BRACKETING THE ENEMY: FORWARD OBSERVERS AND COMBINED ARMS EFFECTIVENESS DURING THE SECOND WORLD WAR

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by

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During World War II, the Army created the Combat Infantryman’s Badge to create *esprit de corps* among infantrymen who served in battle. Forward observer teams served in the thick of battle but, as artillerymen, they were ineligible to receive the award. Thus, the Army never recognized forward observer personnel as combatants. Recently, the Army has created a new Combat Action Badge, similar to the CIB, to signify that the wearer has served in combat.

While raising the morale of infantrymen was important during World War II, perhaps the real significance of the forward observers lies not in the fact they were active combatants, but that they provided the human element previously missing to provide close artillery support of infantry and in so doing achieved true combined arms effectiveness. This study is dedicated to all United States artillerymen, officers and enlisted men alike, who performed forward observer duties during the Second World War. CSMO.
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INTRODUCTION

The inspiration to conduct a detailed study of forward observers first came to me in the spring of 1996, about six months after having met the late James R. McGhee of Mount Vernon, Illinois, at an annual reunion of the 87th Division Association. He had been a second lieutenant with A Battery, 334th Field Artillery Battalion in that division and had served as a forward observer. Jim and Gayle A. Bricker, Jr., of Sarver, Pennsylvania, and my father, Donald L. Walker of Alliance, Ohio, worked together as a three-man forward observer party during the early phases of the division’s combat experience in late 1944 and early 1945.

On February 12, 1945, Gayle Bricker left the unit and was evacuated to a field hospital, suffering internal injuries from concussion. After the 87th Division breached the Siegfried Line in February, 1945, Lieutenant Colonel Robert Moran, commanding officer of the 3rd Battalion, 345th Infantry Regiment awarded Combat Infantryman’s Badges to two field artillerymen, Jim McGhee and my father. The awards were unofficial, yet, they represented one instance where an infantry officer recognized that artillery forward observers were in the war, too.

Jim believed that the U.S. Army should have designated a similar badge for forward observer personnel, and was so proud of his CIB that he sewed it on his uniform before returning to the United States. Five decades later, he and a few other former

petition the Department of the Army to create such an award. Although this drive failed, Jim’s unsuccessful efforts convinced me that few people know what is meant by the term “forward observer,” and even fewer comprehend what a forward observer does.

More importantly for the discipline of history, historians have failed to recognize that forward observers during World War II provided the human element previously missing to achieve the first consistently effective combination of two combat arms—infantry and field artillery—in the twentieth century. This is a study of combined arms doctrine as it evolved in that early part of that century; i.e., the combining of different combat arms on the battlefield so that firepower can support the manpower of maneuvering infantry. Its focus is on the theory and the World War II practice of placing forward observer teams with frontline maneuvering infantry to control and adjust supporting artillery fires.

2. General William C. Westmoreland, himself a former artilleryman, called this effort “unsalable,” probably because it had been tried unsuccessfully before. Westmoreland to John R. Walker, May 8, 1996 (in author’s files).

3. FM 3-0 Operations defines combined arms as the simultaneous application of two or more arms such as infantry and field artillery, to achieve an effect on the enemy that is greater than if individual combat arms were used in sequence. U.S. Department of the Army, FM 3-0 Operations (DRAG Edition) (Washington DC: Department of the Army, June 15, 2000) 4-27 as cited in John W. Washburn, “Integration of Armored Forces in the U.S. Army Infantry Division” Fort Leavenworth, KS, Command and General Staff College, School of Advanced Military Studies Monograph, 2000),1; Jonathan M. House, the premier American authority on combined arms warfare indicates that “combined arms tactics and operations are the actual roles performed and techniques applied by these different arms and weapons in supporting each other, once they have been organized into integrated teams. This is the area that is of most concern to professional soldiers, yet it is precisely this area where historical records and tactical manuals often neglect important details.” Jonathan M. House, Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine, and Organization, (Fort Leavenworth, KS: U.S. Army Command and General Staff College, Combat Studies Institute: Research Survey No. 2, 1984), 3.

4. Lieutenant Colonel James G. Snodgrass defined maneuver in the operational sense as “the swift positioning of combat units to attack the enemy’s rear, attack his flank, cut his lines of communications,
The historiography of the Second World War covers a wide range of topics that examine almost every military aspect imaginable. Historians have conducted much scholarly research on the subject of field artillery, including new developments in artillery weapons, ordnance, and tactics, e.g.; the transition from direct to indirect artillery fire. Except for a small number of memoirs published by former forward observers, however, the history of forward observers has been virtually overlooked because primary sources are scattered and hard to find. The National Archives repository in Suitland, Maryland, for example, holds volumes of official Army records from the Second War. In the majority of these records, the specific actions of forward observers appear only sporadically and only rarely do they identify participants or details.

A notable exception to the scarcity of data regarding forward observers is each division’s set of general orders issued for medals and citations. These provide a brief but detailed narrative account of what the soldier did to receive his medal. Each citation is a history in itself. Some are more detailed than others, but from them the reader obtains a fairly clear idea of what happened. The most frequent awards are the Bronze Star for heroic achievement and the Silver Star for gallantry in action. Because the forward observer was not added to the Army’s Table of Organization and Equipment until 1944, 

bog him down in non-decisive areas, fall on an isolated segment of his force, or elude his attack… It is the means to fight outnumbered and win.” Snodgrass, “Operational Maneuver: From the American Civil War to the OMG: What are its origins and will it work today?” (Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, February 26, 1988), 5.

