

2

WALL OF FIRE -- THE RIFLE AND CIVIL WAR INFANTRY TACTICS

AD-A227 467

A Thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by

RICHARD E. KERR, JR., MAJ, USA

B.S., Pennsylvania State University, 1976

Fort Leavenworth, Kansas

1990

DTIC  
ELECTE  
OCT 15 1990  
S B D  
Co

Approved for public release; distribution is unlimited.

# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> 1 June 1990	<b>3. REPORT TYPE AND DATES COVERED</b> Master's Thesis, Aug 89 to Jun 90	
<b>4. TITLE AND SUBTITLE</b> Wall of Fire -- The Rifle and Civil War Infantry Tactics			<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Major Richard E. Kerr, Jr.				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth KS 66027-6900			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b>			<b>10. SPONSORING / MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b>				
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited.			<b>12b. DISTRIBUTION CODE</b> A	
<b>13. ABSTRACT (Maximum 200 words)</b> This thesis examines the effect the rifle had on infantry tactics during the Civil War. It traces the transition from smoothbore to rifle and the development of the Minie ball. The range and accuracy of various weapons are discussed and several tables illustrate the increased capabilities of the rifle. Tactics to exploit the new weapon are examined, primarily those of William Hardee. Using Hardee's tactics as the standard rifle tactics before the war, the change in how infantry soldiers fought is documented with two battle analyses. The 1862 Maryland Campaign shows the start of tactical evolution as soldiers seek cover, expend large quantities of ammunition and are decisively engaged at greater distances. During the 1864 Wilderness-Spotsylvania battle, the concepts of fortification defense and skirmish offense take hold. Examining several current books that deal with the rifle and its effects, the thesis concludes that the rifle's increased firepower was a major factor in the move away from Hardee's formation tactics.				
<b>14. SUBJECT TERMS</b> Rifle, Tactics, Entrenchment, Fortification, Skirmish line, Civil War, Antietam, Spotsylvania, Wilderness			<b>15. NUMBER OF PAGES</b> 122	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> Unclassified	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> Unclassified	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> Unclassified	<b>20. LIMITATION OF ABSTRACT</b> U1	

## GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to *stay within the lines* to meet *optical scanning requirements*.

**Block 1. Agency Use Only (Leave blank).**

**Block 2. Report Date.** Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

**Block 3. Type of Report and Dates Covered.** State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

**Block 4. Title and Subtitle.** A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

**Block 5. Funding Numbers.** To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

<b>C</b> - Contract	<b>PR</b> - Project
<b>G</b> - Grant	<b>TA</b> - Task
<b>PE</b> - Program Element	<b>WU</b> - Work Unit Accession No.

**Block 6. Author(s).** Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

**Block 7. Performing Organization Name(s) and Address(es).** Self-explanatory.

**Block 8. Performing Organization Report Number.** Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

**Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es).** Self-explanatory.

**Block 10. Sponsoring/Monitoring Agency Report Number.** (If known)

**Block 11. Supplementary Notes.** Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

**Block 12a. Distribution/Availability Statement.** Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR)

**DOD** - See DoDD 5230.24, "Distribution Statements on Technical Documents."

**DOE** - See authorities.

**NASA** - See Handbook NHB 2200.2.

**NTIS** - Leave blank.

**Block 12b. Distribution Code.**

**DOD** - Leave blank.

**DOE** - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

**NASA** - Leave blank.

**NTIS** - Leave blank.

**Block 13. Abstract.** Include a brief (*Maximum 200 words*) factual summary of the most significant information contained in the report.

**Block 14. Subject Terms.** Keywords or phrases identifying major subjects in the report.

**Block 15. Number of Pages.** Enter the total number of pages.

**Block 16. Price Code.** Enter appropriate price code (*NTIS only*).

**Blocks 17. - 19. Security Classifications.** Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

**Block 20. Limitation of Abstract.** This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

WALL OF FIRE -- THE RIFLE AND CIVIL WAR INFANTRY TACTICS

A Thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by

RICHARD E. KERR, JR., MAJ, USA

B.S., Pennsylvania State University, 1976

Fort Leavenworth, Kansas

1990

Approved for public release; distribution is unlimited.

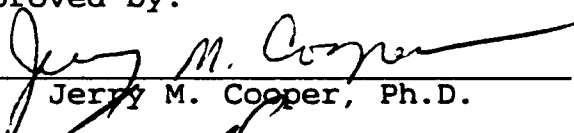
MASTER OF MILITARY ART AND SCIENCE


THESIS APPROVAL PAGE

Name of candidate: Major Richard E. Kerr, Jr.

Title of Thesis: Wall of Fire -- The Rifle  
and Civil War Infantry Tactics

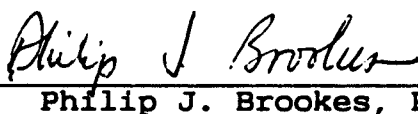
Approved by:

  
\_\_\_\_\_, Thesis Committee Chairman  
Jerry M. Cooper, Ph.D.

  
\_\_\_\_\_, Member Graduate Faculty  
Roger J. Spiller, Ph.D.

  
\_\_\_\_\_, Member Graduate Faculty  
Lieutenant Colonel Terry L. Morrison, M.A.

Accepted this 1st day of June 1990 by:

  
\_\_\_\_\_, Director, Graduate Degree  
Philip J. Brookes, Ph.D. Programs

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

WALL OF FIRE -- THE RIFLE AND CIVIL WAR INFANTRY TACTICS,  
by Major Richard E. Kerr, Jr., USA, 112 pages.

This thesis examines the effect the rifle had on infantry tactics during the Civil War. It traces the transition from smoothbore to rifle and the development of the Minie ball. The range and accuracy of various weapons are discussed and several tables illustrate the increased capabilities of the rifle. Tactics to exploit the new weapon are examined, primarily those of William Hardee. Using Hardee's tactics as the standard rifle tactics before the war, the change in how infantry soldiers fought is documented with two battle analyses. The 1862 Maryland Campaign shows the start of tactical evolution as soldiers seek cover, expend large quantities of ammunition and are decisively engaged at greater distances. During the 1864 Wilderness-Spotsylvania battle, the concepts of fortification defense and skirmish offense take hold. Examining several current books that deal with the rifle and its effects, the thesis concludes that the rifle's increased firepower was a major factor in the move away from Hardee's formation tactics.

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability	
Date	
A-1	

## PREFACE

Although the battles discussed here happened almost 130 years ago, the frustration of integrating new technology into a force of citizen soldiers and changing doctrine faces us today. My topic is primarily a look at the technology and tactics of the day, and an analysis of how tactics may have been used to overcome the effects of potential new capabilities found in the rifle.

The Civil War took place over one and a quarter centuries ago. Primary sources are limited to operational records and personal correspondence, which often reflect the author's purpose or bias. No newsreels or long recordings exist to piece together the war in a nice, clean, continuous flow of events reflecting tactical deliberations. Because of this, it is difficult to verify that changes in tactical maneuver were caused by leaders recognizing the rifle's new lethality.

A universally accepted resolution of this rifle versus tactics question avoids us today. The widely held position, that the rifle caused the high casualties and thus a change in tactics, is confronted by McWhiney and Jamieson in their book Attack and Die and Paddy Griffith's Battle Tactics of the Civil War. McWhiney and Jamieson argue that

the high casualties on the southern side were a result of Celtic heritage and Griffith believes that many factors prevented the full application of the rifle's capabilities in the last "Napoleonic" war.

My interest in this subject comes from two staff rides I participated in with Colonel Harold Nelson from the Center of Military History, the Army War College. In April 1987 we walked the Gettysburg battlefield and in May 1988 we did Antietam. At Gettysburg he spent some time discussing linear tactics and the changes brought about by the rifle. I am indebted to him not only for his historical insight, but also his example of a professional soldier.

I am not a historian and lack many of the required scholarly skills that come with the practice of history and the familiarity of one's subject. Armed only with curiosity, my efforts were aided by many people. Dr. Jerry Cooper served as my mentor, director and teacher in the writing of this thesis. He provided guidance, criticism and encouragement in the right amounts at the right time. Faced with a limited amount of time to accomplish this task, I found the entire staff of the CGSC Library of immeasurable help. As I fumbled through, each member of the staff, at some point in the ordeal, provided that missing piece of information or source that I needed to complete this paper.



## TABLE OF CONTENTS

PREFACE		iv
Chapter		
1	INTRODUCTION	1
	Definitions	5
	From Hand Cannon to Rifle	7
	The Rifle	10
2	1860 RIFLES & TACTICS	14
	Smoothbore vs. Rifle	15
	Tactics	28
	Tactics and Drill	31
	Hardee's Tactics	33
3	THE 1862 MARYLAND CAMPAIGN	43
	Invasion	46
	Pass the Ammunition	52
	Find Some Cover	55
	That's a Long Way	60
	For Their Country	63
4	THE 1864 VIRGINIA CAMPAIGN	66
	Invasion	67
	Entrench	75
	Let's Spread Out	81
	Mule Shoe	86
	In the End	91
5	SO WHAT?	95
	The Last Napoleonic War	95
	Celtic Courage	99
	The Power of Fortifications	101
	The Rifle Reigns Supreme	106

## LIST OF TABLES

1.	Smoothbore Musket Performance	16
2.	Round Ball vs. Minie Ball	19
3.	Commands and Motions to Reload	20
4.	Springfield Rifle Characteristics	21
5.	Performance of Musket vs. Rifle	25
6.	Casualties for the First 12 Major Battles	30
7.	Unit Strength Comparison	46

## LIST OF ILLUSTRATIONS

1.	Rifle Bore Cross Section	17
2.	Expanding Base Bullet	18
3.	Test Results Firing at 10'x 10' Panel	26
4.	Test Results Firing at 6'x 6' Panel	26
5.	Regimental Companies in Order of Battle	34
6.	To March in Line of Battle	36
7.	Oblique March in Line of Battle	36
8.	The Company Being in March by the Flank	37
9.	To Break into Column by Platoon	37
10.	Being in Column by Platoon	37
11.	Column at Full Distance	38
12.	Dispositions Against Cavalry	38
13.	Skirmish Line	39
14.	Antietam	48
15.	Wilderness	68
16.	Spotsylvania	72

# CHAPTER 1

## INTRODUCTION

The story of battle has been a continuing struggle between technology and tactics. The march of technology has been continuous since the eighteenth century, with periods of rapid advances in weapons of war. This is of course tied closely to the world-wide industrial revolution. As weapons changed from hand weapons and pikes to bows and arrows, muskets, cannons and finally rifled firearms and cannon, there were corresponding improvements in powder and metallurgical processes. These increased the rate of fire, range, accuracy, dependability and maintainability of all weapons.

Weapon technology and tactical application remained relatively stable from the late seventeenth century until the middle of the nineteenth century. By the end of the Napoleonic wars, the rifle was a weapon, "whose time had

come." When put together with better bullets and ignition systems, it became the dominant force on the battlefield.<sup>1</sup>

The permanent and ever present curse of the soldier is the reaction to and application of this constant evolution of technology. He faces changes from war to war and even battle to battle. What remains steady through all of this is the soldier. New weapons and technologies are still employed by men, who have a natural resistance to change. With only limited options in tactical formations, the soldier must find clever and unique ways (changes, which are hard to implement) to use the new weapons. As weapons increase in firepower, range and accuracy they seem to increase the attacking soldier's vulnerability and make defense the preferable form of war.

These increased capabilities are available to the offense but require some form of protected maneuver that permits the soldier to survive the increased range of the defender's weapons. This newfound capability changes the face of battle on both sides of the line of contact. All other battle and support systems must then be coordinated with this increased capability. Even the defender must

---

<sup>1</sup>John Keegan, The Mask of Command (London: Penguin Books, 1976) p. 171-172.

adapt his use to the new capability, or risk losing the advantage.

It is often written that defending is the strongest form of war. The increased firepower of the defender is caused by the defender's ability to fire accurately at longer ranges with increased volume. The rifle, coupled with the expanding base conoidal bullet, brought these changes and permitted each rifleman to hold and defend more territory. During the American Civil War it became necessary to have a three to one superiority to triumph over the defense.<sup>2</sup>

If this is true then offensive action becomes more difficult. However, it is only through offensive action that one side seizes the initiative and imposes its will on the enemy. If we assume initial favor to the defender, then it is the soldier's job to negate that superiority and defeat it in some form of offensive action that wins the battle, campaign and the war. As weapons change the face of battle, how does the soldier change the form of battle to maintain parity - and survive?

My research will focus on this struggle in the Civil War. The key question of my research is, "Did rifled

---

<sup>2</sup>Theodore Ropp, War in the Modern World (New York, Collier Books, 1962), p. 162.

firearms cause significant changes in tactics during the Civil War?" This answer requires research into several supporting questions.

Naturally, there are different opinions on whether tactics changed in the war. It is often seen as a precursor to the trench warfare of World War I, yet others see it as the last Napoleonic war. The first question is then: "Was there a change in tactics?" Perhaps the changes were slow and insignificant, a slow evolution. If so, then the increased capabilities of the rifle were probably not significant or could not be fully utilized. If the increased capabilities of the rifle can be shown as significant, did the soldiers and leaders adjust how they fought? Was there a correlation between that change and the rifle's capabilities?

Looking at these questions, I chose the Civil War for many reasons. It is the first war with significant duration that involved rifled firearms on both sides. A war that involved only the United States, it occurred between the formation maneuver of the Napoleonic wars and the static trench war of World War I. Casualties were heavy during the war and it eventually involved the entire population in some form. As an in-between war that became

the first really "total war", it is an ideal place to look for change.

## Definitions

There are several terms that require a definition congruent with the usage in this thesis, but routinely used incorrectly. When I use them I will be referring to the meanings listed below:

**Rifle.** During the war there were several types of firearms used. Multi-shot breech loading technology existed, but smoothbore muskets were in the supply system. The U.S. Army made the transition to rifle with the 1855 model, which was not readily available at the start of the war. Eventually the Union adopted the 1861 Model Springfield as the standard issue, but was forced to modify old 1842 Model smoothbore flintlock muskets to meet demand. Both sides used combinations of weapons, with the majority being rifles or rifle muskets of about equal capability.

**Rifle Musket -** The U.S. Model 1855 Rifle Musket combined the accuracy of the rifle with the advantages of a smoothbore musket. Those advantages were lightness, quickness of loading and facility of handling as a pike. Due to a shortage of rifles at the beginning of the war, the Ordnance Department converted 1842 smoothbore flintlock muskets to rifle muskets. It retained a longer, lighter barrel.

**Rifle -** The U.S. Model 1855 and 1861 Rifles were more sturdy weapons. Manufactured as rifles, they had



a shorter barrel of increased thickness and a sword bayonet with brass mountings.

*Enfield* - rifles that were purchased from, or made from a pattern based on, the English government rifle.

**Musketry.** It was the contemporary application of the firearm to battle. The Civil War soldier used volley firing against area targets. By firing as a unit at a specified target, units could increase their target effect. Since smoothbores were not very accurate, everyone fired into the same area (formation) target. If you did not hit what you aimed at, you probably hit something else, or another stray shot hit your target for you. This form of engagement required fire commands to unify the target and firing sequence. It was used to overcome the low probability of hit when firing at individual targets across the front. This term is important because tactics of the period were made to maximize the concepts of musketry -- getting all unit soldiers to engage the same target simultaneously.

**Tactics.** Although broadly used in the literature, I will use the term to refer to maneuver of small units (regiment/ brigade/ division) on the battlefield to bring their firepower to bear on the enemy. Use of maneuver, and thus tactics, implies moving to put the enemy at a disadvantage relative to your location. Some effects of the rifle are evident at higher echelons of war (operational), but it is the adjustments on the line that had to be made that demonstrate the immediate effects of the rifle.

My intent is to look at the question from different sources and attempt to decide what I think is correct. Searching through firsthand accounts, mostly from the Operational Record and correspondence, I will attempt to quantify the rifle's contribution. Because of the sources available, and lack of time, I will necessarily limit this verification process. That process will be an analysis of the fighting at South Mountain/Antietam and Wilderness/Spotsylvania.

My search will begin with a look at the technology of the rifle, its physical characteristics and capabilities on the field of battle, and then a look at its application -- tactics. After establishing "standard" tactical operations from period doctrinal publication, I will then survey any changes that happened during two short battle analyses. But first, we should examine the rifle's contribution to battle.

### From Hand Cannon to Rifle

The rifle was a product of technical evolution that began with gunpowder. The use of gunpowder in Europe was recorded about 1267 and the first use of firearms goes back to 1324 at the battle of Metz. In the mid-fourteenth century cannons were reduced in size to hand arms. They

consisted of a barrel attached to a straight wood shaft. The barrel had a touch hole and a small priming depression in the top surface. These devices were relatively small (less than 22 inches) because one hand held the weapon while the other put the match to the touch hole.<sup>3</sup>

In the fifteenth century the Spanish invented the matchlock, which mechanically applied the burning match (or rope) to ignite the gunpowder. The matchlock held a piece of burning rope back away from the touch hole. When released by a trigger pull, the lighted rope rotated forward into a small exposed pan of priming powder at the touch hole. This relatively simple finger-operated device permitted both hands to be used in aiming the weapon. The name musket was applied to this improved hand cannon.<sup>4</sup>

At the end of the fifteenth century a pure mechanical substitute, a wheel lock, was invented. This system had a hammer, or lock, that held pyrite against a grooved wheel. The wheel had a spring that allowed it to be "wound up" and when the trigger was pulled the wheel unwound. The friction between the pyrite and the wheel produced a stream of sparks into the priming pan. This

---

<sup>3</sup>Hugh B.C. Pollard, A History of Firearms (New York, B. Franklin, 1973), p. 2-6.

