
<td>T.J. STANFORD</td>
<td>131</td>
<td>95</td>
<td>20</td>
<td>50</td>
<td>15.2</td>
<td>52.6</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARMY OF THE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td>MISSISSIPPI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td>Second Div.</td>
<td>POLK'S</td>
<td>M.T. POLK</td>
<td>102</td>
<td>81</td>
<td>24</td>
<td>30</td>
<td>23.5</td>
<td>37.3</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SMITH'S</td>
<td>M. SMITH</td>
<td>120</td>
<td>89</td>
<td>14</td>
<td>22</td>
<td>10.1</td>
<td>20.4</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td>SECOND CORPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td>First Div.</td>
<td>WASHINGTON ARTY.</td>
<td>W.I. HODGSON</td>
<td>11</td>
<td>28</td>
<td>723</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALABAMA BATTERY</td>
<td>W.H. KETCHUM</td>
<td>13</td>
<td>15</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ROBERTSON'S</td>
<td>F.H. ROBERTSON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GIRARDY'S</td>
<td>I.P. GIRARDY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GAGE'S</td>
<td>C.P. GAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Div.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td>THIRD CORPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>SWETT'S</td>
<td>CHARLES SWETT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>TRIGG'S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>CALVERT'S</td>
<td>J.H. CALVERT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>WATSON BTY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>HARPER'S</td>
<td>PUT. DARDEN</td>
<td>70</td>
<td>8</td>
<td>8</td>
<td>11.4</td>
<td>4</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MILLER'S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>KENTUCKY BTY.</td>
<td>E.P. BYRNE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>MISSISSIPPI BTY.</td>
<td>A. HUDSON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>'COBB'S</td>
<td>R. COBB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>RUTLEDGE'S</td>
<td>A.M. RUTLEDGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.pdr.</td>
<td>12.pdr.</td>
<td>6.pdr.</td>
<td>6.pdr.</td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

# APPENDIX A. TABLE III, ARTILLERY STATISTICS: SHILOH
6 - 7 APRIL, 1862

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H, H, 4th U.S.</td>
<td>John Mendenhall</td>
<td>9</td>
<td>18</td>
<td>498</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>G, 1st Ohio</td>
<td>Joseph Bartlett</td>
<td>3</td>
<td>600</td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>H, 5th U.S.</td>
<td>W. R. Terrill</td>
<td>15</td>
<td>19</td>
<td>242</td>
<td></td>
<td>4</td>
<td></td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- ORD. - Ordnance
- HZR. - Howitzer
- NAP. - Napoleon
- PAR. - Parrott
### APPENDIX B. TABLE I, ARTILLERY STATISTICS: MURFREESBOROUGH

31 DECEMBER, 1862 - 3 JANUARY, 1863

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>MEN</th>
<th>HORSES</th>
<th>% CAS.</th>
<th>% CAS.</th>
<th>ROUNDS</th>
<th>6-pdr. S.B.</th>
<th>12-pdr. HZR.</th>
<th>12-pdr. NAP.</th>
<th>3-inch ORD.</th>
<th>UNIDEN.</th>
<th>TOTAL GUNS</th>
<th>UNIDEN.</th>
<th>TOTAL GUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POLK'S CORPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>First Div.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STANFORD'S</td>
<td>T.J. STANFORD</td>
<td>74</td>
<td>10</td>
<td>10</td>
<td>13.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CARNES'</td>
<td>L.G. MARSHALL</td>
<td>73</td>
<td>7</td>
<td>4</td>
<td>9.6</td>
<td>350</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>SMITH'S</td>
<td>W.B. TURNER</td>
<td>81</td>
<td>6</td>
<td>10</td>
<td>7.4</td>
<td>800</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>SCOTT'S</td>
<td>W.L. SCOTT</td>
<td>81</td>
<td>2</td>
<td>0</td>
<td>2.5</td>
<td>250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>ARMY OF THE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>TENNESSEE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>Second Div.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>ROBERTSON'S</td>
<td>F.H. ROBERTSON</td>
<td>20</td>
<td>15</td>
<td></td>
<td></td>
<td>420</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>GARRITY'S</td>
<td></td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>BARRET'S</td>
<td>O.W. BARRET</td>
<td>4</td>
<td>7</td>
<td></td>
<td></td>
<td>186</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>WATERS'</td>
<td>D.D. WATERS</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>HARDEE'S CORPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>First Div.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WASHINGTON ARTY.</td>
<td>W.C.D. VAUGHT</td>
<td>6</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MOSES'</td>
<td>R.W. ANDERSON</td>
<td>4</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WRIGHT's</td>
<td>E.E. WRIGHT</td>
<td>14</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LUNSDEN'S</td>
<td>H.H. CRIEBS</td>
<td>97</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>250</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COBB'S</td>
<td>R. COBB</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BYRNE'S</td>
<td>E.P. BYRNE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CALVERT'S</td>
<td>T.J. KEY</td>
<td>8</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Second Div.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWETT'S</td>
<td>H. SHANNON</td>
<td>8</td>
<td>11</td>
<td></td>
<td></td>
<td>612</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JEFFERSON ARTY.</td>
<td>PUTNAM DARDEN</td>
<td>6</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEMPLE'S</td>
<td>H.C. SEMPLE</td>
<td>45</td>
<td>20</td>
<td>14</td>
<td>45.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DUGLAS'</td>
<td>J.P. DUGLAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>EUPHILA LIGHT ARTY.</td>
<td>W.A. McDUFFIE</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td>213</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>McCOWN'S Div.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HUMPHREYS'</td>
<td>J.T. HUMPHREYS</td>
<td>8</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>CAVALRY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>WHEELER'S BRIGADE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>WHARTON'S BRIGADE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WHITE'S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