5. Direct fire means that whoever is discharging the weapon observes and takes visual aim at the target. Indirect fire means the shooter cannot see his intended target.

6. Published memoirs of forward observers who served in World War II include: K.P. Jones., F.O.
most official records fail to identify or even acknowledge forward observers. For example, unit and division histories may record details regarding forward observers without identifying individuals by name. Various personnel rosters for field artillery units fail to identify who served as their forward observers. Without the names, it is difficult to know if two different sources are describing the same incident, or exactly what was involved, and what they were doing. Identifying the individuals involved makes it easier for the historian to corroborate the facts given from different sources and lends itself to historical accuracy. So, although official Army records from the Second World War are plentiful, only the general orders consistently identify forward observers and record their actions in a meaningful way that allows us to understand what was happening.

Probably the next best primary source regarding forward observers is the Field Artillery Journal. From 1911 until it became FA Journal and finally The Artillery Journal, this publication has been the professional journal of the United States Field Artillery. Field Artillery Journal provides a number of articles important to understanding how artillery-infantry coordination developed in the twentieth century. In addition, contemporary articles from the interwar period, discuss the relevance of using forward observers in the front lines, a new concept at that time. During World War II numerous forward observers submitted their articles for publication, explaining what they were doing and how it worked. Thus Field Artillery Journal is an important source
regarding the development of the new tactical doctrine for field artillery involving forward observers and their role in the development of combined arms effectiveness.

Because professional soldiers have written more about the development of combined arms tactics than others, the historical literature is found mostly in military repositories and libraries such as the excellent Combined Arms Research Library at Fort Leavenworth, Kansas, and the Military History Institute Library at Carlisle, Pennsylvania. Yet, some published works may be found on the shelf in the local public or university library. Former Army officer, Jonathan M. House may be regarded as the foremost authority on the history of combined arms in the United States. His paper, written in 1984, for the U.S. Army Command and General Staff College at Fort Leavenworth and then later expanded as a book is the foundation from which others have subsequently drawn. British historian, J. B. A. Bailey has also published an important book on combined arms tactics. Again, this is a topic rarely studied by others except for historians serving in the military.

To understand the significance of the forward observer to field artillery one must first understand the role of artillery in the American history. From the Revolutionary War to the advent of the strategic bombing campaigns of World War II, it would be difficult to imagine a single more destructive weapon than artillery. Cannons had a

little has been written on forward observers. The information is scarce.” Dastrup to John R. Walker, October 9, 1996 (in the author’s files).


longer range than small arms and did not require the same degree of firing accuracy to
inflict harm on an enemy. A big gun firing a shell loaded with canister or grape shot had
the same effect as a gigantic shotgun propelling a sizable cluster of heavy pieces of metal
that fanned out as they moved forward. The spread of canister at three hundred feet was
a circle thirty-two feet in diameter with enough impetus to rip and mangle multiple
human bodies in its path with a single shot. One shell fired into the midst of a bunched-
up enemy did not have to be aimed at any individual soldier to take advantage of its
destructive force. Even dozens of tightly grouped riflemen firing their muskets in unison
in a close shot pattern could not match the destructive capabilities of a single artillery
shell. Although the American army’s use of grape shot and canister dates back to the
Revolutionary War, it did not use artillery to its full tactical advantage in combat; not
until after the Civil War did artillery cause the greatest number of casualties in war. A
cannonball or solid shot could be as devastating as case shot. Able to slice men in half
with ease, one solid shot could kill fifteen men standing directly in its path. Even on the
third bounce, a cannonball’s weight and momentum could still take off an arm or a leg.

Military historian John S. D. Eisenhower considered nineteenth-century field


10. For further reading see Boyd L. Dastrup, *King of Battle: A Branch History of the U.S. Army’s
Field Artillery* (Fort Monroe, VA: Office of the Command Historian, U. S. Training and Doctrine
Books, 1973). For further detail about grape shot and canister see Ammunition-Grape Shot and
Ammunition-Canister available from http://www.cross-sites.pwp.blueyonder.co.uk/WBTS/ammunition
/grape.html and http://www.cross-sites.pwp.blueyonder.co.uk/WBTS/ammunition/canister.html [accessed
June 28, 2007].

artillery to be the U.S. Army’s best trained and most technologically advanced combat arm. Robert Remini has described how it won the battle of New Orleans for Andrew Jackson in January 1815, slaughtering British veterans of the Napoleonic Wars by the hundreds on the Chalmette battlefield. Eisenhower writing about the Mexican War of 1846-1848 observes that American troops repeatedly went into battle overwhelmingly outnumbered by the Mexicans, but the superiority of American field artillery repeatedly defeated the enemy in essence winning the war.