<sup>4</sup>Ibid., p. 6-9.

evolved into the flintlock, which simplified the wheel lock procedure and increased reliability. A piece of flint was mounted to the hammer, which was "cocked" back. When the trigger was pulled, the hammer rotated forward, striking a piece of iron, which served as cover to the priming powder. As the hammer struck this curved piece of iron, forcing it up, it exposed the powder and created sparks from the friction of the strike.<sup>5</sup>

After centuries of the flintlock, the percussion cap was invented. This enclosed system greatly increased reliability of ignition, especially in wet weather. In 1807 the Reverend Alexander Forsyth patented the percussion principle. It was a chemical compound that detonated as a result of a sharp blow. Around 1823 the compound was put into sealed copper caps. These caps were designed to fit over a nipple that led to the priming hole. The falling hammer provided the sharp blow to detonate the compound and sent fire into the powder chamber. This sealed ignition system provided a fairly reliable start and eliminated the need for priming powder.<sup>6</sup>

Technology did not immediately find its way into military application; the turn-of-the century, and

---

<sup>5</sup>Ibid., p. 33-35.

<sup>6</sup>Ibid., p. 110-114.

Napoleonic Wars, military firearm was based on the standard "Brown Bess" flintlock smoothbore musket. It had a 39 inch barrel of .753 diameter and weighed about eleven pounds two ounces. Although the percussion cap ignition system was in common use, it was not until 1842 that Britain adopted a percussion musket smooth bore based on Brown Bess. About 1840 the French also adopted a percussion system, initially converting flintlocks.<sup>7</sup>

### The Rifle

The development of the rifle dated back almost two hundred years before the Civil War. The oldest rifles probably came from Germany, as did the flintlock. The first grooved (rifled) barrels were made in Leipzig about 1498. By 1520 Augustin Kutter (or Koster) of Nuremberg had become celebrated for his so-called "rose or star-grooved barrels having spiral form."<sup>8</sup>

Rifles were originally used as sporting weapons, but naturally were tried in limited military formations. Several technological problems, a proper bullet and reliable ignition system, slowed its military acceptance.

---

<sup>7</sup>Ibid., p. 119.

<sup>8</sup>Berkely R. Lewis, Small Arms and Ammunition in the U.S. Service 1776-1865 (Urbana, Univ. of Illinois Press, 1983), p. 2-7.

Frederick the Great had one rifle company with each infantry battalion. About 1650-1700 these rifles found their way to America as sporting weapons. After modifications for better performance, they were manufactured in Pennsylvania and known as "Kentucky" rifles. In 1804 the Army adopted its first rifle. Manufactured at Harper's Ferry, it was more a copy of the German rifles than the Kentucky rifle. It had a short barrel with a large bore and poorly made deep grooves. Using a large 100 grain powder charge, it produced terrible recoil and bad accuracy compared to the Kentucky, yet easily beat the smoothbore musket in range and accuracy.

The first significant exploitation of the rifle was as a result of the cylindro-conoidal bullet invented by Captain Norton of the British 34th regiment in 1823. The invention was seized enthusiastically by Captain C.E. Minie of the French army. This new design permitted the rifle to be loaded as fast as a smoothbore and signalled the end of the smoothbore. The Minie rifle was used in the Kaffir War of 1851 and the Crimean War of 1854-1856.<sup>9</sup>

While the British and French worked the Minie rifle, in 1841 the Prussians invented the Dreyse needle

---

<sup>9</sup>Bernard and Fawn Brodie, From Crossbow to H-Bomb (Bloomington: Indiana University Press, 1973), p. 132.

gun, the first practical European breechloader. The breech loading and ignition system was similar to a bolt action. It had an enclosed needle that struck a disk made of detonating material when the trigger was pulled. Somewhat unreliable because the needle was prone to breakage, it was much more reliable than the matchlock or flintlock. It saw limited action in the Crimean War and wasn't perfected until 1866.<sup>10</sup>

The Crimean War, 1854-1856, marked an epoch in muskets. It was the last war that was conducted with muzzleloaders and saw the beginning of the transition from smooth bore to rifle. The British, caught short at the beginning of the war, had to have 25,000 Enfield rifles manufactured in America. The American Civil War began the transition from muzzle loaders to breech loaders. With both the Union and Confederacy short of rifles in 1861, they both looked abroad. If the Confederacy had a standard rifle, it was probably the Enfield. The Franco-German War of 1870-1871 was fought entirely with breechloaders.<sup>11</sup>

The first U.S. breech-loading weapon was invented by Captain John Hall of Maine in 1811. The Hall carbine was a .52 caliber flintlock with a 33-inch barrel. The

---

<sup>10</sup>Ibid., p. 137.

<sup>11</sup>Pollard, History, p. 127.

hinged breechblock was inclined to spit flame through its loose points and was never popular. After extensive tests it was adopted and mass-produced, in limited numbers, at Harper's Ferry. The first acceptable breech loader was developed at Harper's Ferry by Christian Sharp. The most popular breechloader in the Civil War was the perfected 1859 model.<sup>12</sup>

Unfortunately for the Union, President Lincoln had a Chief of Ordnance who was stubborn, unimaginative and opposed to breechloaders for the average infantryman. Thinking them unable to load or maintain the technologically advanced breechloader, he repeatedly stopped their production until President Lincoln fired him in 1863.<sup>13</sup>

---

<sup>12</sup>Brodie, Crossbow, p. 133.

<sup>13</sup>Ibid., p. 134-135.



## CHAPTER 2

# 1860 RIFLES & TACTICS

At the conclusion of the Civil War many units, mostly cavalry, would be equipped with Spencer or Henry repeating rifles. The one piece cartridge, mechanical reload and reliable firing mechanism made these a tremendous jump in firepower. However, most of the war would be fought primarily with rifled muskets (British Enfields and U.S. Springfields). Both sides would start the war with smoothbore muskets.

At the start of the war, the drafting of armies forced both sides to look overseas for firearms. In a letter to Secretary of War James Holt on 21 January 1861, Colonel H. K. Craig, Colonel of Ordnance, stated that the Union had approximately 480,687 weapons. Unfortunately over 58,000 of those were in armories in Augusta, Georgia and Fayetteville, North Carolina. Union agents were sent abroad to purchase more rifles, only to find them in short

supply. Immediate delivery meant obsolete arms (smoothbores), but they were forced to buy them before the Confederacy did.<sup>1</sup> The foreign smoothbores were exchanged as soon as possible, but the shortage of all arms would see the use of the 1842 percussion musket and altered flintlocks throughout the war.

As late as 1863, at Vicksburg, Union soldiers traded their flintlocks for captured Confederate Enfields. The expanding armies on both sides faced similar situations and scavenging rifles on the field of battle was an advantage of the victor. By the fall of 1862 though, most Union regiments were issued rifles or rifle muskets. The Confederates equipped their soldiers almost as quickly by capturing or importing them and by manufacturing them with the equipment captured at Harper's Ferry.<sup>2</sup>

### Smoothbore vs. Rifle

The smoothbore musket of the day was large, cumbersome and difficult to load. The bullet was a sphere, the ideal shape for reloading. Using much force, the firer had to jam the bullet down the barrel from the muzzle using

---

<sup>1</sup>Claud E. Fuller, The Rifled Musket (Harrisburg, PA, Stackpole Books, 1958), p. 2.

<sup>2</sup>Russel F. Weigley, History of the United States Army (Bloomington: Indiana University Press, 1967,1984), p. 235.

a ramrod. The bullet was surrounded by a patch to seal it against the bore. Both accuracy and range depended on this seal to prevent the expanding gases from by-passing the bullet. The loss of this patch, through incorrect loading or consumption during the explosion, made the bullet something like a marble in a tin can. Not as severe perhaps, but there was a great loss of pressure, which decreased range. Without uniform contact with the barrel, the bullet also "bounced" inside the barrel, resulting in deviation from barrel's centerline flight path. This produced an inherent dispersion that increased with distance and was independent of aim.

The French were the first to conduct a consistent program of research and development of small arms. They recorded the following results with their smoothbore musket of 1800. This test consisted of firing at a target 1.9m high by 32m wide, with one hundred rounds.<sup>3</sup>

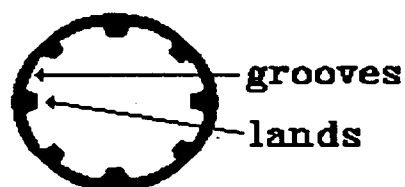
Range->	78.5 m	157 m	235.5 m	314 m	392 m	471
Hits	67	38	16	6	3	5
Hits + ricochets	75	50	27	20	14	7
Pass thru 1" pine	75	50	25	11	5	1

Table 1. Smoothbore Musket Performance

---

<sup>3</sup>Lewis, Small Arms, p. 91.

Table 1 clearly shows that the smoothbore could be effective at seventy eight meters, but at one hundred and fifty seven the probability of hitting the target drops to somewhere between thirty eight and fifty percent. This is not a figure to inspire confidence, remembering that the target is almost six feet high by one hundred feet wide. Fortunately, technology had an answer.



**cross-section**

Figure 1. Rifle Bore

The rifled barrel greatly reduced the dispersion inherent in smoothbore muskets. A series of lands and grooves, with a uniform twist the length of the

barrel, was used to contact the bullet and impart a spin. This spin stabilized the bullet in flight. It was necessary for the bullet to press against the lands with sufficient force to maintain contact and absorb the spiral twist as it moved down the barrel. This tight fit of bullet to lands made reloading very hard and the grooves provided a convenient escape route for the gases. Getting a bullet to seal in the grooves, yet be easy to reload, seemed a true design conflict. The Minie ball provided a solution. It made the smoothbore musket obsolete and, in

fact, the U.S. Model 1855 marked the end of U.S. manufactured smoothbores.<sup>4</sup>

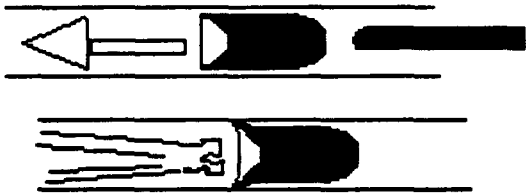


Figure 2. Minie Ball

The Minie ball was actually more oblong like today's bullets. Its technological breakthrough was a hollow base with an

iron cup inside. The bullet diameter was made to fit easily down the lands and grooves when loading. On firing the iron cup was driven into the hollow of the base, pushing the sides out against the lands and into the grooves. With contact on the lands and a seal in the grooves the bullet received the full charge of the explosion and spin of the barrel. The result was extended range and greater accuracy, in theory. One drawback was that the cup had a tendency to drive through the bullet. Harper's Ferry found that the cup wasn't necessary; the gases alone accomplished the same thing. This simplified manufacture and increased reliability.<sup>5</sup>

The British conducted a comparative test of the (round) ball versus the Minie ball using the 1842 rifled

---

<sup>4</sup>Jack Coggins, Arms and Equipment of the Civil War (New York, Doubleday & Co., Inc., 1962), p. 31.

<sup>5</sup>Ibid., p. 26-27.

musket and the 1851 Enfield rifle. Twenty men fired five rounds in volley and five in file at a target 6 feet high by 20 feet wide. Using rifles as the standard weapon, this test proved the superior ballistics of the Minie ball. Both had similar effectiveness to 200 yards, but the added velocity and stabilization make the Minie ball results much better at four hundred yards (4.5% vs. 52.5%). The test results were:<sup>6</sup>

	1842 Rifle Musket		1851 Rifle + Minie Ball	
	No. of Hits	%	No. of Hits	%
100 yards	149	74.5	189	94.5
200 yards	85	42.5	160	50
300 yards	32	16	110	55
400 yards	9	4.5	105	52.5

Table 2. Round Ball vs. Minie Ball

These two concepts, rifled barrel and Minie bullet, were brought together in the rifle/rifle musket common in the Civil War. It had much greater range; the effective range of a smoothbore musket was perhaps 100 yards and the rifled musket was effective beyond 400 yards. Perhaps the biggest benefit was the accuracy from a spin-stabilized bullet. An analogy between a rifled musket and a smoothbore would be that of throwing a touchdown pass with a football versus a basketball.

---

<sup>6</sup>Lewis, Small Arms, p. 103.

Range and accuracy increased the effectiveness of a rifle on a target, but reloading was the key to rate of fire. The loading process was complicated, requiring ten commands and seventeen motions. This was reduced from eighteen motions with a smoothbore musket, with approximate time remaining equal. Ammunition was carried in a standard issue cartridge box of forty rounds, weighing about three and a half pounds. The box was suspended from the shoulder belt, but could be attached to the belt. Percussion caps were carried in a separate shoulder pouch, lined with sheep skin to keep the caps in during action.<sup>7</sup>

COMMANDS:

MOTIONS:

LOAD	1. Drop piece to lay on left thigh 2. Right hand to open cartridge box
HANDLE CARTRIDGE	1. Seize cartridge and place between teeth
TEAR CARTRIDGE	1. Tear paper down to cartridge
CHARGE CARTRIDGE	1. Discharge powder, then cartridge into barrel
DRAW RAMMER	1. Seize rammer 2. Turn rammer 3. Insert rammer
RAM CARTRIDGE	1. Extend arm, with force ram home twice
RETURN RAMMER	1. Withdraw rammer 2. Turn rammer 3. Insert small end first
CAST ABOUT	1. Raise the piece 2. Half-left turn
PRIME	1. Hold w/ left hand, half cock, brush off old primer, get new primer from box, place on cone
SHOULDER ARMS	1. Raise weapon 2. Lower muzzle

Table 3. Commands and Motions to Reload

<sup>7</sup>Coggins, Arms and Equipment, p. 24.

The commands and motions are shown in Table 3. These commands and motions were accomplished with a rifle that was large (long) and heavy. The characteristics of the Springfield rifle used during the Civil War were those found in Table 4.<sup>8</sup>

	<u>1855 Rifle</u>	<u>1855 Rifle Musket</u>
Barrel Length:	33"	42"
Bayonet Length	21.7"	18"
Total Length, w/o bayonet	49.3	55.85
Total w/ bayonet	71.8	73.85
Ramrod Length	33	39.6
Weight w/o bayonet	9.93 lbs.	9.18 lbs.
Weight w/ bayonet	11.83 lbs	9.9 lbs.

Table 4. Springfield Rifle Characteristics

A rifle of these proportions was not easily reloaded with any speed or security using the ten commands and seventeen actions. Twirling the rifle and ramrod required some room to move and accomplishing the task while lying on the ground under fire was slow at best. The War Department conducted a speed test in 1860 to see how many rounds could be fired in five minutes from the off hand position, using the standard issue cartridge box, Model 1855 Rifle Musket and not under fire. Using Maynard's

---

<sup>8</sup>Lewis, Small Arms, p. 66.



primer (a role of paper caps) twelve rounds were fired in five minutes with all rounds impacting inside a six foot square target at one hundred yards. Percussion caps resulted in ten rounds with equal accuracy. In ideal conditions then, a rifle using percussion caps could fire two rounds per minute.<sup>9</sup>

The rifle had better range, accuracy, an equal rate of fire, but the employment of these capabilities on the battlefield was viewed with skepticism. In his 1860 book, The Artillerist's Manual, John Gibbons argued that the infantryman would be unable to use the additional firepower of the rifle. His prediction:

*"A cool, well directed fire from a body of men armed with the new rifle or rifle musket is sufficient to stop the advance of almost any kind of troops. But the very best men will, in time of battle, fire with precipitancy and at too great a distance; from which results a great loss of ammunition and of effect upon the enemy."*<sup>10</sup>

After the battle of Gettysburg more than 37,000 muskets were salvaged. Of these 24,000 were loaded and 18,000 were loaded more than once. Some had unopened cartridges, others had bullets upside down. Based on these

---

<sup>9</sup>Fuller, The Rifled Musket, p. 139.

<sup>10</sup>Paddy Griffith, Battle Tactics of the Civil War (New Haven, Conn., Yale Univ. Press, 1989), p. 57.

statistics, some argue that thirty five percent of all engaged troops were ineffective.<sup>11</sup>

One thing that appears lacking during the war and in preparation for battle was marksmanship training. With little time available after the formation of units, training was limited. Most rifle training involved drill of the seventeen actions required to reload the weapon and "dry" firing target practice. References to actual target practice are few and according to most who kept diaries, it was a rare and exceptional event. The 24th Michigan was sent to the front within three weeks with only one recorded target practice. The 13th Massachusetts were formed in August 1861. They delayed their first target practice until the spring of 1864, after fighting in over six battles.<sup>12</sup>

Surely other things negated the effectiveness of the rifle, or at least made its employment difficult. The smoke from blackpowder rifles and cannon was thick and reduced visibility to well within the old musket range. The noise made fire commands unheard and left targets undesignated. The close formation meant that bumping and jostling during reloading often prevented a steady aim.

---

<sup>11</sup>Fuller, The Rifled Musket, p. 29.

<sup>12</sup>Griffith, Battle Tactics, p. 87-88.

Aiming was a crude technology, anyhow. The rate of fire, at less than two rounds per minute, did not produce a "wall of bullets." But the ingenuity and initiative of the soldier could solve such problems. Zeroing a rifle is something that can be done in combat. With little experience, soldiers quickly learn where their rifle is hitting and change their aim accordingly. Opening up formations provided more room for rapid reloading and better aim. The concept of a wall of bullets, though not exactly referring to the amount of fire, represented the accuracy of the fire and its effect.

Although many people theorized about the rifle's capabilities and the soldier's ability to use it, several countries conducted tests. The French compared their smoothbore musket against a tige rifle, which used a spherical bullet. The Minie ball was superior to the tige bullet, so these results are a comparison of smoothbore versus rifled bore. In the test fifteen marksmen fired 60 rounds at each range. The percentage of hits at ranges indicated are in Table 5.<sup>13</sup>

---

<sup>13</sup>Lewis, Small Arms, p. 105.