LEGEND: S.B. - smooth-bore  UNIDEN. - unidentified  HZR. - howitzer  NAP.-Napoleon  ORD. - Ordnance
## APPENDIX B. TABLE II, ARTILLERY STATISTICS: MURFREESBOROUGH

31 December, 1862 - 3 January, 1863

| DIVISION          | BATTERY                | COMMANDER               | MEN | HORSES | % CAS. | MEN | HORSES | HZR | % CAS. | 12-pdr. | 10-pdr. | 6-pdr. | 12-pdr. | 6-pdr. | UNIDENTIFIED | UNIDENTIFIED | UNIDENTIFIED | ROUNDS FIRED | TOTAL GUNS |
|-------------------|------------------------|-------------------------|-----|--------|--------|-----|--------|-----|--------|---------|---------|--------|---------|--------|--------|---------------|---------------|---------------|--------------|------------|
| RIGHT WING        | 5th WISCONSIN          | O.F. PINNEY             | 12  | 21     | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 726          | 4          |
| First Division    | 8th WISCONSIN          | S.J. CARPENTER          | 55  | 24     | 18     | 43.6| 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 725          | 4          |
|                    | 2nd MINNESOTA          | W.A. HOTCHKISS          |     |        |        |     |        |     |        |         |         |        |         |        |        | 1              | 1              | 1              | 500          |            |
| ARMY OF THE       | A, 1st OHIO            | E.B. BELDING            | 29  | 73     | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 25           | 6          |
| CUMBERLAND        | B, 1st OHIO            | W.P. EDGARTON           | 39  | 75     | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 7            | 6          |
| Second Division   | 5th INDIANA            | P. SIMONSON             | 24  | 23     | 2      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 213          | 6          |
|                    | 4th INDIANA            | A.K. BUSH               | 26  | 27     | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 1,160        | 6          |
| Third Division    | G, 1st MISSOURI        | H. HESCOCK              | 22  | 37     | 2      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 1,112        | 6          |
|                    | C, 1st ILLINOIS        | C. Houghtaling          | 52  | 95     | 4      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 1,154        | 6          |
| CENTRE            | A, 1st MICHIGAN        | G.W. VAN PELT           | 12  | 10     | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 697          | 6          |
| First Division    | A, KENTUCKY            | D.C. STONE              | 3   | 4      | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 110          |            |
|                    | H, 5th U.S.            | F.L. GUENTHER           | 5   | 15     | 1      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 558          |            |
| Second Division   | B, KENTUCKY            | A.A. ELLSWORTH          | 49  | 40     | 4      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 531          | 3          |
|                    | G, 1st OHIO            | A. MARSHALL             | 113 | 116    | 24     | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 553          | 6          |
|                    | M, 1st OHIO            | F. SCHULTZ              | 77  | 56     | 3      | 2   | 2      | 1   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 750          | 4          |
| Third Division    | D, 1st MICHIGAN        | J.W. CHURCH             | 0   | 0      | 0      | 0   | 0      | 0   | 0      | 0       | 0       | 0      | 0       | 0      | 0       | 1              | 1              | 1              | 170          |            |
| PIONEER BRIGADE   | Stokes'                 | J.H. STOKES             | 98  | 13     | 4      | 13.3| 4      | 2   | 2      | 1       | 1       | 1      | 1       | 1      | 1       | 1              | 1              | 1              | 1,450        | 6          |
| Fourth Division   | I, 2nd ILLINOIS        | C.M. BARNETT            |     |        |        |     |        |     |        |         |         |        |         |        |        |                 |                |                |              |            |
| 10th WISCONSIN    | Y.Y. BEEBE             |                         |     |        |        |     |        |     |        |         |         |        |         |        |        |                 |                |                |              |            |