During the Civil War, cannons could easily hurl a shell more than two miles, yet artillerymen continued to aim at their targets as they had for centuries. Although shots fired out of sight might strike the enemy, they could also hit friendly troops who had strayed into the target area. Hence the advantages accruing to longer range were wasted while the technical capability of being able to shoot at something unseen created several new difficulties, leading to a new phase in artillery tactics and the gradual transition from the system of fire known as direct where the gunners could see their targets to indirect fire where they could not. British artillery officer, J. B. A. Bailey described indirect fire as “the most important conceptual and technical innovation in over five hundred years of

14. For example, Warren Ripley comments on the inconsistency of providing an infantry sniper’s rifle with a range of 500 or 600 yards with fine telescopic sights, while furnishing the Parrot gun, a standard rifled cannon used by the Union during the Civil War, with a range of 3,000 to 4,000 yards with sights “far coarser than those of any old smoothbore musket.” Ripley, *Artillery and Ammunition of the Civil War* (New York: Promontory Press, 1970), 229.
artillery practice.” However, military tactics worldwide, are often slow to change, and even during the Spanish-American War, American field artillery still used indirect fire.

The long switchover to indirect fire created a problem in tactical doctrine not unique to the American army and one not rectified for almost eighty years after the Civil War began: how to bring accurate artillery fire to bear on an unseen target in close coordination with infantry attacks, or how to combine these two combat arms effectively in battle. Not until the First World War did armies first come to rely on indirect artillery fire. They were forced to because the longer range, increased accuracy, and high velocity of small arms – rifles and automatic weapons meant that even from a distance, advancing infantrymen could easily spot and kill the gun crews of artillery batteries left unconcealed.

During the First World War, artillerymen called forward observers were stationed among infantrymen at or near the front lines. By relaying vocal or visual signals to the battery commander positioned halfway between them and the guns they could adjust

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15. J. B. A. Bailey, a former member of the Royal Artillery notes that the Russians had used howitzers to experiment with indirect fire as early as the 1750s but that major technical developments involving the use of indirect fire did not appear until late in the nineteenth century. Bailey, *Field Artillery and Firepower* (Annapolis, MD: Naval Institute Press, 2004), 211.

16. Describing that war, Field Artillery historian, Boyd L. Dastrup writes “cannoneers of the 1890s still stressed closing with the enemy at distances of 800 yards which was well within the range of rifles of the time.” Dastrup, *King of Battle*, 140.

17. Vardell Edwards Nesmith, Jr., observed that because of their short duration, neither the Spanish-American War or the Boer War in South Africa “challenged the domination of the direct fire paradigm.” But during the Russo-Japanese War, “the lethality of modern weaponry was felt as infantry took to the trenches and the artillery also sought cover. The war tested the direct-fire paradigm for that last time.” Nesmith, “The Quiet Paradigm Change: The Evolution of Field Artillery Doctrine of the United States Army, 1861-1905” (Ph.D. diss., Duke University, 1977), 339; However, British historian, J. B. A. Bailey writes that “as the First World War approached, direct fire at close range was [yet] the prevailing orthodoxy.” Bailey, *Field Artillery and Firepower*, 206. Bailey explains that “Armies had failed to
artillery fire on observed targets. However, as the infantrymen advanced, the forward observers were left behind, and the ability to provide continuous supporting fire in response to new targets as they became known was lost. When unable to see the target, battery commanders relied upon methods of unobserved fire. In fact, most of the artillery fired during World War I was done without any observation of the target.

This first attempt by the major armies of the world to routinely use indirect artillery fire in combat often had unintended if not disastrous results. French General Alexandre Percin estimated that his army’s artillery killed 75,000 of its own soldiers during the war. Although one may question the accuracy of General Percin’s estimate, the number of deaths resulting from friendly fire or “amicicide” as author Charles R. Shrader calls it, was recognizably, a significant problem in World War I. A better method of combining the combat effectiveness of infantry and artillery was clearly needed.


19. Dastrup observed that “even when opportunities existed to employ observed fire, commanders preferred unobserved fire.” Dastrup, King of Battle, 172-73.


Trying to learn from its mistakes of the First World War, the U.S. Army convened a number of postwar boards to examine the performance of its field artillery in the war and to determine what could be done to improve its effectiveness, which led to several major changes regarding field artillery. Most of these involved technological changes such as the transition from horse-drawn to motorized transport of field pieces, the switch from the French 75-millimeter to American 105-millimeter howitzer as the standard American fieldpiece, and developing usable, but not always dependable, field radios.

However, the main stimulus to improving target acquisition and, ultimately, fire support came not as a result of any board, but from the Field Artillery School at Fort Sill, Oklahoma. The creation of the fire direction center, in conjunction with the switch from the battery to the battalion as the locus of fire power, gave the battalion the ability to mass its fires and required the use of forward observer teams or parties to direct fire missions from a position on the ground or in the air where they could see the impact site of rounds.

The ground crew consisted of one commissioned officer (the designated forward observer) and at least two enlisted artillerymen. The field radios were so heavy that they were disassembled into two parts and carried by the enlisted men. After the radio had been re-assembled one man served as a radio operator while the other helped observe.