Range	Musket	Rifle
164m	30%	61.7%
218m	35%	75%
437m	5%	51.7%
656m	0	41.7%
874m	0	23.3%

Table 5. Performance of Musket vs. Rifle

The United States War Department conducted a rifle/musket comparison in February, 1860. The results were published in Special Order No. 23, dated 1 February 1860. It was a detailed study of the accuracy, range and rate of fire of the .58 caliber rifle musket against several other weapons, including 1843 Model .69 caliber smoothbores. Figure 3 is a summary of those results for the .58 cal. rifle and the .69 cal. smoothbore fired at a 10 foot square panel. Figure 4 shows a similar test fired at a six foot square panel. The test involved ten men firing 5 shots per category: volley, file and skirmisher. Volley fire refers to firing in line, by fire commands. A file is also from line but without commands; the soldier has freedom to aim and fire at will. The skirmisher category is "open" with the firer determining how, where and when he fires.<sup>14</sup>

---

<sup>14</sup>Fuller, The Rifled Musket, p. 53-148.

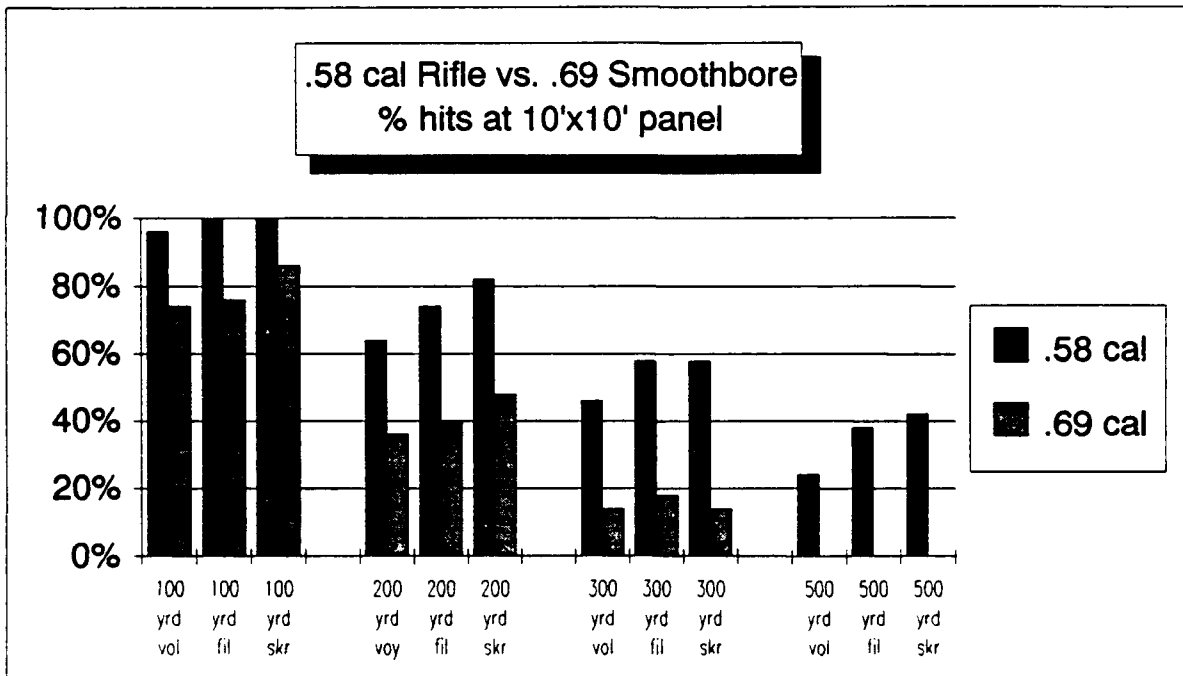


Figure 3. Test Results Firing at 10' x 10' Panel

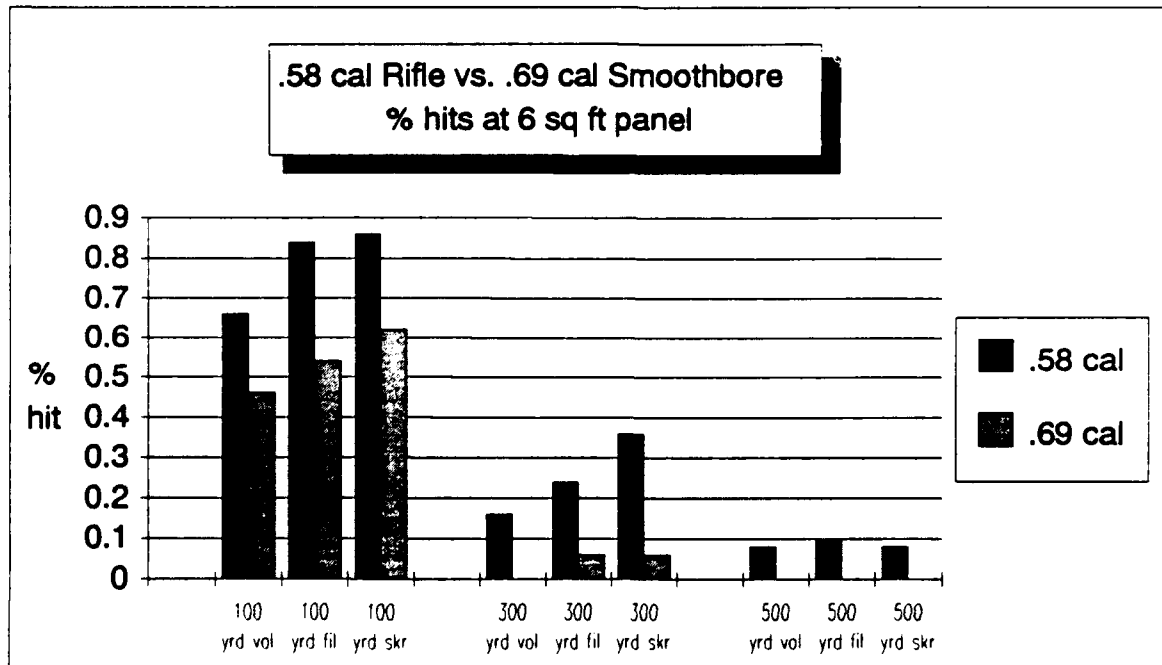


Figure 4. Test Results Firing at a 6'x6' Panel

The charts show that the rifle was effective out to five hundred yards, but the musket lost its effectiveness at less than 200 yards. Also, the data showed that accuracy increased with the freedom given the soldier. In all cases the poorest results were from volley fire and the best, except one event, from skirmish firing. There can be no doubt based on this trial that the rifle had much greater effective range. Hitting a target that is 10 feet by 10 feet only calls for limited marksmanship; it is more a reflection of the weapon's consistency than the firer's aim. This is a good representation of an area target that might be engaged in battle. In fact the rifle did hit between twenty and forty percent at five hundred yards, where the musket was totally ineffective. Even at one hundred yards the musket could produce eighty percent hits, but the rifle hit almost one hundred percent.

When the target was reduced to 6'x 6', less than forty percent of the 10'x 10', the rifle still had the accuracy to hit at five hundred yards. The musket had dropped to less than six percent at three hundred yards. Such a target was about equal to two men standing aside one another. If a unit equipped with rifles chose not to use skirmish fire, but used musketry to fire into a massed unit, it moved the killing zone beyond five hundred yards.

The rifle was superior to the musket in every way. The Minie ball gave it equal or better reload times, its range was double or triple that of a musket and it could be expected to hit what it was aimed at -- even at 500 yards. Tactics designed to maximize the killing power of the bayonet, and the pike, would not work against the rifle.

Portable hand cannons and muskets were first used by foot soldiers to protect the line of battle, made up of pikemen, from the charging cavalry. Muskets were not regarded as the main infantry weapon -- the pike was. It was Gustavus Adolphus of Sweden who realized the futility of the pike and the value of "fire tactics."<sup>15</sup>

## Tactics

Now that we have examined the capabilities of the 1860 rifle, we should look at its employment on the battlefield. The rifle's firepower is arrayed on the field through the use of tactics. The tactics taught before the war differed greatly from the way units would fight at the Wilderness and Spotsylvania in 1864. Many people published "tactics" manuals and relied on previous experience -- before the rifle -- to develop these tactics. These manuals reflected the way soldiers thought they would

---

<sup>15</sup>Pollard, History, p. 43.

fight: close together in linear formations and at relatively short range with the assistance of the bayonet. This was thought necessary to coordinate the effect of the musket's limited range and poor accuracy.

During the Civil War the combination of percussion cap, rifled barrel and new Minie bullet gave the rifle musket far more range and accuracy than anything Gustavus Adolphus could imagine. The combination of extended range, accuracy and firepower of the rifle caused significant changes in "fire tactics" during the Civil War.

The senseless slaughter of sending men against prepared positions gradually changed to more sensible tactics that reflected the power of the weapon and the terrain fought on.<sup>16</sup> This is not agreed upon by all who study the war and its effect. There are several theories about the high casualties and the effect of the rifle in producing them. Regardless of the effect, the casualties were high during the war.

The battle of Malvern Hill on 1 July 1862 took place on a warm summer day. Both sides had full ranks as they prepared for the ensuing fury. General George McClellan's Union forces held a strong position on the hill

---

<sup>16</sup>Coggins, Arms and Equipment, p. 24-26.



and General Robert E. Lee assumed the offensive with human wave assaults. General Fitz Porter remembers the artillery and rifle combining to mow them down. Confederate General Daniel Hill's division lost two thousand of its prebattle strength of 6,500 in "grandly heroic" assaults. He wrote afterward that, "It was not war -- it was murder."<sup>17</sup>

	US Engaged	US Casualties	%	CSA Engaged	CSA Casualties	%
Shiloh	62682	10162	16	40335	9735	24
Fair Oaks	41797	4384	11	41816	5729	14
Seven Days	91169	9796	11	95481	19739	21
2d Manassas	75696	10096	13	48527	9108	18
Antietam	75316	11657	16	51844	11724	23
Perryville	36940	3696	10	16000	3145	20
Fredericksburg	100007	10884	11	72497	4656	6
Murfreesboro	41400	9220	22	34732	9239	27
Chancellorsville	97382	11116	11	57352	10746	19
Vicksburg	45556	3052	7	22301	29396	99
Gettysburg	83289	17684	21	75054	22638	30
Chickamauga	58222	11413	20	66326	16986	26

Table 6. Casualties for the First Twelve Major Battles

The cost of the Civil War was horrendous. The cost in terms of lives increased greatly. Even in World War II, with more modern (lethal) weapons and the pace of

---

<sup>17</sup>Perry D. Jamieson and Grady McWhiney, Attack and Die: Civil War Military Tactics and the Southern Heritage (University, Univ. of Alabama Press, 1982), p. 4.

mechanization, the United States lost a little over 300,000 casualties. Had we lost a percentage equal to the Confederate loss in the Civil War, we would have lost in excess of 6,000,000 men. The Union alone lost over 360,000 during the war. The Confederate percentage lost was considerably more, even though they could afford it less. Table 6 shows a summary of casualties for the first twelve major campaigns in the war.<sup>18</sup>

The rifle brought increased range and capability to the battlefield. Were tactics used to reduce the casualties? How did soldiers adjust their tactics to neutralize the lethality of the rifle? Before answering that, a review of the "standard" tactics prior to the war is necessary for discussion of tactical change. Perhaps the best method is to examine manuals (and doctrine) of the period between the Mexican and Civil Wars. Before the Civil War began there was an attempt to account for the minor contributions of the rifle to infantry tactics in the training manuals.

### Tactics and Drill

In his annual report of 1854, Secretary of War Jefferson Davis concluded that tests reinforced the foreign

---

<sup>18</sup>Ibid., p. xiv.

support of rifled weapons and predicted it to become the standard infantry weapon. He directed a new manual of rifle tactics be prepared to replace General Winfield Scott's manual for muskets, Infantry Tactics. In his 1855 report, Secretary Davis announced the government's transition to rifles, through manufacture and conversion of old muskets. He also announced distribution of a two volume manual, Rifle and Light Infantry Tactics. The manual was written by Major William J. Hardee, with the assistance of Secretary Davis, and based on a study of rifle tactics in foreign countries. To attempt parity with the new rifle, Hardee made several changes to Scott's tactical system. He provided for more rapid rates of advance and for deployment from column to line without stopping. One of Hardee's innovations was a system of "comrades in battle", a group of four soldiers, adjacent to each other in rank and file. Created primarily for skirmish action, they were supposed to work together. The manual placed greater emphasis on skirmish order and it opened up the skirmish order and allowed for a quicker pace. In the end however, his tactics were as much close order as Scott's.<sup>19</sup>

---

<sup>19</sup>Ibid., p. 48-53.

## Hardee's Tactics

Hardee's work, Rifle and Light Infantry Tactics: The Exercise and Maneuvers of Troops When Acting as Light Infantry or Rifleman, consisted of two volumes, both published in 1855. Volume I was the Schools of the Soldier and Company: Instruction for Skirmishers and Volume II was the School of the Battalion.

Formation of a Regiment in order of battle, or line, consisted of ten companies, on line, with two ranks as shown in figure 5. Each company had two platoons, each consisting of twenty soldiers. The platoons were split between ranks, with twenty in the front rank and twenty in the second. Each platoon was split into two sections. The odd-even files were designated in the company from right to left and used to form groups of four men, called comrades in battle.<sup>20</sup>

Soldier interval was tight. One pace between ranks was the maximum allowed to permit both ranks to fire simultaneously. The correct distance between files was described as individuals should "touch elbows" in the rank. This "slight touching of the elbows" was an acquired sense

---

<sup>20</sup>William J. Hardee, The Rifle and Light Infantry Tactics: For the Exercise and Maneuvers of Troops, 2 vols. (Philadelphia, Lippincott, Grambo & Co., 1855), vol. II, p. 5-6.

that was absolutely necessary to maintaining alignment, especially when marching with the eyes straight ahead.<sup>21</sup>

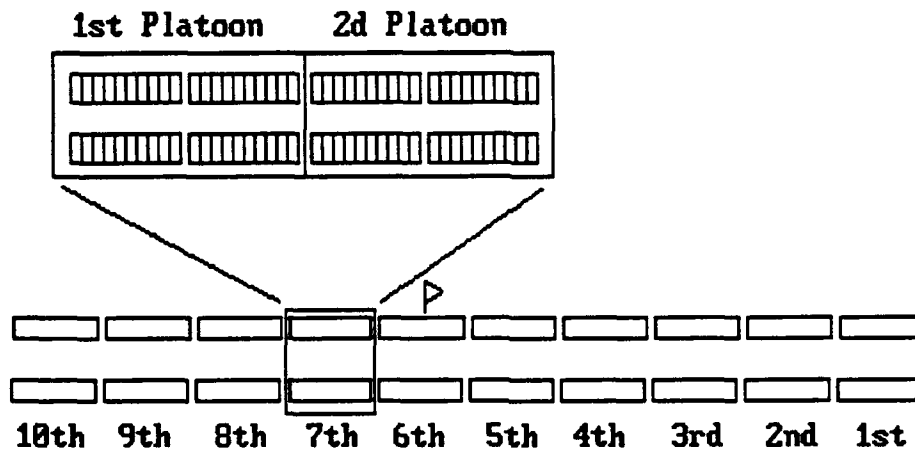


Figure 5. Regimental Companies in Order of Battle

Line and order of battle movement was controlled by length of step and rate, as we control march formations today. Common time was twenty eight inch step at ninety per minute. Double quick step was thirty three inches in length and one hundred sixty-five per minute. Under "urgent circumstances" the rate could be increased to as high as one hundred and eighty steps per minute. This rate would cover 4,000 yards in approximately 25 minutes, or about 160 yards per minute under parade ground conditions.<sup>22</sup>

Firing was also centrally controlled to mass the unit's fire. Direct fire to the front, the standard

<sup>21</sup>Ibid., vol. I, p. 71-72.

<sup>22</sup>Ibid., vol. I, p. 25-28.

engagement method, was a six step process with a fire command of, "1)Fire by squad 2)Squad 3)Ready 4)Aim 5) Fire 6)Load." A second volley was initiated at the second step. These actions were performed by both ranks simultaneously. They fired together, "the rear rank men inclining forward a little the upper part of the body, in order that their pieces may reach as much beyond the front rank as possible." To fire to the right or left the command *aim* was preceded by *right* or *left oblique*. In conducting a left oblique, both ranks would throw back the left shoulder and look left. The front rank was to do so without moving their feet. The second rank was to move their right foot forward eight inches, incline the upper body forward and bend the right knee -- a little.<sup>23</sup>

A deviation on the *fire by squad* (or company, battalion) was to *fire by file*. Fire was initiated by file in succession down the ranks. It began with the right two men, one from each rank, firing together as a file. As they lowered their weapons to reload, the second file was to fire. Subsequent shots were fired without regard to file or rank. Alternately, *fire by rank* could be used. The command to *aim* was preceded by *front rank* or *rear rank*.

---

<sup>23</sup>Ibid., vol. I, p. 58-60.

Firing continued under control of the one giving commands, alternating from rank to rank.<sup>24</sup>

Alignment, movement and firing of the company was similar to that of the individual. Significant movements were:

Figure 6. To march in line of battle.<sup>25</sup>

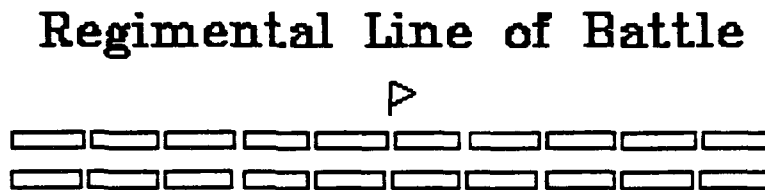
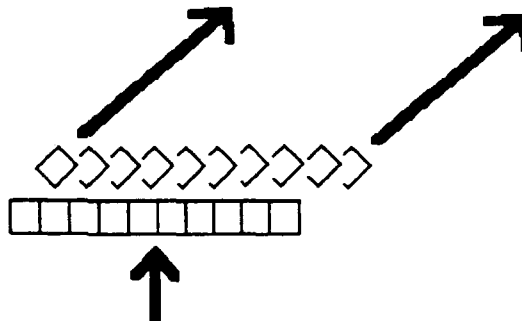


Figure 7. Oblique march in line of battle. Each man takes a half left, or right, step and continues the march straight ahead.<sup>26</sup>



---

<sup>24</sup>Ibid., vol. I, p. 58-62.