**LEGEND:**
- HZR. - howitzer
- PAR. - Parrott
- S.B. - smooth-bore
- NAP. - Napoleon
- UNIDENT. - unidentified
### APPENDIX B. TABLE II, ARTILLERY STATISTICS: MURFREESBOROUGH (Cont’d.)

31 DECEMBER, 1862 - 3 JANUARY, 1863

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>MEN</th>
<th>HORSES</th>
<th>%CAS.</th>
<th>% CAS.</th>
<th>12-pdr.</th>
<th>10-pdr.</th>
<th>6-pdr.</th>
<th>12-pdr.</th>
<th>6-pdr.</th>
<th>6-pdr.</th>
<th>F.IRED GUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEFT WING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Division</td>
<td>8th INDIANA</td>
<td>C. ESTEP</td>
<td>12</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>871</td>
</tr>
<tr>
<td></td>
<td>6th OHIO</td>
<td>C. BRADLEY</td>
<td>5</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>10th INDIANA</td>
<td>J.B. COX</td>
<td>5</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,442</td>
</tr>
<tr>
<td>Second Division</td>
<td>F,1ST OHIO</td>
<td>D.T. COCKERILL</td>
<td>18</td>
<td>24</td>
<td>14.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 1,080 6</td>
</tr>
<tr>
<td></td>
<td>B,1st OHIO</td>
<td>W.E. STANDART</td>
<td>20</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 1,610 6</td>
</tr>
<tr>
<td>Third Division</td>
<td>H.M,4th U.S.</td>
<td>C.C. PARSONS</td>
<td>22</td>
<td>20</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 2,299 8</td>
</tr>
<tr>
<td></td>
<td>STEVENS'</td>
<td>A.J. STEVENS</td>
<td>9</td>
<td>7</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 1,650</td>
</tr>
<tr>
<td></td>
<td>3d WISCONSIN</td>
<td>C. LIVINGSTON</td>
<td>25</td>
<td>9</td>
<td>22.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 6 358</td>
</tr>
<tr>
<td></td>
<td>7th INDIANA</td>
<td>G.R. SWALLOW</td>
<td>12</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>406</td>
</tr>
</tbody>
</table>

**LEGEND:**
- HZR. - howitzer
- PAR. - Parrott
- S.B. - smooth-bore
- NAP. - Napoleon
- UNIDEN. - unidentified
APPENDIX B. TABLE III, ARTILLERY STATISTICS: MURFREESBOROUGH

31 DECEMBER, 1862 - 3 JANUARY, 1863

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>First Division</td>
<td></td>
<td>4</td>
<td>8</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Right Wing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Second Division</td>
<td></td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Third Division</td>
<td></td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>First Division</td>
<td></td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Second Division</td>
<td></td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2*</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>First Division</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left Wing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Second Division</td>
<td></td>
<td>4</td>
<td>10</td>
<td>6</td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Division</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*2 16-pdr. Parrott
## APPENDIX C. TABLE I, ARTILLERY STATISTICS: CHICKAMAUGA