Also, during World War II, U.S. Army field artillery pilots flew light, single-engine, unarmed planes accompanied by an artillery officer who might also serve as a ____________________________

22. For an overview of these changes see: Dastrup, King of Battle, Chapter VII.

forward observer on the ground. Their mission was to find targets and direct fire missions. Since observation from a moving airplane gives one a much wider perspective and a better view of potential targets, during the war the number of field artillery strikes directed from planes far exceeded the number on the ground. However, this did not eliminate the constant need to keep forward observer parties with the forward elements of the infantry. Bad weather and poor visibility as well as various topographical features often put aerial observers at a disadvantage for spotting enemy activity on the ground. Bad flying weather also occurred at some of the most critical times, most notably during the early phases of the German Ardennes Offensive of December 1944.

Although both aerial and forward observers on the ground contributed to the achievement of true combined arms effectiveness, those on the ground became more closely integrated with the infantrymen they were supporting. At times, they even led the riflemen they accompanied. The focus of this dissertation, then, is on the forward observer on the ground.

In the early phases of World War II only a commissioned officer was classified as the forward observer. However, as the fighting continued, so many of them became


25. The history of one air section reports that 70 percent of the Division’s observed fire missions were observed from the air. “Story of the 87th Division Air Section,” *An Historical and Pictorial Record of the 87th Infantry Division in World War II 1942 – 1945.* (Baton Rouge, LA: Army & Navy Publishing Co, 1946), reprinted by the 87th Division Association, 1988, 180.

26. Edgar Raines writes that “total flying hours [in Europe] dipped appreciably…with the onset of autumn rains and the associated fogs in October and did not increase markedly until the weather improved in March, 1945.” Raines, *Eyes of the Artillery*, 311.
casualties that it was not unusual for the enlisted men who had accompanied them to become designated as the forward observer. Although many FOs became casualties, an accurate assessment of how many artillerymen performing forward observation duties became casualties during the Second World War would be difficult to compute. There is no official Army record that consistently identifies forward observation personnel from 1941 to 1945. Sometimes the duty rotated. More often, it changed only as various members of forward observer parties became casualties.

Forward observation duty was dangerous work. It was particularly hazardous because they had to be close enough to the target to be seen by the enemy. Also, if they misjudged the adjustments to be made, they could inadvertently bring friendly fire down on top of themselves and the very men they were trying to support. Thus, it was a very hazardous job laden with tremendous responsibility.

The forward observer was the vital link previously missing in the control of artillery in support of infantry. Positioning artillerymen in the front lines to find targets and direct fire, enabled field artillery, for the first time, to provide spontaneous and responsive support to maneuvering infantry in a truly effective combined arms fashion. The process of communicating instructions for adjusting artillery fire became the process

27. James R. McGhee, a former forward observer, writes “Normally, Forward Observers were Lieutenants but, as we were running low on qualified lieutenants, it was more and more necessary to use competent, experienced senior non-coms to take up the slack.” McGhee, *Golden Acorn Memories*, 57.

of transmitting knowledge from front to the rear areas throughout the war.

Jonathan House calls attention to what he calls the three Cs of combined arms effectiveness; command, control, and communications. To some degree, each is interdependent upon the reliability of the other, and so each affect the others’ effectiveness. During World War I when the Army tried unsuccessfully to achieve combined arms effectiveness, the coordinating of artillery support with infantry was only one facet of the problems of command, control, and communications that plagued commanders. High levels of command controlled artillery planning and deployment. Inadequate systems for communicating with the front lines meant that field commanders were frequently unable to remain abreast of developing situations. Such a centralized system of command in tandem with weak systems of communications resulted in ineffective control of artillery fire that was often wasted. All the advances in weaponry for “artillery and infantry could not accomplish much without changes in command, control, and communications.” This study will investigate how forward observers accompanying front line infantrymen both affected and were affected by the three Cs of command, control, and communications during World War II.

After a brief overview of the history of artillery, and what was implicit in the conversion to indirect artillery fire, this work will use the experience of one U.S. infantry division from the Pacific and one from the European Theater of War during World War II to describe the practice of combined arms doctrine at the tactical level through the use of


30. Ibid., 182.
forward observer teams accompanying maneuvering infantry. By studying a division in each of these two theaters, one can make a comparison of American combined arms tactics against the Japanese and then against the German Army. Throughout this study, unless otherwise noted, the terms forward observer and forward observers will mean any member of a forward observation party regardless of rank. Part one offers a historical background to field artillery and a description of the transition from direct to indirect fire. Without an understanding of this, it would be difficult for readers to comprehend what role the forward observer played and what he contributed to successful combined arms tactics. Parts two and three will demonstrate that the artillerymen who performed this dangerous job—commissioned officers and enlisted men alike—not only served as technicians directing artillery fire, but became wholly integrated with the infantrymen as part of the front line combat team.

Chapter one will begin with a quick overview of the history of artillery, and U.S. Army field artillery, and a description of combined arms doctrine and tactics as practiced in the United States in the late nineteenth century. The many major improvements in small arms fire, coming almost simultaneously with the new increase in the range of field guns, had a number of implications for the use of indirect fire. As Vardell Nesmith, Jr. noted, at times the technology of field artillery has often exceeded its efficient application.