<sup>25</sup>Ibid., vol. II, p. 132.

<sup>26</sup>Ibid., vol. I, p. 111.

Figure 8. The company being in march by the flank, to form it on the right or left by file into line of battle.<sup>27</sup>

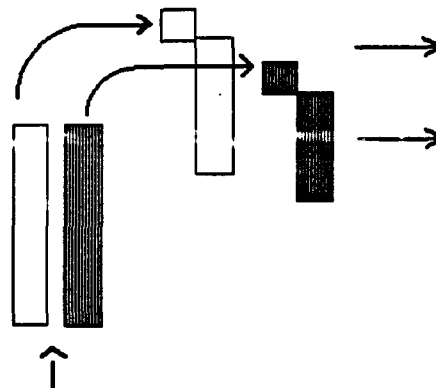
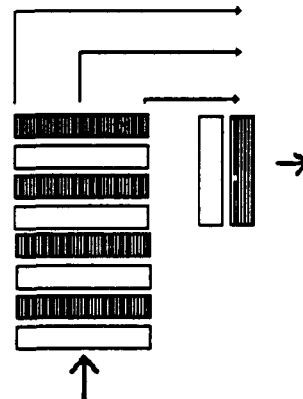


Figure 9. To break into column by platoon either at halt, or while marching.<sup>28</sup>



Figure 10. Being in column by platoon, to form to the right or left into line of battle, either at a halt or marching.<sup>29</sup>



<sup>27</sup>Ibid., vol. I, p. 121.

<sup>28</sup>Ibid., vol. I, p. 127.

<sup>29</sup>Ibid., vol. I, p. 140.



The battalion volume taught the basic movements at the company with some variations for the larger formations. Two additions were the deployment into order of battle directly from column and the formation and use of squares. The deployment from column (high speed march) to line of battle, without stopping, was one of Hardee's improvements over previous manuals. Squares were to be used against cavalry. There were several variations, from column, line and even oblique.

Figure 11. *Column at full distance, forward into line of battle* <sup>30</sup>

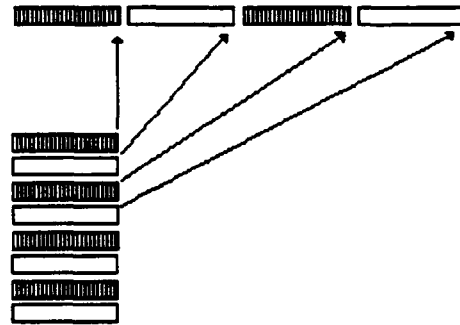
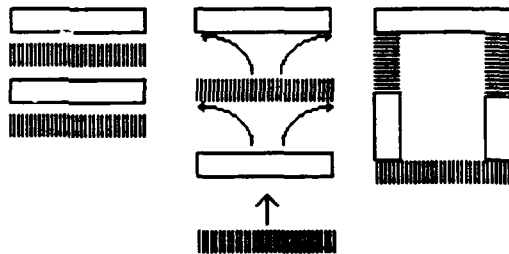


Figure 12. *Dispositions against cavalry (form squares)* <sup>31</sup>



<sup>30</sup>Ibid., vol. II, p. 88-100.

<sup>31</sup>Ibid., vol. II, p. 182.

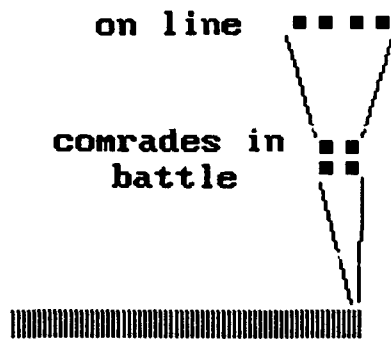


Figure 13. Skirmish Line

Another difference in the Hardee manuals was the considerable attention given to the skirmish line. The mission of the skirmishers was, "to protect the advance of the main corps." Commanders were to have

maximum latitude in deploying skirmishers and exactness, according to the manual, was not required. They were permitted to carry their "pieces in the manner most convenient to them." Hardee further describes the formation in terms we might use today.

19. A chain of skirmishers ought generally to preserve their alignment, but no advantages which the ground may present should be sacrificed to attain this regularity.

20. The interval between skirmishers depends on the extent of ground covered; but in general, it is not proper that the groups of four men should be removed more than forty paces from each other....

29. Skirmishers should be particularly instructed to take advantage of any cover which the ground may offer, and should lie flat on the ground whenever such movement is necessary to protect them from the fire of the enemy.<sup>32</sup>

The soldiers should initially deploy in groups of four, comrades in battle, and if fired upon further deploy to line and get down.

<sup>32</sup>Ibid., vol. II, p. 168-178.

Although his skirmisher tactics seem to be the common sense way to attack rifles, we must remember that the order of battle, oblique and square were the standard battle formation. When Hardee and Secretary Davis wrote them, they used a European model, which is evident in the formations above. A skirmish line was only used to make contact with the enemy, not fight him.

Hardee's volumes were really drill manuals. Their purpose was to keep soldiers close together, to maintain control over them and to mass their fires; it didn't teach how to fight as we think of it today. It taught how to get to the battle, and move on the battlefield, in formation movement. The tactics of the day did not address the "how" part of putting the enemy at a disadvantage by your movement -- only how to move. In fact, only during the chapter on skirmishers did Hardee's manual discuss tactical techniques such as using the ground for cover and individual movement to reduce the unit's vulnerability during attacks.

Drill, as we think of it today, was very similar to tactics as discussed in Hardee's Tactics. The principle idea was to be able to quickly transform a column, which moved quickly but had little firepower to the front, into line or order of battle, with all of its firepower forward.

The line was hard to control and did not move as quickly as a column. The officer's challenge was to use the column when speed was necessarily more important than firepower and be able to convert the formation into line when contact dictated. Because this transformation could be complicated when executed by drill command and the requirement of remaining in proper order, it was a proficient commander who was able to smoothly move from column to line without hesitation or wasted effort.<sup>33</sup>

The Civil War would see an evolution in tactics. In The Story of Weapons and Tactics: From Troy to Stalingrad, Tom Wintringham recalls past battle and then the rifle's effect on its tactics:

In Frederick's day the main process of battle had been preparation by musket fire, with some assistance from artillery, and then assault in line with the bayonet. In Napoleon's era the main process of battle was preparation by concentrated artillery fire, with some assistance by skirmishers and other musket fire, and assault in column with the bayonet.

Industry produced weapons of sufficient range and accuracy to change this process of battle. Although campaign troops would continue to advance against the enemy, receiving heavy casualties, it was "physically impossible for them to advance in close-ordered line or column; the enemy's fire

---

<sup>33</sup>Jay Luvaas and Harold Nelson, The U.S. Army War College Guide to the Battle of Gettysburg (Carlisle, PA, South Mountain Press, 1987), p. 204.

destroyed these formations and reduced them to straggling groups of skirmishers capable of fire action, but not shock action."<sup>34</sup>

---

<sup>34</sup>Tom Wintringham, The Story of Weapons and Tactics: From Troy to Stalingrad (Freeport, NY:Books for Libraries Press, 1943; reprint ed., Curtis Brown, Ltd., 1971), p. 150-153.

## CHAPTER 3

# THE 1862 MARYLAND CAMPAIGN

On 4 September 1862 General Daniel H. Hill's division, leading the Army of Northern Virginia, crossed the Potomac near Leesburg and camped at Fredericktown, Maryland. Only three months after assuming command of the Army of Northern Virginia, General Robert E. Lee had made the decision to take the war north, and out of Virginia. Unknown to Lee, he would provide General George McClellan the plan to defeat his invasion. This plan and how it was used -- by both sides -- would significantly influence the results of Lee's first invasion.<sup>1</sup>

Assuming command of the Army of Northern Virginia on 1 June 1862, General Lee was charged with defending

---

<sup>1</sup>War Department, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies, 127 vols. (Washington: U.S. Government Printing Office, 1880-1901), vol. XIX, part 1, p. 144-145.

Virginia against the invading Union Army. Using a third of his force as a holding force against McClellan, he decided to attack General John Porter's Fifth Army Corps first. Lee fought a series of five offensive battles in the Seven Days Battle and lost 20,500 to the Union's 16,500. While losing every battle except Gaines' Mill, Lee defended Richmond by moving the Union Army away, seized the initiative and was regarded as a hero for his offensive, if bloody, way of defending the city. Continuing the attack at Mechanicsville, then Cedar Mountain and again at Second Bull Run on 29 August, it was only natural for General Lee to take the war north.<sup>2</sup>

In addition to invading enemy territory, General Lee had several other considerations. With poor campaigning weather on the way, he had only a short time left to maintain the Confederate spirit and annihilate the Union Army. An offensive into the border state of Maryland might free up southern sympathizers; it would allow access to rich areas for replenishment of his army and, by making a demonstration near Washington, keep all of McClellan's

---

<sup>2</sup>Peter Maslowski and Allan R. Millet, For the Common Defense: A Military History of the United States of America (New York, The Free Press, 1984), p. 182-184.

forces on guard.<sup>3</sup> Lee also hoped to convince other nations watching the unfolding war to come in on the southern side.

As McClellan established his proper defense of Washington, Lee passed by and moved into Maryland, and forced McClellan to "enlarge his sphere of operation, and made an active campaign necessary to cover Baltimore, prevent the invasion of Pennsylvania, and drive them out of Maryland...." <sup>4</sup>

The two sides about to clash in Maryland were essentially equal in terms of doctrine and force structure. The professional leadership of both armies had a common education at the U.S. Military Academy. Most had experienced Professor Mahan's teachings of entrenchment and the power of the defense. Naturally, the tactics and doctrine they used were based on that common experience. Force structure was similar, with like organizations that varied in soldiers per unit. A sample organization for each side is shown in Table 7 below.<sup>5</sup>

---

<sup>3</sup>OR, XIX, p. 24-27.

<sup>4</sup>Ibid., p. 27.

<sup>5</sup>Luvaas, Gettysburg, p. 200.



UNIT	NORTH	SOUTH
Regiment	350-400	350-400
Brigade	800-1700	1400-2000
Division	3000-7000	6000-14000
Corps	12000-14000	24000-28000

Table 7. Unit Strength Comparison

## Invasion

As the Maryland Campaign unfolded, Lee crossed the Potomac River east of the Blue Ridge with 55,000 soldiers on 4 September, headed for Fredericktown. Lee issued Special Order 191 on 9 September to split the Army and seize Harper's Ferry depot no later than 12 September. Three columns under General "Stonewall" Jackson were to converge on Harper's Ferry. General James Longstreet moved his column to Boonsboro.

Moving in response to the Confederate threat, the Army of the Potomac reached Fredericktown with 88,000 soldiers on 12 September. Around noon on 13 September, Union soldiers found a copy of Special Order 191 and sent it to General McClellan. McClellan attacked South Mountain, Crampton's & Turner's Gaps, at sunrise on 14 September to relieve Harper's Ferry. When he became aware of the large Federal force, Lee decided to concentrate the Confederate Army at Sharpsburg, leaving Jackson to reduce Harper's Ferry.

At 0900 on 15 September, Harper's Ferry surrendered. Jackson quickly moved to reinforce Lee at Sharpsburg. As Jackson departed Harper's Ferry, Longstreet and Hill arrived at Sharpsburg and deployed along the Antietam River. McClellan decided to pursue; his lead element, General Sumner's corps, found the enemy on Antietam. Rather than attacking, McClellan decided to wait for a daylight reconnaissance. The next day, 16 September, the Confederates continued to concentrate on Antietam with Jackson arriving that morning and Walker during the afternoon.

McClellan spent the day cautiously making his attack plan, adjusting to Lee's movements along the Antietam. Fighting was limited to artillery duels. McClellan decided to attack the next day. General Joseph Hooker, I U.S. Corps, crossed the Antietam on the evening of 16 September, in preparation for his attack on the Confederate left at daybreak 17 September.

At sunrise, Hooker attacked into East/West Woods but Major General John B. Hood immediately counterattacked. XII Corps, under Major General Joseph K. Mansfield, attacked to support Hooker. Lee brought Brigadier John G. Walker's Division from the Confederate right to the left and counterattacked Mansfield. Mansfield's corps was

stopped, but held. Next, Major General Edwin V. Sumner's lead division attacked in march formation to reinforce Mansfield. This offensive was repulsed and pursued by Major General Lafayette McLaw's division. Sumner's remaining divisions then attacked the Confederate center

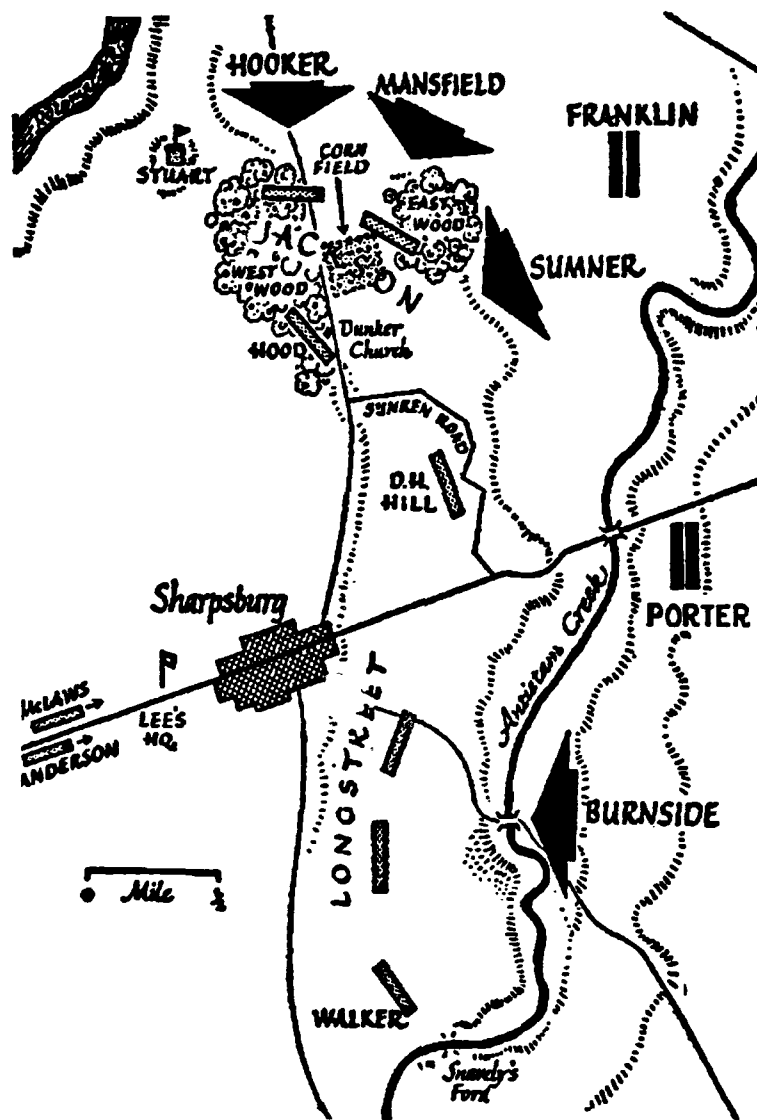


Figure 14. Antietam<sup>6</sup>

<sup>6</sup>Shelby Foote, Fort Sumter to Perryville (New York: Vintage Books, 1974), p. 689.

(D.H. Hill) and took the sunken road. With only 200 soldiers, Hill counterattacked and froze the Federals in place. McClellan refused to commit his reserve of two divisions belonging to Major General William B. Franklin, commander of VI Corps.

On the Union left, after attempting to cross the lower bridge all morning, Major General Ambrose E. Burnside attacked straight on at 1300 and pushed two regiments, then a division, onto the overlooking hill. Rolling up the Confederate right, he pushed the Confederates to the edge of Sharpsburg. General A.P. Hill, attacking on the march from Harper's Ferry, hit the Union left flank and forced them to retreat back to the ridge line.

The day ended with Lee ordering his troops to strengthen the defense for the next day and McClellan expecting a knockout blow from Lee. On 18 September McClellan telegraphed Halleck and decided to wait for reinforcements. In the afternoon, Lee issued orders to withdraw and under cover of darkness the army pulled out. President Lincoln issued the Emancipation Proclamation as a result of the first strategic defeat of the Confederacy.<sup>7</sup>

---

<sup>7</sup>Ibid., p. 661-700.

The significant, and decisive, event for this battle is still debated. Contrary to the principles of war, Lee's initial plan split his army into four parts and eventually he actually divided it into five. Lee was a student of McClellan's actions and risked much on his ability to anticipate McClellan's next move. With McClellan slowly moving out from Washington, Lee undoubtedly would have penetrated farther north and perhaps changed the course of the war -- had his plan not been compromised. Special Order 191 gave McClellan the opportunity and confidence to assume the attack and defeat Lee in detail.

Unable to attack quickly and decisively on finding Special Order #191 however, McClellan wasted sixteen hours and lost the initiative. On arriving at the Antietam, and still outnumbering Lee three to one, he hesitated for almost two days while Lee consolidated his army. During the battle of Antietam his plan was uncoordinated, unwritten, poorly communicated, and totally unsupervised. Again, always overestimating Lee's strength by a factor of two, he could not conceive the truth -- that Lee was in a bad way. He failed to commit his reserve of four divisions when the battle hung on edge. The battle ended with a final blunder; the next day McClellan failed to pursue Lee as he limped back across the Potomac.