19 - 20 SEPTEMBER, 1863

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>MEN</th>
<th>HORSES</th>
<th>CAS. 12-pdr.</th>
<th>CAS. 6-pdr.</th>
<th>% CAS. 12-pdr</th>
<th>% CAS. 6-pdr</th>
<th>12-pdr. NAP.</th>
<th>6-pdr. S.B.</th>
<th>JAMES 3-inch</th>
<th>10-pdr. HZR.</th>
<th>12-pdr. HZR.</th>
<th>24-pdr. HZR.</th>
<th>ROUNDS FIRED</th>
<th>TOTAL GUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEATHAM'S DIVISION</td>
<td>CARNES' (TENN.)</td>
<td>W.W. CARNES</td>
<td>33</td>
<td>48</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td>103</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARMY OF THE TENNESSEE</td>
<td>STANFORD'S (MISS.)</td>
<td>T.J. STANFORD</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMITH'S (MISS.)</td>
<td>W.B. TURNER</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLK'S CORPS</td>
<td>SCOGIN'S (GA.)</td>
<td>J. SCOGIN</td>
<td>89</td>
<td>13</td>
<td>15.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLEBURNE'S DIVISION</td>
<td>CALVERT'S (ARK.)</td>
<td>T.J. KEY</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOUGLAS'S (TEX.)</td>
<td>J.P. DOUGLAS</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HILL'S CORPS</td>
<td>SEMPLE'S (ALA)</td>
<td>H.C. SEMPLE</td>
<td>10</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRECKINKRIDGE'S DIVISION</td>
<td>GRAVES'S (KY.)</td>
<td>R.E. GRAVES</td>
<td>84</td>
<td>10</td>
<td>11.9</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COBB'S (KY.)</td>
<td>R. COBB</td>
<td>84</td>
<td>5</td>
<td>11.9</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEBANE'S (TENN.)</td>
<td>J.W. MEBANE</td>
<td>72</td>
<td>1</td>
<td>8</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HILL'S CORPS</td>
<td>SLOCOMB'S (L.A.)</td>
<td>C.H. SLOCOMB</td>
<td>126</td>
<td>33</td>
<td>27.5</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W.T. WALKER</td>
<td>BLEDGEE'S (MISS.)</td>
<td>84</td>
<td>2</td>
<td>0</td>
<td>2.3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESERVE CORPS</td>
<td>MARTIN'S (GA.)</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIDDELL'S RESERVE CORPS</td>
<td>SWETT'S (MISS.)</td>
<td>C. SWETT</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOWLER'S (ALA.)</td>
<td>W.H. FOWLER</td>
<td>24</td>
<td>27</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BARRET'S (MO.)</td>
<td>O.W. BARRET</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVIS'S (GA.)</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUMSDEN'S (ALA.)</td>
<td></td>
<td>2</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CORPS RESERVE</td>
<td>MASSENBURG'S (GA.)</td>
<td></td>
<td>4</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LEGEND:** NAP. - Napoleon  S.B. - smooth-bore  ORD. - Ordnance  PAR. - Parrott  HZR. - howitzer
## APPENDIX C. TABLE I: Continued.

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>CAS. MEN</th>
<th>% CAS. MEN</th>
<th>HORSES</th>
<th>12-pdr. MEN</th>
<th>6-pdr. S.B. RIFLE</th>
<th>10-pdr. ORD.</th>
<th>12-pdr. HZR.</th>
<th>24pdr. HZR.</th>
<th>TOTAL ROUNDS FIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>HINDMAN'S DIVISION</td>
<td>DENT'S</td>
<td>S. H. DENT</td>
<td>16</td>
<td>8</td>
<td>6</td>
<td>317</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARMY OF THE TENNESSEE</td>
<td>GARRITY'S (AL)</td>
<td>J. GARRITY</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>23</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGSTREET'S CORPS</td>
<td>SCOTT'S (TENN.)</td>
<td>J. H. MARSH</td>
<td>15</td>
<td>14</td>
<td>2</td>
<td>2</td>
<td>136</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. P. STEWART'S DIVISION</td>
<td>WATER'S (AL)</td>
<td>C. W. WATKINS</td>
<td>70</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>32</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGSTREET'S CORPS</td>
<td>DAWSON'S (GA.)</td>
<td>R. W. ANDERSON</td>
<td>69</td>
<td>7</td>
<td>14</td>
<td>10.1</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUPAULA BYT.</td>
<td>McD. OLIVER</td>
<td>106</td>
<td>14</td>
<td>15</td>
<td>13.2</td>
<td>4</td>
<td>76</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st ARKANSAS</td>
<td>J. T. HUMPHREYS</td>
<td>89</td>
<td>4</td>
<td>13</td>
<td>4.2</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGSTREET'S CORPS</td>
<td>DARDEN'S (MISS.)</td>
<td>PUTNAM DARDEN</td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>89</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRESTON'S DIVISION</td>
<td>PEEPLES'S (GA.)</td>
<td>T. M. PEEPLES</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>69</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGSTREET'S LEFT WING</td>
<td>WOLIHIN'S (GA.)</td>
<td>A. M. WOLIHIN</td>
<td>87</td>
<td>3</td>
<td>5</td>
<td>3.4</td>
<td>428</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BAXTER'S (TENN.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KOLB'S (AL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESERVE ARTILLERY</td>
<td>JEFFREY'S (VA.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILLIAMS' BATTALION</td>
<td>McCANT'S (FLA.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROVISIONAL DIVISION</td>
<td>YORK'S (GA.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. R. JOHNSON</td>
<td>CULPEPER'S (SC)</td>
<td>J. F. CULPEPER</td>
<td>84</td>
<td>14</td>
<td>16.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:** NAP. - Napoleon  S.B. - smooth-bore  ORD. - Ordnance  PAR. - Parrott  HZR. - howitzer  * Also one Blakeley Rifle
# Appendix C. Table II, Artillery Statistics: Chickamauga