During the First World War, all the major combatants were forced to use indirect

artillery fire or suffer the loss of their firing batteries. No longer could they position their field guns where they could be seen by the enemy. The howitzers and big guns of that day were extremely accurate. Shells could be fired to land on targets with extreme precision, if the exact location of the target could be calculated in relation to the guns. Yet, unless the guns could be brought to bear on targets as they appeared and when infantry had the most crucial need for artillery support, their extreme precision and accuracy meant little with regard to tactical effectiveness. Command, control, and communications affecting effective infantry–artillery coordination were lacking. To rectify this required someone who was always in position to observe the target, had the authority to command and control the direction of artillery fire, and had the means to communicate the results.

It was at the Field Artillery School during the 1930s where the most appreciable advances in the control of artillery fire that would serve the army so well during the next war were made. These changes enabled artillery to provide the responsive, close, and effective fire support to infantry that was lacking during the First World War.

Chapter two introduces the two divisions used for case studies in this work: the 37th “Buckeye” Division, Ohio National Guard, in the Pacific and the 87th “Golden Acorn” Division in the European Theater. One of the first units to experiment with the motorization of artillery was the 135th Field Artillery Regiment of the Ohio National Guard. Aside from this, the 37th Division makes a good subject for study in the Pacific Theater because its commanding officer, Major General Robert Beightler was a firm believer in the use of artillery to try to save infantry casualties, never hesitating to do that.
The 87th Division was an American division that arrived in Europe during the latter stages of the war, yet it saw its share of hard fighting in the five months that it was in combat. General William W. Ford commanded the 87th Division Artillery when it arrived in Europe. Ford had been instrumental in convincing the army of the value of using light, single-engine airplanes for aerial observation and for directing artillery strikes.

The third chapter compares the state of Japanese and German combined arms tactics and how these measured up to those of the United States Army. It also reviews their military doctrine, tactics, and equipment and how these look in contrast to the Americans. It compares the field artillery of both enemies to American field artillery, and makes a similar analysis of secondary factors in each theater or what might be termed leveling conditions. These include climate, terrain, and population density. Because both belligerents in a single theater of operations lived and fought in the same environment, these tend to reduce the differences in the way they fought, although both armies may not reacted entirely alike to these factors.

Chapter four follows the experience of the 37th Division artillery on the island of New Georgia. This was the division’s initial combat experience and first opportunity to practice the evolving doctrine of combined arms warfare. Climate, topography, and terrain all forced them to use new tactics not emphasized in their training. Forward observers learned immediately that on the jungle islands of the Pacific where thick foliage obscured the flash of exploding artillery shells, the fall of rounds often had to be sensed using one’s hearing rather than sight. The extremely humid climate significantly
reduced the reliability of field radios, and problems with breaks in telephone lines created the potential for problems with communications nearly as troublesome as those that occurred during World War I.

In the fifth chapter, this study demonstrates how the fight for Bougainville tested the ability of the 37th Division to combine infantry and artillery tactically in a difficult situation. It thoroughly tested the ability of the 37th Division’s forward observers to maintain control and communications. On Bougainville, a feature of note was the massing of fires and wholesale slaughter that resulted as infantry and artillery achieved their fullest combined fighting ability and effectiveness, on the defensive, and in place, not advancing. The virtual massacre that took place demonstrated the asymmetrical nature of the war in the Pacific at the tactical level.

Chapter six reveals the dangers inherent in modern warfare when weapons of mass destruction are used in combat in proximity to a large civilian population. Urban fighting was new to the 37th Division, and something it had not trained to undertake. The liberation of Manila required the Division to use direct as well as indirect artillery fire. The Japanese had more artillery available on Luzon than they had on New Georgia or Bougainville, but exercised poor command, ineffective control, and lacked reliable communications to employ it. By 1945, air-ground coordination had improved significantly and on Luzon more planes were available, giving an added dimension to U.S. combined arms effectiveness not nearly as measurable during the campaigns for New Georgia and Bougainville.

The seventh chapter looks at the first combat experience of the 87th Division
against the German Army. What becomes immediately apparent is how much more parity there was between the two armies at the tactical level than existed between combatants in the Pacific. The Golden Acorn Division was fighting an enemy with much more experience in the execution of combined arms warfare than they had. It remains to be seen if the Germans deliberately exploited a weakness in American tactical doctrine by directing artillery fire precisely on the boundary of the 3rd and 7th U.S. Armies on December 16 at Medelsheim. All three Cs of American combined arms effectiveness were tested in the 87th Division’s first major engagement. For a “green” division, the Saar Valley experience was a difficult struggle against an intelligent and sophisticated enemy.

Chapter eight covers artillery-infantry combined arms effectiveness in the Ardennes Offensive, known commonly as the Battle of the Bulge. Here American artillery played a key role, first in preventing a German breakthrough to the coast, and then in reducing the Bulge. Bad flying weather and heavily wooded terrain meant that the forward observers on the ground made a major contribution at crucial times to successful combined arms tactics during this campaign. Also, ground observers became so thoroughly integrated with the infantrymen they were protecting, they frequently took command of small unit actions when junior officers became casualties.