The Maryland Campaign was a tactical draw. If McClellan had 88,000 involved, Lee had barely 40,000, yet they both suffered about 12,000 casualties. These figures were, of course, far more devastating to the Army of Northern Virginia which was already at a manpower disadvantage. More importantly, Antietam was a strategic setback to the Confederacy because Lee's invasion was stopped and his army severely wounded. McClellan met his objective: "prevent the invasion of Pennsylvania, and drive them out of Maryland...."<sup>8</sup>

The battle at the Antietam Creek was to become the single bloodiest day of the war. It certainly demonstrated that the era of decisive battles was ending, if not gone forever. The ability of the few to hold back the many by using rifles in a defensive position, and the cost of not digging in, was not lost on those men who fought that day.

The fighting at Antietam, or Sharpsburg as it is called in some places, had several trends that were common to the battle, and perhaps the Civil War. Based on comments from the Operational Records, units often ran out of ammunition, they used Hardee's drills to get around the battlefield, but the soldiers fought from covered and

---

<sup>8</sup>OR, XIX, p. 27.

concealed positions whenever possible. Fighting in the open, standing up, resulted in exceptional casualties.

Certainly the Civil War rifle was not a rapid fire weapon, but it was more lethal than previous weapons or experience had shown. As commander of First Brigade, 2d Division, II Corps, Brigadier General Willis A. Gorman attacked in line of battle against "well-directed fire." His description, "brigade became hotly engaged... receiving the most deadly fire it has ever been my lot to witness. Although the fire was not so rapid, it was most deadly..." The brigade's casualties for the battle were 758 out of 2000 engaged.<sup>9</sup>

#### Pass the Ammunition.

The soldier carried, on the average, about sixty rounds. At a maximum rate of two rounds per minute he could last about thirty minutes before running out of ammunition. Typically this rate was not sustained due to the awkward weapon, its complicated reloading motions, and unfriendly fire. As a result most battles lasted for two to four hours before requiring resupply. Units constantly ran out and had to be resupplied often, or were pulled out of the battle.

---

<sup>9</sup>Ibid., p. 310-312.

The frequency of resupply, sometimes two or three times a day, shows the large amount of ammunition expended during Civil War battle. Walter Millis, in Arms and Men, stated that the rifle "had a faster and more dependable rate of fire than the smooth-bore flintlock."<sup>10</sup> The Antietam reports contained numerous incidents of ammunition shortage and resupply indicating the large volume of ammunition consumed.

Captain F. Williams, commanding the Fifty-sixth Pennsylvania Volunteers, reporting on his regiment's actions at South Mountain said, "the men stood under a galling fire from the enemy for an hour and a half, until their ammunition was exhausted." <sup>11</sup>

The Commanding General of Second Division, Third Corps, Brigadier General James B. Ricketts, in his report of Antietam, also mentions running out of ammunition. On the morning of the seventeenth the division formed in line of battle under artillery fire. The division advanced to, "the outer edge of the wood, and kept up a fearful fire for four hours, until, the ammunition being exhausted and the

---

<sup>10</sup>Walter Millis, Arms and Men: A Study of American Military History (New York: G.P. Putnam's Sons, 1956), p. 127.

<sup>11</sup>OR, XIX, p. 240.



supports coming up, it was compelled to retire to refill boxes...." <sup>12</sup>

Captain John B. Callis, commander of the Seventh Wisconsin Infantry, was heavily engaged at the battle of South Mountain. Formed in line of battle, at five o'clock they moved up the turnpike with skirmishers deployed one hundred paces to the front. The enemy engaged them as they moved through a cornfield into an open field. Their advance halted when, "the open field afforded no shelter or protection against the sharp fire from the bank. The regiment then formed a line of battle..." The battle continued until about nine o'clock at night, when they ran out of ammunition. General John Gibbon told them to, "Hold the ground at the point of the bayonet." The regiment then lay down, and scavenged cartridge boxes from the dead and wounded. As the enemy advanced due to the cease fire, the regiment rose up, fixed bayonets and charged the enemy. They fired one volley into the enemy, who broke and ran. The regiment lost 147 out of 375 soldiers who started the battle.<sup>13</sup>

---

<sup>12</sup>Ibid., p. 259.

<sup>13</sup>Ibid., p. 256-257.

The lack of ammunition was not a problem exclusive to the Union. Captain P.H. Loud reports how the Tenth Georgia Infantry was:

...marched by the right flank to an open field opposite some hay-stacks and piles of rock, where, finding the enemy fronting us posted in force, the order was given "by company into line" and "forward into line," which movements were made by the regiment under a most galling fire....

They advanced beyond the hay-stacks, then a lane, past a small woods and finally to a fence. After firing from the fence, nearly out of ammunition, they advanced again to a position to the rear of a house, barn and other out-buildings. The Union was behind a stone fence and forced the Confederates to withdraw to get more ammunition and reorganize. The unit went into the fight with 148 men and four hours later it withdrew with only 65 remaining.<sup>14</sup>

### Find Some Cover...

It wasn't only the Confederates who were forced to attack an enemy behind stone fences. At Antietam it was common to seek shelter and during the later stages of the war, to dig in. In History of the United States Army, Russel Weigley wrote that the firepower of the rifle "tended to tear any frontal attack to shreds before it could close." As a result, the soldiers "increasingly

---

<sup>14</sup>Ibid., p. 877-879.

looked for the shelter of stone walls or dug rifle pits."

In an effort to reduce casualties, fighting at South Mountain and Antietam was often conducted from behind some form of cover and concealment.<sup>15</sup>

Brigadier General Marsena R. Patrick, commander of 3d Brigade, 1st Division, I U.S. Corps, at the battle of South Mountain, describes his brigade's movement and the enemy's positions:

...the line of battle was now moving steadily toward the summit of the mountain, under a most galling fire from the enemy above us, posted behind the trees and rocks.... Where the enemy were posted in force behind the fences, in the cornfield, and behind the rocky ledge.<sup>16</sup>

Brigadier General Nathan Kimball's account of his brigade's action (1st Brigade, 3rd Division, II U.S. Corps) at Antietam was brutal. After crossing the Antietam they formed line of battle to the left of General Sedgwick's division. They moved forward almost three quarters of a mile when they ran into the enemy, "posted in a strong position in an orchard, corn-field, ditches, and upon the hill sides." To their front was a sunken road, which formed a rifle-pit, filled with the enemy and more posted behind the road in a cornfield. As the unit crested the

---

<sup>15</sup>Weigley, U.S. Army, p. 235.

<sup>16</sup>OR, XIX, p. 242.

hill they were exposed to a "murderous fire" and the advance was halted. The battle raged for three and a half hours before the Confederates fell back. Having exhausted all their ammunition, General Kimball's men resorted to stripping supplies from their fallen comrades. The brigade suffered 639 casualties in that action.<sup>17</sup>

Colonel William Harrow was the regimental commander of the Fourteenth Indiana Infantry at Antietam. His unit started the fight with 320 soldiers, each carrying 60 rounds per man. Under fire the regiment moved through an orchard and into a plowed field at about eight o'clock in the morning. They occupied the crest, "from which we engaged the enemy, sheltered under ditches, rocks, and fences, with a large reserve force in a field of corn in their rear." The battle continued for four hours. The rebels attempted to flank the brigade on the right. The brigade reformed a line of battle at right angles to the original line. The enemy was "repulsed, our men using the ammunition taken from their dead and wounded comrades." Their losses for the brigade were 181 killed and wounded.<sup>18</sup>

Brigadier General John Gibbon, commanding 4th Brigade, 1st Division, I U.S. Corps, attacked up the

---

<sup>17</sup>Ibid., p. 326-328.

<sup>18</sup>Ibid., p. 328-329.

Hagerstown Pike at South Mountain, with the mission to attack the enemy in a gorge. Formed in double column at half distance, the skirmishers became engaged, then the leading regiment. The men advanced on the enemy who was, "posted in the woods and behind stone walls, driving him before them until he was reinforced by three additional regiments." General Gibbon then deployed with two regiments swinging around to take the enemy in the flank. The fight continued until after dark, with one regiment firing over another, until they were relieved with their ammunition nearly exhausted. The brigade's losses were 318 soldiers. <sup>19</sup>

The Union experience on the opposite flank, facing a covered enemy, was similar. Major General Ambrose E. Burnside, commanding the far left flank of the Army at Antietam, was prepared to attack the stone bridge over the creek on the morning of the seventeenth. The order to attack was given at ten o'clock. His regiments, "made several successive attacks in the most gallant style, but were driven back by the galling fire of the enemy." The Confederates were on a steep bank immediately beyond the bridge, "posted in rifle-pits, and behind barricades, within easy musket range of our men, and almost entirely

---

<sup>19</sup>Ibid., p. 247-248.

concealed and covered from our shots." General Burnside ordered an assault to carry the bridge at all costs, and this was done at approximately one o'clock in the afternoon. His men continued to the outskirts of Sharpsburg. When it became apparent the enemy was strongly reinforced, they withdrew to the heights above the bridge. The cost of securing the bridge was 1875 men killed, wounded or missing.<sup>20</sup>

Although the Confederates were the defenders at Antietam, their losses in attacking covered positions were also great. Lieutenant Colonel P.A. Work, commander of the First Texas Infantry Regiment, recorded his unit's actions and losses at Sharpsburg. Attacking through a cornfield, they soon became engaged. Pushing the Union back, they rushed forward and broke the Union's first line of battle and, "advanced to within some 30 steps of his second line, secreted behind a breastwork of fence rails thrown in heaps upon the ground...." The First Texas quickly lost any support on their right and left and were forced to withdraw. Forty four soldiers withdrew, out of 226 who had started the attack.<sup>21</sup>

---

<sup>20</sup>Ibid., p. 418-422.

<sup>21</sup>Ibid., p. 933.

## That's a Long Way...

Walter Millis describes the rifle as more dependable and capable than the smoothbore. These capabilities ended the "mass bayonet charges in dressed ranks." The extended range permitted the defender to load and fire several times during the enemy's approach. The attacker, under this fire, could ill afford to stop, aim, and fire. Not wanting to stop and present a stationary target, his problems were compounded if he attempted to aim at defenders "behind a wall or intrenchments. Something could be done by opening out and loosening up the attack formation and by throwing out skirmishers (when there was cover for them) to keep down the defender's fire."<sup>22</sup>

As soldiers on both sides sought to maximize their protection while shooting at enemy soldiers in the open, the engagement distance increased dramatically. The range of the smoothbore musket was often debated, some saying it was worthless beyond fifty yards, but very few believed in its effect above 150 yards. The units at Antietam often became decisively engaged at twice that distance.

The Twenty-Sixth New York Volunteers attacked at daylight on the seventeenth. Formed in line of battle, the

---

<sup>22</sup>Millis, Arms & Men, p.113 & 127.

regiment halted five hundred yards from the woods. Deploying in column by division, the columns advanced by the oblique under fire. About three hundred fifty yards from the enemy, incoming fire forced a deployment in line of battle along a fence. After firing thirty rounds per man, they stopped firing. The Confederates advanced again, forcing the Volunteers to open fire again. Running low on ammunition, another cease fire was called as the commander sent for relief. Under attack again, the soldiers were forced to resume firing until all ammunition was expended. The regiment retired as their relief arrived, having lost 66 soldiers.<sup>23</sup>

Major General Henry W. Slocum, commanding the First Division, Sixth Corps, describes his units forming and the engagement. The division formed in column, with brigades in line of battle, consisting of two regiments, and the lead regiment formed as skirmishers 200 yards in front of the line of battle. Two hundred yards behind followed another brigade, formed in two lines and two hundred yards separating the regiments (lines). The enemy opened fire as soon as they advanced, "but the troops advanced steadily, every line in the entire column preserving its alignment with as much accuracy as could be expected at a drill or

---

<sup>23</sup>OR, XIX, p. 263.



review." The skirmishers withdrew from heavy fire from the enemy, who was posted behind a stone wall. After the skirmishers fell back, the first line moved forward to within 300 yards of the enemy's line. After a "severe engagement" and after a "most gallant infantry charge" the enemy withdrew. The cost was 511 soldiers.<sup>24</sup>

The Confederate experience also told of engagements above 300 yards. The Sixteenth Mississippi Infantry Regiment was told to advance in line of battle on the morning of 17 September. As they proceeded under "heavy fire" they went "several hundred yards" when they came upon another regiment lying down in a road. The regiment continuing on, "passed over these troops and confronted the enemy in line of battle, who were drawn up some 300 yards from the road, pouring a destructive fire in our ranks." The cost to the Sixteenth Mississippi that day was 144 soldiers killed or wounded out of 228 who went into action.<sup>25</sup>

Today, fighting behind a breastwork seems like common sense. Keeping in mind Hardee's Tactics, consider this last report from Confederate General D.H. Hill, describing the Union attack.

---

<sup>24</sup>Ibid., p. 380-381.

<sup>25</sup>Ibid., p. 884-885.

It was now apparent that the Yankees were massing in our front, and that their grand attack would be made upon my position, which was the center of our line. I sent several urgent messages to General Lee for reinforcements, but before any arrived a heavy force (since ascertained to be Franklin's Corps) advanced in three parallel lines, with all the precision of a parade day, upon my two brigades. They met with a galling fire, however, recoiled, and fell back; again advanced, and again fell back, and finally lay down behind the crest of the hill and kept up an irregular fire.

The Yankees attacked General Hill again that day, but he counterattacked twice, with less than two hundred men. The cost of this active defense was heavy. In two days of fighting (South Mountain and Sharpsburg), Hill's division lost 3,241 soldiers out of less than 5,000 engaged.<sup>26</sup>

### For Their Country...

The fighting at Antietam was both common to the war and an anomaly. The attacks across open ground in parade field formations were tactics according to Hardee's manual. As units moved about the field, the commands and movements were also from Hardee. What was not in Hardee's manual was the concept of fighting from concealment.

Despite the leadership's predisposition to entrenchment, it never happened at Antietam. With Mahan preaching the desirability of fortification to officers from both sides during their West Point years, it is not

---

<sup>26</sup>Ibid., p. 1023-1025.

clear why this did not take place. Perhaps it was because Antietam was more or less a meeting engagement, and both generals hoped to take the offense and did not want fieldworks in the way.

Whatever the reason for not digging in, the soldier's instinct for survival found a solution. Reacting to the deadly fire, they fought from behind stones, fences, bales of hay, houses, sunken roads and anything else they could hide behind. To attack a force protected by cover proved too costly. The cost of attacks that happened throughout the entire battle was enormous. Even as the strategic defender, the Confederacy conducted numerous counterattacks and lost an amount equal to the attacking Union. Many events of the battle point to the effects of the rifle and increased casualties.

It was no longer a battle of pikes or bayonets. The range of the rifle enlarged the killing zone from hand-to-hand distance to something beyond three hundred yards. Consequently, units became engaged much earlier, were exposed for longer periods of time and found it difficult to disengage. Running out of ammunition, which happened frequently, was cause to disengage -- quickly. But units could not withdraw, unless they were relieved by a

supporting force, or were forced to hold their ground at the "point of the bayonet", which was not very effective.

Something caused the preference for cover and concealment, and it was probably the rifle. In previous wars fought with muskets, formation fighting was the norm. During the Civil War this style changed and it became common for soldiers to get down on the ground and shoot from behind cover. Obviously it became too dangerous to stand up in formation and march forward. So even when the leaders did not order entrenchment, as at Antietam, the soldiers went to the ground and sought cover.

Though the infantryman had a solution, his leaders did not see it so clearly. The generals still ordered open field, line of battle, frontal assaults. They unfortunately were caught between the tactics of the day (Hardee's) and the reality of the battlefield. Their problem was to develop a new tactical doctrine to confront a new weapon, in the middle of a war that had a high turnover rate among the ranks and the leaders -- due to high battlefield casualties. This effort was also hindered by lack of an institution to assess the battle experience and develop the appropriate doctrine.

# CHAPTER 4

## THE 1864 VIRGINIA CAMPAIGN

Grant came as Lee had said he would, only more so, crossing the Rapidan not merely by "one of those fords," Ely's or Germanna, but by both - and, presently, by still another for good measure. Sheridan's new-shod cavalry led the way, splashing across the shallows in the darkness soon after midnight, May 4, and while the engineers got to work in the waist deep water, throwing a pair of wood and canvas pontoon bridges at each of the two fords, the troopers established bridgeheads on the enemy side of the river at both points and sent out patrols to explore the narrow, jungle-flanked, moonless roads tunneling southward through the Wilderness.<sup>1</sup>

The crossing of the Rapidan began the new General-in-Chief's plan to defeat the Confederacy. Moving with General George G. Meade's Army of the Potomac, General U.S. Grant had approximately 122,000 soldiers crossing the river. The forces were arrayed in two ranks, with a third of the force, General Ambrose E. Burnside's IX Corps, in reserve. The forward Corps were the II Corps under Major

---

<sup>1</sup>Shelby Foote, Red River to Appomattox (New York: Random House, 1974), p. 146.

General Winfield S. Hancock, the V Corps under Major General G.K. Warren, and the VI Corps under Major General John Sedgwick. It extended twenty-five miles. Facing the Army of the Potomac was the Army of Northern Virginia, eight divisions of infantry and three of cavalry, numbering about 65,000 men.<sup>2</sup>

### Invasion

At around 7:15 A.M. on the fifth of May, Major General Gouverneur K. Warren notified Meade of a large Rebel force moving toward them on the (Orange) Turnpike, some two miles west of the Wilderness Tavern. Meade made the decision and ordered Warren to attack and Hancock to halt, to prevent any further dispersion of the Union forces.