19 - 20 September, 1863

<table>
<thead>
<tr>
<th>Division</th>
<th>Battery</th>
<th>Commander</th>
<th>Men</th>
<th>Horses</th>
<th>% Cas.</th>
<th>% Cas.</th>
<th>12-pdr</th>
<th>6-pdr</th>
<th>James 3-inch</th>
<th>10-pdr</th>
<th>12-pdr</th>
<th>24-pdr</th>
<th>HZR</th>
<th>MTN.</th>
<th>Rounds Fired</th>
<th>Guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Division</td>
<td>H, 5th U.S.</td>
<td>H.M. BURNHAM</td>
<td>130</td>
<td>117</td>
<td>44</td>
<td>65</td>
<td>33.8</td>
<td>55.5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>728</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>4th INDIANA</td>
<td>D. FLANSBURG</td>
<td>95</td>
<td>116</td>
<td>24</td>
<td>34</td>
<td>25.3</td>
<td>29.3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A, 1st MICHIGAN</td>
<td>G. VAN FELT</td>
<td>118</td>
<td>130</td>
<td>25</td>
<td>46</td>
<td>21.2</td>
<td>35.3</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>380</td>
<td>6</td>
</tr>
<tr>
<td>Second Division</td>
<td>M, 1st OHIO</td>
<td>F. SCHULTZ</td>
<td>4</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>415</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>G, 1st OHIO</td>
<td>A. MARSHALL</td>
<td>0</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>294</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>BRIDGES'</td>
<td>L. BRIDGES</td>
<td>126</td>
<td>26</td>
<td>47</td>
<td>20.6</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Third Division</td>
<td>4th MICHIGAN</td>
<td>J.W. CHURCH</td>
<td>11</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>I, 4th U.S.</td>
<td>F.S. SMITH</td>
<td>22</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>C, 1st OHIO</td>
<td>M.B. GARY</td>
<td>122</td>
<td>13</td>
<td>26</td>
<td>10.6</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>498</td>
<td>6</td>
</tr>
<tr>
<td>Fourth Division</td>
<td>18th INDIANA</td>
<td>E.L. LILLY</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>778</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>19th INDIANA</td>
<td>S.J. HARRIS</td>
<td>20</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,100</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>21st INDIANA</td>
<td>W.W. ANDREW</td>
<td>10</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>442</td>
<td>2</td>
</tr>
<tr>
<td>First Division</td>
<td>2nd MINNESOTA</td>
<td>A. WOODBURY</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>8th WISCONSIN</td>
<td>J.D. McLEAN</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Second Division</td>
<td>5th INDIANA</td>
<td>P. SIMONSON</td>
<td>10</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,247</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>A, 1st OHIO</td>
<td>W.F. GOODSPEED</td>
<td>20</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>20th OHIO</td>
<td>E. GROSSKOPFF</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>85</td>
<td>6</td>
</tr>
<tr>
<td>Third Division</td>
<td>G, 1st MISSOURI</td>
<td>G. SCHUELER</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>277</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>C, 1st ILLINOIS</td>
<td>M.H. PRESCOTT</td>
<td>4</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>194</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>11th INDIANA</td>
<td>A. SUTERMEISTER</td>
<td>21</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>6</td>
</tr>
</tbody>
</table>

**Legend:**
- NAP. = Napoleon
- S.B. = Smooth-bore
- ORD. = Ordnance
- PAR. = Parrott
- HZR. = Howitzer
- MTN. = Mountain

Total rounds fired: 728, 380, 415, 294, 6, 498, 778, 1,100, 442, 1,247, 85, 277, 194, 120.
### APPENDIX C. TABLE II, ARTILLERY STATISTICS: CHICKAMAUGA (Cont’d.)