Chapter nine follows the 87th Division as it smashed through the West Wall, crossed the Rhine, and raced across central Germany to find itself near the Czechoslovakian border when the war in Europe ended. Penetrating the heart of the Reich forced the 87th Division to utilize its combined arms effectiveness to the fullest. Artillerymen remained integrated with infantry on the front lines as the distinction
between combat arms became difficult to discern at times. Also blurred was the
distinction between officers and enlisted men as NCOs stepped in to do the job when
their officers became casualties, as the final push to victory sometimes required using
artillerymen of all ranks to direct and adjust artillery fire.

Chapter ten offers the conclusions of this study. Although the artillery-infantry
team was not the only combat arms duo to achieve combined arms effectiveness during
World War II, it was the first to do it with real consistency. When General George S.
Patton intimated that artillery won the war, what he was really alluding to was its success
as a force multiplier in the practice of combined arms tactics. The evolution of doctrine
that placed forward observers with maneuvering infantry to command, control, and
communicate the coordination of field artillery with infantry was the keystone in the
development of successful combined arms warfare.

The final chapter serves as an Epilogue and outlines the changes which have
taken place since World War II regarding the changing nature of warfare and what this
may mean for combined arms doctrine and tactics and field artillery forward observation.
Limited wars and wars of national liberation that use unorthodox tactics have served to
make more recent armies smaller and more mobile. Combined arms warfare loses its
potency in situations where the enemy chooses not to engage in sustained combat. As a
result, the major armies of the world have tended to integrate all available combat arms
more extensively at lower levels than ever before. This means that field artillery is
integrated more fully not just with other combat arms within the Army but with other
branches of service as well.
Global Positioning Systems, rangefinders and other tools of today’s technology have eliminated much of the work the forward observer had to do during World War II either by mental calculation or by using his senses. At the same time, modern technology and communications have taken away much of the forward observer’s control leaving his job somewhat akin to someone sending e-mail requests for fire missions. Today, a private in the U.S. Army may undergo training to be a forward observer. The training he needs to be able to use his equipment diverts him from tactical training. Thus, today’s emphasis on training is on the technical aspects of the job and not on leadership skills. Although artillery fire is more accurate than ever before, the conduct of fires has lost some of its human element and with it some of its ability to react responsively.
PART I

Preparation for Combined Arms Warfare
CHAPTER ONE

THE EVOLUTION OF FORWARD OBSERVATION

For the first 900 years of the history of artillery, direct fire was the main way of using field guns in battle. It meant that those aiming the weapon could observe their intended target, in contrast to indirect fire where the intended mark could not be seen. Certainly over this period of time, there were numerous instances when armies fired projectiles over the tops of trees, hills, and walls at an enemy unseen. Unless someone could actually see where the shot landed and report the results, or the enemy remained confined within some space such as within a walled fortress, the effectiveness of indirect fire was limited.

By the late-eighteenth century, combined arms in combat involved infantry, artillery, and cavalry. Using direct fire, artillery blasted holes in the block formations of 1 infantry while cavalry waited, ready to rush into the gaps and rout the enemy. Napoleon typically placed his artillery a few hundred meters behind the infantry it was supporting. From there, the gunners could see their targets and massing his artillery fire had a psychological effect on both his army and the enemy’s. The next stage of development in the combined use of infantry and artillery came by using the latter to bombard the

2. House, Combined Arms Warfare in the Twentieth Century, 27. enemy’s defensive positions prior to an attack. During the American Civil War, massed
artillery fire could be used effectively but more typically on the defensive because of the shorter range of the guns.

By the middle of the nineteenth century, field guns had acquired longer range enabling them to routinely hurl shells out of sight of the gunners. Yet, increased range did not immediately change the situation much, and for several different reasons direct fire remained in general use in open combat. One reason was that infantrymen felt unprotected if they could not see their supporting artillery. Tradition demanded that artillery remain in close proximity to the riflemen. Another had to do with hitting the target. Firing at distant unseen targets was ineffective and could result in friendly casualties unless one knew where the shots were landing in relation to the target and could make adjustments.

Artillerymen the world over clung to the direct fire mode of artillery but during the latter half of the nineteenth century many improvements in weapons necessitated changes in tactics. The advent of rifling and long range accuracy in small arms, followed by repeating rifles and, later, automatic weapons forced armies to stop placing their guns in sight of the enemy and taking aim at their targets. In spite of this, the artillery observer’s stationary place on the battlefield, too far from the enemy to


4. Military historians recognize that military traditions are sometimes hard to change. British historian J. B. A. Bailey writes that “the withdrawal of arms to cover was widely resented by other arms, which still preferred guns to deploy amongst them,” adding that “it is ironical that the tool which would
observe targets, meant that field artillery lacked the ability to provide effective, responsive fires except in the most static situations. The forward observer also lacked a consistently reliable system of communicating with the batteries. So field guns capable of hurling shells a number of miles with very high accuracy existed for nearly a century before armies developed a system to make effective use of their technical capabilities. In the meantime, during the long switchover to indirect fire, artillerymen had to relearn how to provide effective fire to destroy the enemy and protect maneuvering infantry.