Approaching the Yankees on the Turnpike was the Corps of Lieutenant General Richard S. Ewell. Further south on the (Orange) Plank Road was Lieutenant General Ambrose P. Hill. Neither corps was to become decisively engaged before Longstreet's Corps arrived, some 42 miles away. Choosing not to oppose the crossing, Lee's plan was

---

<sup>2</sup>Ibid., p. 147.

to hit the Federals in the Wilderness, using the thick undergrowth to offset their numerical superiority.<sup>3</sup>

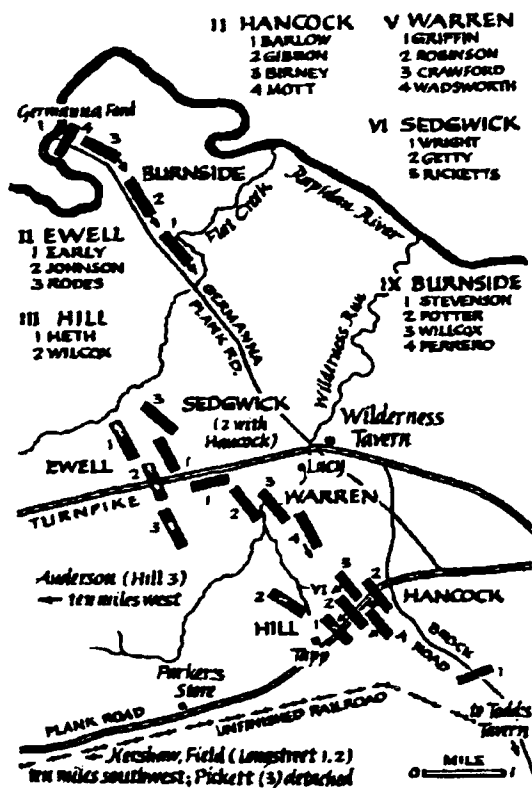


Figure 15. The Wilderness<sup>4</sup>

Warren's assault initially drove the Confederates almost a mile before they were able to halt the Union advance. The Confederates were aided by the heavy timber, thick brush, dense smoke from musket fire, and the increasing disorganization these factors caused in the Yankee lines as they attacked. As Grant called up his reserve, Burnside's IX

Corps, Meade ordered Hancock and Sedgwick into the battle. Trying to bring the units together in a coordinated attack in the inhospitable Wilderness proved a difficult task. In the confusion of a meeting engagement, two more unsuccessful Union attacks were launched that day.<sup>5</sup>

<sup>3</sup>Timothy H. Donovan, Jr. et al., The American Civil War, The West Point Military History Series (Wayne, NJ: Avery Publishing, 1987), p. 198-199.

<sup>4</sup>Foote, Red River, p. 162.

<sup>5</sup>Donovan, American Civil War, p. 199.

Both commanders, Grant and Lee, intended to attack on the morning of 6 May. With Longstreet's arrival at daybreak, Lee seized the moment. Longstreet conducted a flank attack that rolled up Hancock's left. During a break to consolidate the gains, Longstreet was wounded by a round from his own soldiers. It wasn't until later that afternoon that Lee was able to launch another attack, this time on the Union right against Sedgwick's Corps. Initiated with less than two hours of daylight left, General John Gordon's attack was quickly ended by darkness.

After two days of battle in the Wilderness, Grant had very little to show for the Army's efforts. The morning of 7 May saw skirmishers from the Union lines moving forward to find the enemy. They found the Confederates entrenched and Grant hoped to force them out of the trenches. Realizing the futility of a direct attack, especially in the Wilderness, he directed a night march around the Confederate right - in the direction of Spotsylvania.

After dark, the corps of Warren and Sedgwick moved behind Hancock's Corps and started the move south. After fighting Lee to a draw at best, General Grant was doing something new in the Union army -- he was continuing the attack -- and the soldiers morale went with him, briefly.



Unfortunately the attack ran into problems almost as soon as they departed. Cavalry units tied up the crossroads when their lead columns got lost. Finally at 11 P.M. the corps started to move again toward Spotsylvania. The confusion at the crossroads was costly, allowing Lee to get to Spotsylvania first, forcing Grant and Meade to attack him.<sup>6</sup>

Anticipating Grant's move, Lee had ordered a road cut through the forest due south from his position. When some Union movement confirmed Lee's suspicion, he ordered Longstreet's Corps, now under General Richard H. Anderson, to march at 3 A.M. Jumping the gun, Anderson actually started at 9 P.M. the prior evening. In addition Stuart's Cavalry, under Brigadier Fitzhugh Lee, had been harassing the Federal move and established blocking positions south east of Alsop. Arriving just in time, Anderson's troops reinforced Fitzhugh Lee's cavalry and began to build the Confederate defense outside Spotsylvania. Holding against Warren's four divisions and portions of Sedgwick's three, Anderson was finally reinforced by Lieutenant General Richard S. Ewell's II (C.S.A.) Corps and ended the day's

---

<sup>6</sup>Ibid., p. 200-201.

fighting in a draw. Both sides were firmly entrenched, awaiting 9 May.<sup>7</sup>

It was spent in reconnaissance of the enemy line and improving entrenchments. General Sedgwick was killed by a Rebel sniper using a Whitworth rifle, which increased caution and lowered morale even more. General Lee worked to build an impenetrable line, "studded with guns at critical points throughout its convex three-mile length." A coordinated Union attack was planned for 5 P.M. on 10 May, but General Warren went forward early and his unit was handily defeated by the abatis and entrenchments. Elsewhere, General Sedgwick's IV U.S. Corps, now commanded by Horatio Wright, conducted a brigade attack that was commanded by Colonel Emory Upton.<sup>8</sup>

Upton attacked on a narrow front with four lines, without stopping to fire until reaching enemy lines. After penetrating the Rebel line, his attack stopped when Brigadier Gershom Mott's Division failed to support his breakthrough and he was forced to fight his way back out. After rewarding Upton with a battlefield promotion, Grant decided to repeat the attack with a Corps. General Hancock was selected to make the main attack in the same place and

---

<sup>7</sup>Foote, Red River, p. 194-197.

<sup>8</sup>Ibid., p. 206-208.

manner as Upton had made his. To allow for repositioning and planning it was delayed a day until 12 May.<sup>9</sup>

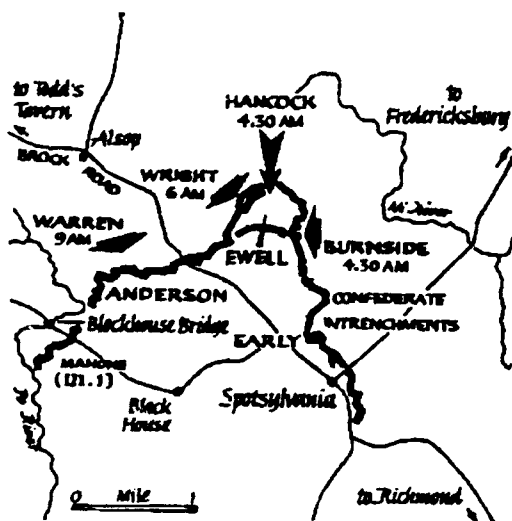


Figure 16. Spotsylvania<sup>10</sup>

Rain started falling on the afternoon of 11 May. Initially planned for 4 A.M., the attack was delayed until 4:30 P.M., and then it was conducted in the mud and darkness due to the rain and fog that covered the battlefield. The second

attack of the "mule shoe" achieved results similar to Upton's. Aided by the fact that twenty-two Confederate artillery pieces were moving out of the "shoe" as the attack commenced, the Yankees quickly overran Ewell's position. Hancock's men continued to pour in, putting 20,000 men in a half mile square, and they quickly turned into an undisciplined mob. The veteran Confederates worked to restore their defense and succeeded in stopping the advance. The fighting continued along the trench for sixteen hours, the enemies within arms reach in some cases. This grim display of bloodshed became known as the "Bloody

<sup>9</sup>Ibid., p. 208-210.

<sup>10</sup>Ibid., p. 217.

Angle." At midnight the Confederates began a withdrawal to form a second line to their rear.<sup>11</sup>

Grant ordered Warren to attack at first light on 14 May, after a night march, to hit the Confederate right and turn Lee out of his Spotsylvania positions. Mud and exhaustion put the attack two hours behind schedule and it was called off. Brigadier Horatio G. Wright, commanding 1st Division, VI Corps, then suggested a movement from left to right and Grant approved it for 4 A.M. on 18 May. Delayed again as they moved through two lines of entrenchments, Federal troops finally attacked at 8 A.M. Rebel cavalry had detected the countermove and Lee reinforced his left, including 29 artillery pieces. The Union attack moved ahead, unsuspecting, "in successive lines, apparently several brigades deep, well aligned and steady, without bands, but with flags flying, a most magnificent and thrilling site." By ten o'clock the attack ended.<sup>12</sup>

At the beginning of the battle for Spotsylvania, Grant had written Halleck, "I propose to fight it out on this line if it takes all summer." After ten days, two costly head-on assaults and several attempts to flank Lee,

---

<sup>11</sup>Ibid., p. 220-223.

<sup>12</sup>Ibid., p. 236-237.

Grant decided to abandon this line and conduct a wide movement around Lee's right.<sup>13</sup> Hancock was given the mission of moving first, to become the bait. Lee was expected to chase Hancock, and Grant would then attack Lee's flank on the move. Lee preempted the move by attacking the Federal right on the evening of 19 May. He hit Warren's flank division, which was supported by Hancock. As Lee's Second Corps faced certain destruction, a unit of rapid fire artillery moved in and covered Ewell's withdrawal.

Accepting a twenty-four hour delay in the Union departure, Grant ordered all four corps to march on the night of 20 May. Lee prepared to counter and decided to concentrate his forces at Hanover Junction. Here at the junction of two Federal rail lines, the armies would meet again in the battle of the North Anna. The battles at the Wilderness and Spotsylvania had cost the Union a total of 36,000 casualties. As the defender, Lee lost approximately 18,000 in casualties. Lee's extensive use of field fortifications made it possible to defeat the Union and reduce his cost.<sup>14</sup>

---

<sup>13</sup>Ibid., p. 212.

<sup>14</sup>Foote, Red River, p. 238-241.

The battle of the Wilderness had two immediate characteristics that differed from Antietam. Even as the armies began their engagement in the Wilderness, there were significant changes in how units fought. The first change was that the use of skirmishers had become much more common, and in some cases, battles were fought using only skirmishers. The second was the instinctive use of fortifications, or breastworks. Whenever units halted, for whatever reason, they began to construct protection. This was done by soldiers on the offense as well as the defense.

### "Entrench!"

The desire for cover and concealment had matured by the time the armies met at the Wilderness. If soldiers couldn't find cover, they made it. Jay Luvass described the transition in The Military Legacy of the Civil War:

...the Springfield and Enfield rifles...had killing power at ranges exceeding half a mile. Gradually the Civil War soldier learned also to seek shelter in trenches or behind breastworks, until by late 1863 battlefields were honeycombed with defense lines....never before had improvised intrenchments dominated a battlefield as in the Wilderness or the fighting for Atlanta.<sup>15</sup>

---

<sup>15</sup>Jay Luvass, The Military Legacy of the Civil War: The European Inheritance (Chicago: University of Chicago Press, 1959; reprint ed., Lawrence: University Press of Kansas, 1988), p. 4.

G.F.R. Henderson held a similar view. In The Civil War: A Soldier's View, he described the use of entrenchments in the Virginia Campaign, and especially the Wilderness, almost as a habit. If a unit found itself closing on the enemy, they immediately sent out scouts or pickets and entrenched.

There was no waiting for orders. If the general did not give the order, the battalion or company commanders acted for themselves, and it is even said that the men...threw up shelter without waiting for their superiors to give the word.<sup>16</sup>

The fighting in the Wilderness and at Spotsylvania was characterized by entrenchment on both sides, as reported in official unit reports.

Major George W. Scott, commander of the Sixty-first New York Infantry, told how on 5 May, after completing a march from Chancellorsville at 3 P.M. the regiment was not engaged, but the men constructed breastworks. On 6 May the regiment moved to the extreme left of the corps and "laid in breast-works all night." The unit marched to Todd's Tavern on 8 May and "made breast-works." Forming a line of battle on the right of the 140th Pennsylvania Volunteers, they advanced parallel to the road to Corbin's Bridge and encountered enemy skirmishers. After driving the

---

<sup>16</sup>G.F.R. Henderson, The Civil War: A Soldier's View (Chicago: University of Chicago Press, 1958), p. 265.

skirmishers back, they "engaged his line of battle at about 300 yards."<sup>17</sup>

Brigadier Nelson A. Miles, commander of First Brigade, First Division, II Corps, recounted the unit's actions beginning 6 May. The brigade moved to the extreme left with skirmishers deployed to the front and flank, to link up with the cavalry. The remainder bivouacked behind "breastworks" that evening. On the morning of 7 May, the Twenty-sixth Michigan Volunteers were deployed forward in a heavy skirmish line along the Brock Road. The skirmish line attacked the enemy and forced him from the road and captured a "few" prisoners. On 10 May, the unit again saw action as they withdrew across the Po River. The brigade "immediately went into position on the extreme right and threw up breast-works...."<sup>18</sup>

Captain Thomas C. Thompson, of the Seventh New Jersey Infantry, II Corps, reported how his regiment marched toward Spotsylvania Courthouse on the morning of 8 May. He told of using entrenchments on the march and the long engagement distances. Before reaching Todd's tavern, the regiment halted and formed a line of battle and made a

---

<sup>17</sup>OR, XXXVI, p. 378-379.

<sup>18</sup>Ibid., p. 370-371.



small breastwork. It moved forward to Todd's Tavern on 9 May and again occupied breastworks.

Here we remained idle until about 4:30 p.m. when with the brigade we massed in a dense wood...at the given command, ordered the regiment forward. Driving in the rebel pickets and advancing to an open field brought us into full view of the rebel works some 600 yards distant. Hardly had the line emerged from the wood when the enemy opened upon the column a heavy fire, where-upon the whole line broke and retreated toward our works.<sup>19</sup>

Two New York regiments report almost a continual use of breastworks in their experience. The Sixty-third New York Infantry Regiment contacted the enemy on at 5 P.M. on 5 May in the Wilderness, but were relieved at 7 P.M. The next morning they occupied

...breast-works thrown up during the night by the division pioneer corps. The enemy charged the works and was repulsed.... From the 9th to the 11th the regiment was on the march from one point to another, throwing up breast-works.

The Sixty-third New York attacked with its division on the morning of 12 May, as part of the II Corps attack. On "15th, 16th, and 17th, the regiment engaged in throwing up breast-works, being moved to different places on the line." On the eighteenth they charged the enemy works, but spent "19th and 20th, lying behind breast-works" again.<sup>20</sup>

---

<sup>19</sup>Ibid., p. 499.

<sup>20</sup>Ibid., p. 391-392.

Captain Edwin Evans, 109th New York Infantry, IX Army Corps, reported the regiment marched at 5 A.M. on 6 May toward the Wilderness. Entering by the flank into the woods at 11:30 A.M., they came under fire. The regiment formed a line, charged at the double quick, and succeeded in capturing several enemy and his line of works, but "were relieved at 3:30 P.M., our ammunition being exhausted." Two companies were deployed as skirmishers while the remainder of the regiment withdrew a short distance. On the morning of 7 May they "commenced throwing up breast-works, behind which we remained until 12 m. on the 8th...." The regiment marched to Spotsylvania on Sunday, 8 May and at 10:30 A.M. they advanced across the Ny River in line of battle and "threw up light breast-works." The afternoon of the next day they advanced with skirmishers "thrown forward at a double-quick" and followed by the battalion. The skirmishers advanced one half a mile and captured a line of works. The morning of 9 May the regiment moved to the right and "threw up another line of works." On 12 May the unit attacked in line of battle, but they were unable to hold their position. After withdrawing they "commenced throwing up temporary works." They moved to the left about four or five miles on 19 May and "constructed another line of works."<sup>21</sup>

---

<sup>21</sup>Ibid., p. 961-962.

Confederate reports in the OR are sparse and usually in outline form. In addition to the Union reports of Confederate fortifications, there are some good Rebel descriptions. Brigadier John Bratton, CSA, commanding Bratton's Brigade, First Corps, described how on 7 May the brigade was in line of battle, perpendicular to the Plank Road. "A crude breast-work of logs was thrown up.... Skirmishing was more or less brisk all day." The brigade marched to Spotsylvania Court House, arriving on 8 May. On 9 May it moved to the Brock Road and established a perpendicular line to the road and "threw up a little breast-work of logs and rails." On the morning of 12 May the enemy assaulted. One of the regiments opened on the Yankees a little too early and "caused the enemy to drop behind a crest just in time to evade the storm of minie-balls."

They kept up an active fusillade.... Our men were quietly awaiting their appearance over the crest. This continued so long (for some hours) that we began to suspect that by some happy mistake they were fighting themselves. Skirmishers from the First and Fifth Regiments were ordered up to the crest to discover what it meant. They found them lying behind the crest firing at what did not clearly appear, but they with great gallantry charged them with a yell, routed and put the whole mass to flight....<sup>22</sup>

---

<sup>22</sup>Ibid., p. 1065-1066.

## Let's Spread Out...

As soldiers learned to use field fortifications for protection, offensive formations also opened up. After the war, General Sherman made the following comments regarding skirmish tactics:

Very few of the battles in which I have participated were fought as described in European text-books, viz., in great masses, in perfect order, manoeuvring by corps, divisions, and brigades. We were generally in wooded country, and, though our lines were deployed according to tactics, the men generally fought in strong skirmish-lines, taking advantage of the shape of the ground, and of every cover.<sup>23</sup>

Bernard Brodie, in From Crossbow to H-Bomb, stated that the first battles of the Civil War "demonstrated dramatically that the old Napoleonic tactics of mass frontal assaults were dead." General Robert E. Lee, after the Seven Days Battle, according to Brodie, saw this and "thereafter encouraged his infantry to become skirmishers, spreading out and seeking cover." Brodie also quotes General D.H. Hill on the Confederate soldier:

Of the shoulder-to-shoulder courage, bred of drill and discipline, he knew nothing and cared less. Hence, on the battlefield, he was more of a free lance than a machine. Who ever saw a Confederate line advancing that was not crooked as a ram's horn? Each ragged rebel yelling on his hook and aligning on himself.<sup>24</sup>

---

<sup>23</sup>Memoirs of General William T. Sherman by Himself, quoted in Paddy Griffith, Battle Tactics of the Civil War (New Haven: Yale University Press, 1989), p. 111.