#### 19 - 20 SEPTEMBER, 1863

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>BATTERY</th>
<th>COMMANDER</th>
<th>MEN</th>
<th>HORSES</th>
<th>% CAS.</th>
<th>% CAS.</th>
<th>12-pdr.</th>
<th>6-pdr.</th>
<th>JAMES 3-inch</th>
<th>10-pdr.</th>
<th>12-pdr.</th>
<th>24-pdr.</th>
<th>MTN. ROUNDS</th>
<th>TOTAL GUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST DIVISION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWENTY-FIRST ARMY CORPS</td>
<td>6th OHIO</td>
<td>C. BRADLEY</td>
<td>119</td>
<td>11</td>
<td>2</td>
<td>9.1</td>
<td>2</td>
<td>4</td>
<td>336</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8th INDIANA</td>
<td>G. ESTEP</td>
<td>134</td>
<td>18</td>
<td>56</td>
<td>13.4</td>
<td>4</td>
<td>2</td>
<td>750</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECOND DIVISION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H, 1st OHIO</td>
<td>N.A. BALDWIN</td>
<td>132</td>
<td>13</td>
<td>13</td>
<td>9.8</td>
<td>11.5</td>
<td>2</td>
<td>4</td>
<td>1445</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M, 4th U.S.</td>
<td>F.D.L. RUSSELL</td>
<td>117</td>
<td>109</td>
<td>8</td>
<td>13</td>
<td>6.8</td>
<td>12.0</td>
<td>4</td>
<td>2</td>
<td>1445</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ARMY OF THE CUMBERLAND</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H, 4th U.S.</td>
<td>H.C. CUSHING</td>
<td>87</td>
<td>73</td>
<td>23</td>
<td>24</td>
<td>26.4</td>
<td>32.8</td>
<td>4</td>
<td>760</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TWENTY-FIRST ARMY CORPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F, 1st OHIO</td>
<td>G.J. COCKERILL</td>
<td>110</td>
<td>90</td>
<td>12</td>
<td>12</td>
<td>10.9</td>
<td>13.3</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>THIRD DIVISION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3d, WISCONSIN</td>
<td>C. LIVINGSTON</td>
<td>119</td>
<td>27</td>
<td>32</td>
<td>22.7</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th INDIANA</td>
<td>G.R. SWALLOW</td>
<td>122</td>
<td>9</td>
<td>14</td>
<td>7.3</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>250</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TWENTY-FIRST ARMY CORPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26th INDEPEND. PENN</td>
<td>R.J. STEVENS</td>
<td>112</td>
<td>17</td>
<td>37</td>
<td>15.1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18th OHIO</td>
<td>C.C. ALESHIRE</td>
<td>95</td>
<td>7</td>
<td>7.3</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M, 1st ILLINOIS</td>
<td>T. BURTON</td>
<td>112</td>
<td>12</td>
<td>10.7</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RESERVE CORPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I, 2nd ILLINOIS</td>
<td>C.M. BARNETT</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- PAR. - Parrott
- NAP. - Napoleon
- S.B. - smooth-bore
- HZR. - howitzer
- MTN. - Mountain
- ORD. - Ordnance
BATTLE OF SHILOH
Situation at the Close of the First Day: 6 April 1862
SKETCH MAP

- CAVALRY
- BRIGADE
- DIVISION
- CORPS
- UNION
- CONFEDERATE
- CANNON
APPENDIX E
MAP NO. 1

BATTLEFIELD OF PERRYVILLE, KENTUCKY
FIRST POSITIONS: OCTOBER 8TH, 1862

- SKETCH MAP -

CONFEDERATE
- UNION

OLD MECKVILLE PIKE
OCTOBER 8TH SKETCH MAP

POSSIBLE WRITINGS:

"CONFEDERATE"
"UNION"
"POSTERIOR"
"CHAPLIN RIVER"
"SPRINGFIELD PIKE"
"LEBANON PIKE"
"Crittenden"
"Anderson"
"MAGAD"
BATTLE OF MURFREESBOROUGH
31 DEC.1862-3 JAN.1863
Situation at 4 p.m. 2 JAN.1863
SKETCH MAP
LEGEND: F: FORD X: BRIDGE

ASSAULTING IN TWO LINES
DIVISIONAL ARTILLERY BEHIND SECOND LINE.

WOODS.
CHICKAMAUGA
Positions on 20th September 1863: at 2:30 and movements to dusk

LEGEND:
F: Ford  B: Bridge
SKETCH MAP

APPENDIX 6
MAP NO 3

N.B. Rosecrans withdraws...
BIBLIOGRAPHY

Manuscript Materials


Federal Government Printed Publications


Memoirs and Regimental Histories


Books

BIBLIOGRAPHY

Books


Articles

BIBLIOGRAPHY

Articles


Atlases