The field guns of the nineteenth century included the cannon, the howitzer, and the mortar. The cannon has a flat trajectory, while that of a howitzer follows an arc. The trajectory of a mortar is a very high angle parabola. The mortar and the howitzer enable an army to rain down artillery shells on an enemy positioned behind concealment. The cannon’s primarily horizontal approach to a target generally precludes this option. Because most artillery usage then involved aiming the guns at the targets, the armies of the world relied upon the cannon. Mortars and howitzers utilized indirect fire but prior to the twentieth century their application was generally limited to particular situations.

By the time of the Crimean War of 1854-1856, the effective range of cannons had reached a distance of over a mile, making it at times impossible for the cannoneers to see their targets unless they were sitting on top of a high hill or their enemy appeared before them across a long, flat, open stretch of terrain. Five years after the Crimean War ended, the range of American artillery had caught up to that of European with field guns capable revolutionize the provision of close support would be largely ignored until armies were shocked into using it by the First World War.” Bailey, *Field Artillery and Firepower*, (Oxford: The Military Press, 1989), 119.
of hurling shells well out of sight of the batteries. Increased range, however, created a new series of problems for using field artillery effectively. Indirect fire involves parabolic bombardment over a long distance. There is no advantage to longer range if an artilleryman does not know if he has hit his intended target. If is not possible to determine where shots have landed, indirect fire raises the possibility of hitting friendly troops positioned between the guns and the enemy. The new, increased range of artillery that came about in the mid-nineteenth century made it necessary to develop a reliable system of directing fire by someone who could see and take note of where the shots were landing and communicate the results to the batteries, and then adjust subsequent fire. It required positioning an artilleryman forward of the batteries to observe the fall of the shells. Over time, the title “forward observer” evolved from that function.

During the Civil War, another technological improvement in weaponry gave additional impetus to the eventual conversion to indirect artillery fire: the rifled musket. Using a smoothbore musket it was difficult for enemy soldiers to hit the artillerymen consistently at any range beyond one hundred yards, but not so with rifled small arms. This innovation forced armies to position its batteries beyond their extended range or risk losing their gun crews to enemy rifle fire during battles.

5. John P. Langellier writes that at the time of the Civil War, American smoothbore field guns could reach around 1,500 yards and rifled guns about 2,500 yards. There are 1,760 yards in one mile. He also notes that the 12-pound smoothbore “Napoleon” howitzer was “the backbone of the Union field artillery.” Not as important, but nonetheless, technologically significant were the 3-inch rifled ordnance guns. Langellier, Redlegs: The U.S. Artillery from the Civil War to the Spanish-American War, 1861–1898 (Mechanicsburg, PA: Stackpole Books, 1998), 6, 1.

6. Rifling refers to spiral grooves cut inside of a gun barrel to impart spin to the bullet giving it greater accuracy over a longer distance. The inside of the barrel of the old smooth-bore musket had no
The increased range and accuracy of the rifled musket also gave rise to trench warfare, a new idea during the Civil War. Generals from both sides came to appreciate the difficulty of making frontal assaults against entrenched troops and encouraged their own armies to dig trenches. As the utilization of trenches became more widespread, the overall effectiveness of direct, flat-trajectory artillery fire decreased. The cannoneers, unable to see the enemy dug in, likewise were unable to reach them with their low-angle, flat-trajectory cannon fire. So, the appearance of trenches for protection and concealment also gave impetus to the eventual switch to indirect artillery fire by the armies of the world.

The history of forward observers in the United States also began during the Civil War. Probably the first recorded instance of using a forward observer to direct artillery fire occurred in May 1862. Major Albert J. Myers used signal flags from a tugboat to direct Union fire on a coastal fort held by the Confederates at Sewell’s Point near Norfolk, Virginia. Signal Corps balloons were used in similar fashion during the war.

During the last thirty-five years of the nineteenth century, the U. S. Army concentrated its efforts on maintaining its coast artillery, placing less emphasis on field rifling and when fired, the projectile fairly tumbled out of the barrel, causing it to wobble erratically. Peter Paret observes that with a rifled musket a good shot could hit a target at a distance of 250 yards, consistently. Paret, ed., with the collaboration of Gordon A. Craig and Felix Gilbert, Makers of Modern Strategy from Machiavelli to the Nuclear Age. (Princeton Univ. Press, Princeton, NJ, 1986), 419.

7. Archer Jones observes that “the most novel tactic to come out of the Civil War was the use of field fortifications thus strengthening the power of defense. McGrady Whiney and Perry D. Jamieson note that “William T. Sherman seems to have learned (perhaps quicker than others) the high cost of taking the tactical offensive against entrenched positions, perhaps first during the Atlanta campaign.” Archer Jones, Civil War Command and Strategy: The Process of Victory and Defeat (NY: The Free Press, 1992), 38; Grady McWhiney and Perry D. Jamieson, Attack and Die: Civil War Military Tactics and the Southern Heritage (Univ. of Alabama Press, 1982), 106.

artillery. The latter attained greater mobility enabling it to achieve closer synchronization with infantry and cavalry. During this period, in an effort to improve artillery training, the army re-established an artillery school at Fort Monroe, Virginia, in 1868. Other important advances included breech loading guns and modern carriages that absorbed recoil so that guns did not have to be repositioned after every shot.