<sup>24</sup>Brodie, Crossbow, p. 135.

The commander of the Twenty-sixth Michigan Infantry, Major Nathan Church, told of Union duty as skirmishers. After crossing the Rapidan on 4 May the regiment deployed as skirmishers. On 5 May they contacted the enemy, with two companies deployed as skirmishers and the remainder "lying in support in the woods." On the evening of 6 May, six companies went out to meet Confederate cavalry and remained on picket that night. They attacked in skirmish formation on the seventh and drove the cavalry about two miles. The regiment marched to Todd's Tavern on 8 May, arriving at 2 P.M. and "constructed breastworks." Again on the ninth the regiment "deployed as skirmishers, and advanced about two miles..." after crossing the Po River. As skirmishers, the Twenty-sixth Michigan moved up the north bank of the Po and charged an enemy skirmish line. They moved the enemy pickets back and "maintained our position for half an hour within 300 yards of their intrenchment...."<sup>25</sup>

There are many reports that include the experience of using entrenchment and skirmishing. Colonel William S. Tilton, commanding the Twenty-second Massachusetts Infantry, V Corps, reported his regiment went into line of battle on 5 May after crossing the Rapidan on 4 May. They

---

<sup>25</sup>OR, XXXVI, p. 372-373.

immediately "formed a breast-work of logs" and "skirmishing began with the enemy." On 7 May the regiment marched to Spotsylvania, but stopped at Todd's Tavern on 8 May. Here, the regiment, as part of the brigade, formed a line of battle to support an artillery battery withdrawal. They then occupied a wooded crest and "immediately set my men at work erecting a barricade of pine logs." The remainder of the day was quiet, except for engagements by the skirmishers. The evening of the next day a "strong skirmish line" was formed and sent forward to drive the enemy, which they did. The regiment "intrenched themselves in rifle-pits", which were completed about midnight. The Twenty-second participated in Colonel Upton's attack -- as skirmishers.

...with the Twenty-second[Massachusetts] and the Fourth Michigan to join the skirmish line and charge upon the lines of the enemy and ascertain their position. Our gallant boys dashed forward, drove the rebels from the disputed rifle-pits, and charged nearly to the woods,...

The commander of the Sixteenth Michigan Infantry, Captain Guy W. Fuller, related how the regiment was initially detailed to guard the trains, but went into battle on 7 May. "On the 7th the regiment was thrown out as skirmishers, in charge of George H. Swan, with orders to advance till the enemy was found, and there hold them in

---

<sup>26</sup>Ibid., p. 559-561.

check." They took the advanced line of rifle-pits, but were "compelled to return." On 8 May the regiment moved to Spotsylvania and attacked in line of battle across an "almost impassable swamp." The regiment fell back early on the ninth and occupied line of battle until 10 May, when it was again "sent out to relieve the skirmishers of the Second Brigade. On the 11th again on the skirmish line..." On 12 May the regiment moved to "near position of the Second Brigade, and occupied breast-works...." The regiment continued to fight behind breastworks:

On the morning of the 13th returned to our original position and constructed line of breast-works...marched all night...at daybreak of the 14th; remained in breast-works. ...until night of the 17th, advanced 1 mile and threw up a line of earth-works.<sup>27</sup>

LTC Byron M. Cutcheon, commander of the Twentieth Michigan Infantry, IX Army Corps, reported how his unit attacked on 6 May in the Battle of the Wilderness. After advancing "as rapidly as the ground and the undergrowth would allow," they pushed back the rebels and stopped at a breast-work. The commander pushed forward "a strong skirmish line" which bumped into a rebel brigade. LTC Cutcheon ordered his line to attack as he called for reinforcements. With assistance from the Eleventh New Hampshire the rebels were forced back, allowing the

---

<sup>27</sup>Ibid., p. 583-585.

Twentieth Michigan to hold their position for the "remainder of the night, throwing out a strong skirmish line." On the morning of 7 May, a skirmish line was sent forward to find the enemy. Not finding any, the regiment occupied the rebel line as skirmishers. After marching to Spotsylvania Court House, the 20th Michigan moved against the enemy using line and skirmishers and then spent the remainder of the day constructing breast-works.

May 10, the morning was occupied in strengthening our works. A strong and vigilant skirmish line was kept out. About 3 p.m. received orders to attack.... At about 6 p.m., having thrown forward a strong skirmish line, supported by a second, the line advanced.

The regiment attacked on 12 May and fought hand-to-hand. After constructing "heavy breast-works" it occupied them until 21 May.<sup>28</sup>

As before, the Confederates told of similar experiences. Colonel James R. Hagwood wrote of the actions of the First South Carolina Infantry (CSA). After minor skirmishing on May Seventh and Eighth, the regiment moved to Spotsylvania Court House. On 9 May:

We shortly began skirmishing, which was kept up until night put a stop to it. On the next day we moved a short distance to the left and erected a line of temporary works of fallen trees. On the morning of the 10th the enemy assaulted our position, but were repulsed... My skirmish line, slightly reinforced, held its position throughout

---

<sup>28</sup>Ibid., p. 976-977.



the fight. More or less skirmishing occurred during the following day.<sup>29</sup>

The routine actions of the armies in Virginia were summed up well by LTC Charles Cummings, commander of the Seventeenth Vermont, IX Army Corps. He wrote about his unit's action there, "we have been busily engaged in marching, intrenching and skirmishing."<sup>30</sup>

### Mule Shoe

Perry Jamieson, in "The Development of Civil War Tactics," discusses the conflict between line and column formations. The line provided maximum fire forward, but lacked control and depth. Control was especially difficult, not just laterally from end to end, but also in keeping the second line from intermingling with the first. The column had its own problems, namely target area, decreased firepower forward, and most importantly, coordination [rehearsal] to work out tasks and movements for each line. But it provided penetration capability, on a narrow front, and gave depth to the attacking formation. Perhaps the most famous Federal attack in column was commanded by Colonel Emory Upton at Spotsylvania.<sup>31</sup>

---

<sup>29</sup>Ibid., p. 1068-1069.

<sup>30</sup>Ibid., p. 937.

<sup>31</sup>Perry Jamieson, "The Development of Civil War Tactics," Ph.D. dissertation, Wayne State University, 1979, p. 87-104.

At Spotsylvania, Colonel Emory Upton developed and executed a plan to break the tactical gridlock on 10 May. The II U.S. Corps repeated the effort on 12 May. As the commander of the Second Brigade, First Division, II Corps, Upton was to attack with twelve regiments. His objective was the "angle" of the Confederate fortifications, which had been under construction since 8 May.

The fortifications were of a formidable character with abatis in front, surmounted by heavy logs, underneath which were loopholes for musketry.... About 100 yards to the rear was another line of works...occupied by a second line of battle. The position was in an open field about 200 yards from a pine wood.<sup>32</sup>

The attack by Colonel Upton was similar to one he had conducted at Rappahannock Station in November 1863, using columns rather than lines. The column formation consisted of four lines of battle, each with three regiments.

The pieces of the first line were loaded and capped; those of the other lines were loaded but not capped; bayonets were fixed. The [120th New York and 96th Pennsylvania] were instructed as soon as the works were carried to turn to the right and charge the battery. The Fifth Maine was to change front to the left and open an enfilading fire.... The second line was to halt at the works, and open fire to the front if necessary. The third line was to lie down behind the second and await orders. The fourth line was to advance to the edge of the wood...and await the issue of the charge.... All

---

<sup>32</sup>OR, XXXVI, p. 667.

the officers were instructed to repeat the command "Forward" constantly....<sup>33</sup>

An artillery preparation preceded the attack. At its conclusion the column moved forward "noiselessly" to the edge of the wood, then gave a loud yell and rushed forward. They advanced through the waiting enemy's fire and engaged in hand-to-hand fighting. The Confederates were waiting, pieces loaded, with bayonets ready to "impale" the first over the parapet.

The first of our men who tried to surmount the works fell pierced through the head by musket-balls.... Others held their pieces at arms length and fired down...while others...hurled them down upon their enemy, pinning them to the ground.... Numbers prevailed, and, like a resistless wave the column poured over the works, quickly putting hors de combat those who resisted.... Pressing forward and expanding to the right and left, the second line...fell into our hands. The enemy's lines were completely broken and an opening had been made for the division which was to have supported on our left, but it did not arrive.<sup>34</sup>

General Grant decided the initial success of Upton's attack was cause to initiate a Corps attack by General Hancock's II Corps. Brigadier John R. Brooke, Commanding the Fourth Brigade, Barlow's Division, II Corps, described the fighting at the angle on 12 May. As part of the division, the brigade made a three hour march to the

---

<sup>33</sup>Ibid., p. 667.

<sup>34</sup>Ibid., p. 668.

attack position. The Fourth Brigade was in the front line of battle, with the division in column, brigades in line.

...at 4:35 a.m. the order to advance was given, and the division moved forward steadily in one immense mass. About 100 yards from the enemy's line of works we ran over and captured their skirmishers, who surrendered without much resistance, and without firing but one shot that I heard.... The enemy was apprised of the attack by cheers of some new troops in the division as we swept over and down the last descent, and opened a terrific fire of artillery and musketry upon us...after a sharp, short fight, killed and captured nearly all who occupied the works.... Never during the war have I seen such desperate fighting. The bayonet was freely used on both sides.... Not a shot was fired by [my] men until they mounted the works. After crossing the first line, I pushed forward.... I encountered a second line of works with a marsh in its front. Owing to the disorganization of my command I could not make a determined attack on the line.... At about 7 A.M. I was directed by General Barlow to withdraw my brigade from the confused mass of men, and reorganize as rapidly as possible; also to replenish my ammunition....<sup>35</sup>

Brigadier Nathaniel H. Harris, CSA, commanding Harris' Brigade, Anderson's Division, Third Army Corps described the fighting in the angle on 12 May:

Thus from 7 a.m. of the 12th to 3:30 a.m. of May 13 (twenty hours) my men were exposed to a constant and destructive musketry fire, both from the front and the flank.... A cold, drenching rain fell during the greater portion of the day and night and the trenches were filled with water. Great difficulty was experienced in procuring supplies of ammunition, man after man shot down while trying to bring it in.... As an instance of the terrible

---

<sup>35</sup>Ibid., p. 409-410. The underlining is mine.

nature of the fire, trees 22 inches in diameter were hewn to splinters and felled by the musketry.<sup>36</sup>

Although it achieved some successes during the war, attacking in column formation was not the solution to attacking entrenched infantry equipped with rifles. Columns became masses and the resulting confusion was difficult to manage, as General Brooke described in his experience at the Mule Shoe. In addition to leading, or directing, the mass, it was necessary to coordinate a supporting force that followed the breakthrough column. A column attacked on a narrow front, with limited firepower as only the outside rows were able to fire without injuring their comrades. If the supporting force did not exploit the penetration, the column could easily be surrounded by the enemy's lines as they fought to close the "narrow" gap.

Command and control of a column assault was difficult. This problem was compounded by the very large target a column presented to enemy riflemen, and especially artillerymen. In the words of Brigadier General John A. Miles, who participated in the Union column attacks, "There were no stray shots or wild shooting at so large a living target."<sup>37</sup>

---

<sup>36</sup>Ibid., p. 1091-1092.

<sup>37</sup>Jamieson & McWhiney, Attack, p. 95.

## In the End

From Antietam to the Wilderness things had changed. The armies were more experienced and had lost the "Volunteer" or Militia definition. Leaders changed, through promotion, and attrition. So too did the way the war was fought. Antietam still was fought using line of battle in the open. The fighting in the Wilderness and Spotsylvania involved more protection.

Starting in the Wilderness, soldiers used entrenchments for protection. The OR shows it was standard procedure for units to build them, whenever they stopped. After marching to a new position, protection was put up. Units got up to attack, but they spent the rest of their time behind cover, not in order of battle formation, but flat on the ground behind an earthen, wood or stone wall. They would attack forward, seize an objective, then immediately go on the defensive by constructing fortification. And then attack again, then entrench.

Entrenchment became a way to avoid rifle effect when defending, but what about attacking? The solution to that was to open up the attack formation and permit soldiers to move individually -- not presenting a mass target. The Wilderness and Spotsylvania reports contain

many more references to the use of skirmishers and more units detailed as skirmishers. As the range and accuracy of the rifle was fully understood, soldiers began to understand that mass formations, attacking over the extended distance, presented lucrative targets for rifleman. Skirmish was used as a way to reduce target size and exposure, but also as a reconnaissance formation.

Finding the enemy in line of battle at 100 yards (or probably less) was hard enough in the dense growth of the Wilderness and the smoke of battle. When he got behind cover and engaged from 300 to 500 yards, knowing the enemy's exact strength and location was impossible. Sending forward a skirmish line to draw his fire and ferret out his disposition was much more preferable than committing the entire force, in dense line of battle, against a potentially much larger force. Assuming a veteran force, whose experience did not permit blindly blundering forward, the use of skirmishers was a common sense response to the fatality of the rifle.

The change in tactics was motivated by the attitudes of the soldiers who executed the tactics. The soldier of 1864 was quite different than that of 1861. Gerald F. Linderman, in Embattled Courage, writes that "experience cost many soldiers their conviction that war

was a question of valor." To those who had been fighting since 1861, enthusiasm wasn't enough to stand up and march into rifle fire. He describes the transformation of enthusiastic volunteers into "hardened" veterans. As soldiers realized their own vulnerability, saw the regiments dwindle in size, experienced the death of friends and moved through a sea of corpses, they became "coarse" and eventually "disillusioned" with the war.<sup>38</sup>

This disillusionment can be seen in the reenlistment policies of 1864. Most Union soldiers enlisted for three years -- in 1861. The vast majority of them were due for discharge in May through July of 1864, in the middle of the campaign season. The government initially offered a \$400 bonus, which increased to as high as \$700, to get soldiers to stay. For a private who received \$13 a month, it was a sizable bribe. But the real hook was an immediate 30 day furlough and the promise that if three fourths of a regiment reenlisted they could maintain the regiment and its colors, after the furlough. There were the usual speeches, visits from congressman back home and plenty of whiskey appeared for those in need. The result of 585 million dollars spent on Union reenlistment bounties during the war was that in 1864 about half of

---

<sup>38</sup>Gerald F. Linderman, Embattled Courage (New York: The Free Press, 1989), p. 241-265.



those eligible eventually reenlisted.<sup>39</sup> In 1864, if a soldier wasn't a veteran, he was a conscript or a well-paid "substitute."<sup>40</sup>

---

<sup>39</sup>Ibid., p. 261-262; Weigley, US. Army, p. 210-211; Bruce Catton, A Stillness at Appomattox (New York: Pocket Books, 1958), p. 38-41.

<sup>40</sup>Catton, Appomattox, p. 26.

## CHAPTER 5

### SO WHAT?

The theme of this thesis has been to investigate the transition from smoothbore to rifle and its effect on infantry tactics in the Civil War. The rifle brought a significant increase in firepower to the battlefield. It had a range two or three times that of a smoothbore, at least twice the accuracy, and a volume of fire that was equal or better. The application of that technology in battle and the corresponding effect on tactics is debated in several recently published works.

#### The Last Napoleonic War

Paddy Griffith in Battle Tactics of the Civil War asserts that the Civil War was the last Napoleonic war. In his view, the size of the armies and the distances over which they fought were similar. Battles were conducted using essentially Napoleonic weapons and tactics, except

for the "doctrinal emphasis on fortification."<sup>1</sup> Continuing the battle comparison, he states that in Civil War fighting, as in Napoleonic battle, the tactical defense was marginally more successful than the offense. This probably led Clausewitz to his conclusion that the, "defense is the stronger form of war." In summarizing his comparison of the Civil War with that of Napoleon he states:

Were it not for the single fact that Civil War assaults tended to be tactically less successful than those of other wars, we would have little difficulty assimilating the Civil War with the Napoleonic experience rather than the first World War.<sup>2</sup>

Battle tended to be less successful, and longer, for two reasons. The first reason, according to Griffith, was poor generalship. In his view generals were overly cautious and too eager to call off the battle, even if victory was close at hand. There were some notable exceptions in his estimation, but the "predominant military culture" was not one of rapid maneuver followed by a final assault.<sup>3</sup>

Griffith argues that the second reason for extended, less decisive battle was:

---

<sup>1</sup>Griffith, Battle Tactics, p. 180.

<sup>2</sup>Ibid., p. 199.

<sup>3</sup>Ibid., p. 191.

...regiments which came under the enemy's close-range fire followed their natural instincts and settled down to fire back. Even though the fire might be capable of hitting only one or two men...the imposing aspect of the enemy's position was sufficiently unnerving to deter the attacker from pressing home the assault. The firefight dragged on until exhaustion set in or nightfall put an end to hostilities. Casualties mounted because the contest went on so long, not because the fire was particularly deadly.<sup>4</sup>

In addressing the effect of the rifle, Griffith states, "the idea that the rifle musket revolutionised tactics...is demonstrably false." The rifle did not "mow down" the attacking soldiers because of many factors on the battlefield, including smoke, slow reloading times and lack of ammunition. Casualties were indeed high, but this was more an indication of long duration than the superiority of the rifle.<sup>5</sup>

The superior rifle did not change tactics, rather tactics were ultimately the choice of individuals, colonels and brigadiers, who had vastly different backgrounds. Few had formal military educations, nor were they familiar with Hardee's drill manual and its basic concept of shock tactics. The course of battle was usually determined by common sense and natural instincts. Men got down to fire

---

<sup>4</sup>Ibid., p. 190.

<sup>5</sup>Ibid., p. 180.

back in order to return enough fire to cause the attacker to stop, not because the rifle was exceptionally deadly.<sup>6</sup>

It was not therefore, the improved weaponry that forced armies to use trenches, rather it was experience and training. Once trenches became familiar, they were symbols of, "specific tactical qualities -- firepower and protection -- which Civil War soldiers decided were most important." His conclusion is that as the soldiers got used to fighting behind fieldworks, and experienced their benefits, the alternatives of shock and mobility lost favor.<sup>7</sup>

My research indicates that the rifle's firepower on the battlefield was significant. Reports from Antietam indicate a high consumption of ammunition, extended engagement distances and the preference for some form of individual cover. There are numerous references to the "galling fire" and effect of rifles on the battlefield. The formation and line fighting of Antietam was patterned after Napoleonic war, but with significant differences.

It wasn't close-up fighting; bayonets were not a major contributor. The killing weapon was the rifle. The

---

<sup>6</sup>Ibid., p. 189-190.

<sup>7</sup>Ibid., p. 189.

long range of the rifle prevented units from closing and using the bayonet, or pike, common in Napoleon's time. Columns generally were not used - to avoid presenting a mass target. Even successive lines of battle were separated by 200 yards to prevent enemy bullets fired at the first line from hitting the second.

### Celtic Courage

Grady McWhiney and Perry Jamieson in their book, Attack and Die, support the contribution of the rifle to the war's devastation. However, they also attribute the high casualties, especially southern casualties, to a Celtic warrior heritage. In three climactic battles in Celtic history, Telamon, Culloden and Gettysburg, the Celts used similar tactics with similar results. They boldly attacked a fortified enemy, with better weapons, and technology. The waiting and prepared enemy destroyed their dash and courage. They risked everything and lost the battle and the war.

In 225 B.C. at Telamon, the Romans met the Celts who were pushing into the Po valley in Italy. As the Romans occupied a strong defensible hill position, the Celts prepared to attack -- as they always did. They attacked with "weird discordant" music and "horrible and diverse yelling". In 1746 near Culloden, England, the

Celts continued their resistance to English domination. Numbering 5000, they faced 9000. The "Highlanders" attacked bravely, with their usual fierce yells accompanied by bagpipe music. They lost 2000 to the English loss of 50. The Civil War continued this conflict of Celts versus Englishman. The Confederates fought as their ancestors had -- by attacking.<sup>8</sup>

The book concludes that Southerners were aggressive and culturally conditioned for war. An August 1862 Richmond newspaper explained,

The familiarity of our people with arms and horses gives them advantage for aggression, which are thrown away by delay. Ten thousand Southerners, before the Yankees learnt to load a gun, might have marched to Boston without resistance.

Yankee culture was mostly derived from English culture, but the south was Celtic - Scottish, Scotch-Irish, Welsh, Cornish and Irish.<sup>9</sup>

In researching unit reports of the Maryland and Virginia campaigns, the Confederate entries are not as numerous and are difficult to find in any length. But those I found could easily have described a Yankee action. The two sides used the same way of fighting, at least by description. If anything, the Union Army was more

---

<sup>8</sup>Jamieson & McWhiney, Attack, p. 171-178.

<sup>9</sup>Ibid., p. 170-172.

aggressive in initiating tactical offenses during these two campaigns.

During South Mountain and Antietam, General Lee started on the tactical and strategic offensive, but turned it over to McClellan during the battle. It was General McClellan who ordered repeated line of battle assaults against Lee. General Grant crossed the Rapidan with the strategic objective of destroying the Army of Northern Virginia. Lee initiated the attack in the Wilderness, but it was Grant who counterattacked and continued to attempt to flank Lee as they moved to Spotsylvania. After Spotsylvania and North Anna, Grant's famous Cold Harbor attacks are surely more representative of Celtic courage.

### The Power of Fortifications

In a more traditional approach, Hattaway and Jones in How the North Won point to Mahan's teachings on entrenching. The increased capabilities of the rifle (range, accuracy and reliability), revolutionized tactics by neutralizing the cavalry charge on the battlefield and by placing a premium upon cover for the infantry. Combined



with entrenchments advocated by Mahan, the new weapon "immensely augmented the power of the defense."<sup>10</sup>

When infantry protected itself with fortifications it became almost impregnable to frontal attack by enemy infantry, even less vulnerable to cavalry. With the addition of maneuver and mobility through organization and operation at the company, regiment, brigade and division level, these rifle-equipped armies should have been almost invulnerable to annihilation. This new capability was such that even green troops were expected to hold a position. Annihilation, the proper and attainable object according to Clausewitz, would not happen in the open fields of the Civil War.<sup>11</sup>

The power of the fortified defense was stressed by Dennis Mahan in his teachings at West Point. West Point prepared the leaders on both sides with an appreciation of engineering and the value of field fortifications. With this education that predisposed them to understand the technological and tactical change that was to come,

---

<sup>10</sup>Herman Hattaway and Archer Jones, How the North Won: A Military History of the Civil War (Urbana, Univ. of Illinois Press, 1983), p. 10-12.

<sup>11</sup>Ibid., p. 46-47.

officers on both sides knew how to lay out and fortify defensive positions.<sup>12</sup>

General George McClellan, when ordered to assume the offensive in early 1862, argued persuasively that history had shown conclusively the advantages a defending army held with strong defensive positions. He also recognized the problem citizen-soldiers faced. It was pointless and a waste of manpower to have new recruits advance against the "murderous fire" of entrenched defenders. His defensive concepts adhered faithfully to his teacher (Dennis Mahan) and he advocated the turning movement to counter it. By attacking the enemy from the rear, forcing him to "turn" out of his position, one could even the odds. A difficult maneuver, it bogged McClellan down in perfectionist preparation.<sup>13</sup>

The benefits of "entrenchment" were addressed directly by Mahan in the preface to his A Treatise on Field Fortification. Although he discussed the increased capability of the rifle later in the introduction, it was not the reason he stressed fortifications. Fortifications were a requirement for regular troops and this had been demonstrated in experience. In Mahan's opinion, the

---

<sup>12</sup>Ibid., p. 46-47.

<sup>13</sup>Ibid., p. 95.

militia officer was even more dependent on fortification for he did not have the cooperation and discipline of regular troops. These "conservative means" provided strength and confidence to militia soldiers, especially in their first contact. His reasoning:

To suppose irregular forces capable of coping on equal terms with disciplined troops, is to reason, ...but against a vast weight of testimony to the contrary. It is not indeed that discipline confers individual courage; certainly a greater proportion of this essential military virtue will, ...be found among the militia. Called out on a particular emergency, with little or no previous exercise in the services they are required to render, militia cannot have that shoulder-to-shoulder courage, by which men are animated, who have served long together, which begets a reliance on each other.... But place the militia soldier on his natural field of battle, behind a breastwork, and an equilibrium between him and his more disciplined enemy is immediately established....

But were not these reasons...sufficient, others of greater cogency could be adduced, in favor of intrenched positions.... Its ranks are filled with all that is most valuable in society. The farmer, the mechanic, the merchant, the members of the learned professions, must all quit their peaceful avocations to meet the foe. The father of the family jeopardizes its future prosperity, the son exposes his widowed mother to the chances of an old age of penury....<sup>14</sup>

Regular army officers were familiar with Mahan's theories. Graduates of West Point, Union and Confederate, had been exposed to his teachings as cadets.

---

<sup>14</sup>Dennis Hart Mahan, A Treatise of Field Fortification (New York, John Wiley, 1856), p. vi-viii.

There is a stark contrast in comparing the use of fortifications in Hardee's Tactics, in the 1862 Maryland Campaign and in the 1864 Virginia Campaign. Most 1862 fighting was still conducted from exposed positions, using line of battle to assault and defend as described by Hardee. This approach was already changing at Antietam as individuals and small units began to seek natural cover in the form of fences, stone walls, etc. If Mahan's theories of fortification were correct, the time to use them was in 1861-62 while the armies and leaders were largely volunteers and untrained. The actions at Antietam indicate the opposite. It was the veterans of the Wilderness that embraced fortification.

By 1864 the armies on both sides were experienced. With large standing armies, the replacements were quickly integrated into the force - and its experiences. In the Virginia Campaign fortifications become standard operating procedure. Not just getting down behind rocks or logs -- both sides constructed trenches with parapets. When units stopped, whether attacking or defending, they "threw up breast-works." Fortifications were not used by the untrained militia soldiers early in the war, but by the battle-hardened veterans who understood the capabilities of the rifle and had experienced its effects.

## The Rifle Reigns Supreme

Edward Hagerman's 1988 book, The American Civil War and the Origins of Modern Warfare, proposed a more "traditional" view of the rifle and tactical change. In his view the Civil War was a "new era" in land warfare largely brought on by massed armies and the impact of the industrial revolution. Civil War soldiers and commanders shaped strategy and tactics based on these influences. These changes made the war the first "modern" war.<sup>15</sup>

The rifled musket made its full force felt, for the first time, in the war as it challenged current tactical doctrine. The machine gun, rifled artillery and ordnance were not significant factors in the war, especially the early years. The rifle was, however. By 1862 it was the standard infantry weapon. Entrenching was to become the accepted practice as the frontal assault was doomed by a "devastating increase in firepower." This was largely due to the accuracy and range of the rifled musket.<sup>16</sup>

The classical line and column of Napoleon disappeared as the soldier was forced to seek cover from

---

<sup>15</sup>Edward Hagerman, The Evolution of Trench Warfare in the American Civil War (Bloomington:Indiana University Press, 1988), p. xi.

<sup>16</sup>Ibid., p. xii.

the rifle's firepower. In a logical response they began to dig in, on the offense and defense, which anticipated a similar reaction to the machine gun in World War I. As a response to the rifle's ability to reach out and touch them at much greater distances, tactics began to change. The first new concept was that assaults should be conducted in a series of alternating rushes, in place of lines. Another was the increased use of the skirmish line and the extension of that line in attempt to disperse from the rifle's fire.<sup>17</sup>

Based on my research, the firepower of the individual soldier and his unit was significantly increased by the transition from smoothbore to rifle. It became the dominant weapon on the battlefield and its effects were acknowledged throughout the Operational Records. Both sides started the war with battlefield tactics based on the previous war -- when the smoothbore musket was the standard weapon.

During the conduct of the war, soldiers blue and gray experienced the steady, sure killing power and range of the rifle and the resulting inadequacies of smoothbore tactics. As the war progressed, so did the evolution of tactics. The rifle's range, and grape shot artillery, all

---

<sup>17</sup>Ibid., p. vii.

but ended the bayonet charge. The use of protection evolved from using whatever was available on the battlefield at Antietam to the construction of tactical fortifications at Spotsylvania. The primary offensive formation in 1862 was the line of battle. By 1864 the line of battle had lost its effectiveness and several alternatives were tried. More and more units used skirmish formation to locate the enemy, conduct the initial assault and, in some cases, it actually was used to carry the line. Another alternative, the column, was used on narrow attack frontages to penetrate the enemy's line. At Spotsylvania it met with limited success. The coordination, training and supporting tactics for exploitation were not yet available.

Just as our army attempts to adjust its tactical doctrine to the next war using today's technology, so did the soldiers in the Civil War. Tactics slowly evolved as a reaction to their experience against the new weapon's destructive power, but they paid a heavy price in lives lost while gaining that experience. Our job then, to save lives and accomplish the mission, is to study the past as a path to the future and attempt to develop the right tactics for the next war.



## **BIBLIOGRAPHY**



## BOOKS

- Addington, Larry H. The Patterns of War Since the Eighteenth Century. Bloomington IN: Indiana University Press, 1984.
- Ambrose, Stephen E. Upton and the Army. Baton Rouge LA: LA State University Press, 1964.
- Beringer, Richard E. Why the South Lost the Civil War. Athens GA: University of GA Press, 1986.
- Brodie, Bernard and Fawn M. From Crossbow to H-Bomb. Bloomington IN: Indiana University Press, 1973.
- Catton, Bruce. A Stillness at Appomattox. New York: Pocket Books, 1958.
- Catton, Bruce. This Hallowed Ground. New York: Washington Square Press, 1956.
- Coggins, Jack. Arms and Equipment of the Civil War. New York: Doubleday & Co. Inc., 1962.
- Cottesloe, Thomas F. The Book of Rifle. New York: Longmans, Green & Co., 1901.
- Donovan, Timothy H., Jr; Flint, Roy K.; Grant, Arthur V., Jr.; Stadler, Gerald P. The American Civil War. The West Point Military History Series. Wayne NJ: Avery Publishing, 1987.
- Dupuy, Trevor N. The Evolution of Weapons & Warfare. Fairfax VA: Hero Books, 1984.
- Eames, Henry E. The Rifle in War. Ft. Leavenworth: US Cavalry Assoc., 1909.
- Edwards, William B. Civil War Guns. Harrisburg PA: The Stackpole Company, 1962.
- Foote, Shelby. Fort Sumter to Perryville. New York: Vintage Books, 1986.
- Foote, Shelby. Red River to Appomattox. New York: Vintage Books, 1974.
- Fuller, Claud E. The Rifled Musket. Harrisburg PA: Stackpole Books, 1958.

- Griffith, Paddy. Battle Tactics of the Civil War. New Haven CT: Yale University Press, 1989.
- Griffith, Paddy. Battle in the Civil War. Mansfield, England: Fieldbooks, 1986.
- Hagerman, Edward H. The Evolution of Trench Warfare in the American Civil War. Bloomington: Indiana University Press, 1988.
- Hardee, William J. The Rifle and Light Infantry Tactics: For the Exercise and Manoeuvres of Troops. Vol I & II, Philadelphia PA: Lippincott, Grambo & Co., 1855.
- Hattaway, Herman and Jones, Archer. How the North Won: A Military History of the Civil War. Urbana IL: Univ of Illinois Press, 1983.
- Henderson, G.F.R. The Civil War: A Soldier's View. edited by Jay Luvaas. Chicago: University of Chicago Press, 1958.
- Jamieson, Perry D. and McWhiney, Grady. Attack and Die: Civil War Military Tactics and the Southern Heritage. University AL: University of Alabama Press, 1982.
- Keegan, John. The Face of Battle. London: Penguin Books, 1976.
- Keegan, John. The Mask of Command. London: Penguin Books, 1987.
- Lewis, Berkeley R. Small Arms and Ammunition in the U.S. Service 1776-1865. Washington: The Smithsonian Institution, 1956.
- Linderman, Gerald F. Embattled Courage: The Experience of Combat in the American Civil War. New York: Free Press, 1987.
- Luvass, Jay. The Military Legacy of the Civil War: The European Inheritance. Chicago: Univ of Chicago Press, 1959; reprint ed., Lawrence: University Press of Kansas, 1988.
- Luvaas, Jay and Nelson, Harold W. The U.S. Army War College Guide to the Battle of Gettysburg. Carlisle PA: South Mountain Press, 1987.

- Luvass, Jay and Nelson, Harold W. The U.S. Army War College Guide to the Battle of Antietam: The Maryland Campaign of 1862. Carlisle PA: South Mountain Press, 1987.
- Mahan, Dennis H. A Treatise of Field Fortification. New York: John Wiley, 1856.
- Matloff, Maurice. American Military History. Washington: U.S. GPO, 1969.
- Matter, William D. If It Takes All Summer. Chapel Hill: The University of North Carolina Press, 1988.
- Millet, Alan R. and Maslowski, Peter. For the Common Defense: A Military History of the United States. New York: The Free Press, 1984.
- Millis, Walter. Arms and Men: A Study of American Military History. New York: G.P. Putnam's Sons, 1956.
- Mitchell, Reid. Civil War Soldiers. New York: Viking, 1988.
- O'Connell, Robert L.. Of Arms and Men: A History of War, Weapons & Aggression. New York: Oxford University Press, 1989.
- Pollard, Hugh B.C. A History of Firearms. New York: B. Franklin, 1973.
- Robertson, James I. Soldiers Blue and Gray. Columbia: University of South Carolina Press, 1988.
- Ropp, Theodore. War in the Modern World. New York: Collier Books, 1962.
- Sears, Stephen W. Landscape Turned Red: The Battle of Antietam. New York: Warner Books, 1983.
- Scott, Winfield. Infantry Tactics. New York: Harper & Bros., 1854.
- Upton, Emory. Upton's Infantry Tactics: Double & Single Rank. New York: D. Appleton & Co., 1867.
- Weigley, Russell F. History of the United States Army. Bloomington: Indiana University Press, 1967, 1984.
- Weller, Jac. Weapons and Tactics: Hastings to Berlin. New York: St. Martin's Press, 1966.

Wiley, Bell I. The Life of Billy Yank: The Common Soldier of the Union. Indianapolis: Bobbs-Merrill, 1952.

Wiley, Bell I. The Life of Johnny Reb: The Common Soldier of the Confederacy. Baton Rouge: Louisiana State University Press, 1978.

Wintringham, Tom. The Story of Weapons and Tactics: From Troy to Stalingrad. Freeport NY: Books for Libraries Press, 1943.

### Government Documents

U.S. War Department. The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies. Washington: U.S. GPO, 1880-1901.

### Periodicals

Mahon, John K. "Civil War Infantry Assault Tactics." Military Affairs, Summer 1961, pp. 47-48.

### Unpublished Materials

Jamieson, Perry D. "The Development of Civil War Tactics." Ph.D. dissertation, Wayne State University, 1979.

Hagerman, Edward H. "The Evolution of Trench Warfare in the American Civil War." Ph.D. dissertation, Duke University, 1965.

Moseley, Thomas V. "Evolution of the American Civil War Infantry Tactics." Ph.D. dissertation, University of North Carolina at Chapel Hill, 1968.

## INITIAL DISTRIBUTION LIST

1. Combined Arms Research Library  
U.S. Army Command and General Staff College  
Fort Leavenworth, KS 66027-6900
  
2. Dr. Jerry M. Cooper  
U.S. Army Military History Institute  
Carlisle Barracks, PA 17013-5008
  
3. Defense Technical Information Center  
Cameron Station  
Alexandria, VA 22314
  
4. LTC Terry L. Morrison  
Center for Army Leadership  
USACGSC  
Fort Leavenworth, KS 66027-6900
  
5. Dr. Roger J. Spiller  
Combat Studies Institute  
USACGSC  
Fort Leavenworth, KS 66027-6900