Within two decades after the American Civil War, some European artillerists were beginning to see the advantages of converting to indirect fire and using a forward observer. Among the first was Karl G. Guk, a Russian officer whose *The Covered Fire of Field Artillery* described a modern system of indirect fire that made use of a compass, an aiming point, and a forward observer who would estimate the range to the target and make subsequent adjustment to range and deflection. After registering the guns on the aiming point and firing one shot, the observer would adjust subsequent rounds based on where the first had landed in relation to the target. By the 1890s, the Germans, Russians, and French had adopted the use of the aiming point method because it offered the most accurate way of using indirect fire.

Not only did artillerymen have to learn how to hit unseen targets, they then found

9. Janice E. McKenney, *The Organizational History of Field Artillery, 1775 – 2004.* (Washington, DC: The Center of Military History, 2007), 75-77; Boyd Dastrup defines the breech as “the rear part of a cannon behind the bore.” Thus, any breechloading weapon is one that is loaded near the end of the barrel as opposed to a muzzleloader where the bullet or shell is enters the barrel or bore at the front where it exits the gun. Dastrup, *King of Battle,* 317.

10. J. B. A. Bailey, *Field Artillery and Firepower* (Oxford: The Military Press, 1989), 45. Range is the distance from the gun to the target and deflection the horizontal angle between the current line of fire and the target. The fundamental theorem of Trigonometry says that the square of the hypotenuse of a right triangle is equal to the sum of the sides squared. Trigonometry then is a fundamental component for the computation of fire direction.

it necessary to conceal their batteries. In 1896, Major General Moriz Edler von Reichold, a German artillery officer, described how increased ranges, speed, accuracy, and precision of modern fire, along with the introduction of smokeless powder, made it imperative for artillery commanders to hide their batteries. A concealed battery could quickly put a plainly visible battery out of action without the risk of incurring counter-battery fire.

Despite various proposals made for converting to indirect fire, the U.S. Army, like the other major armies of the world, was slow to accept them. In 1896, Lieutenant A. B. Dyer proposed using stakes driven into the ground as a method of aligning guns behind cover. However, the official Drill Regulations for Light Artillery published that year failed to mention Dyer’s proposal, instead recommending only that the guns be concealed behind cover over which they could still be aimed directly.

With the guns now positioned far behind infantry’s lines and field pieces capable of hurling shells 6,000 yards commonplace, some American artillerymen began to envision the need for using someone far ahead of the batteries to direct fire. Even the War Department admitted in 1896 that positioning an artilleryman forward of the guns might facilitate directing fire, since that person could see the burst of shells while simultaneously maintaining sight of the infantry. Even though the term “forward observer” had been applied to artillerymen earlier, their previous function had involved


detecting enemy movement. Yet, their purpose now remained basically unchanged because the War Department had not abandoned direct fire. If the gunners could still take aim at their targets, there was no need for an observer to the fore to relay the results and adjust subsequent shots.

When the Spanish-American War began two years later, U.S. Army field artillery continued to use a system of direct fire to its disadvantage. During the Santiago, Cuba, campaign, poorly directed American artillery firing at a stone fort a little over a mile away had little effect until late in the attack. The gunners of Captain Charles D. Parkhurst’s battery had difficulty hitting their targets because they could neither see the enemy nor discern where their shells were landing. Once, just as Parkhurst’s battery prepared to fire shot to hit the enemy on the crest of a hill, he suddenly realized that American troops already occupied that spot. In another instance, American artillery fire proved incapable of breaking up an enemy counterattack because the American guns rested on the reverse side of a slope. The gunners could neither see the enemy nor fire low enough to hit them as they approached because all their batteries consisted of high velocity, flat trajectory field pieces. The episode demonstrated not only the suitability of howitzers for modern warfare, but also the need for an observer to adjust fire.

As the new century began, the major armies of the world remained committed to direct fire because of its expediency and because of tradition. It was easier to use the old

15. Dastrup, King of Battle, 150.

method than the new one. Not until the early twentieth century did British artillery
convert to indirect fire. Some British Army officers began to see how this might
require closer coordination between artillery and infantry. In 1902, Colonel B. F. R.
Henderson of the British Army wrote an article extolling the virtues of infantry, artillery
and cavalry working together in tactical combination. Yet, Henderson’s idea of close
artillery support was limited to providing a strong bombardment before an attack.

Although American artillerymen also resisted using indirect fire, in 1904, Major
Ernest Hinds wrote an article urging its use. Hinds based his opinion on what he had read
in Revue d’Artillerie, the French counterpart to the Journal. The French Army had
already developed a system of indirect fire and because contemporary American guns
and sights were similar to those of the French, the U.S. Army should make the switch.

The British Boer War and Russo-Japanese War served notice to the armies of the
world that they could no longer position their artillery batteries in full view of the enemy.

17. Shelford Bidwell writes that, “the general adoption of indirect fire from 1914-1915 was at first regarded by many officers as a retrograde step for compared with direct fire, it was slow, complicated, less accurate (because it was fired at longer ranges) and if the Forward Observation Officer became a casualty the guns were silenced.” Bidwell, “Indirect Fire as a Battle Winner/Loser” in Correlli Barnett, ed., Old Battles and New Defences: Can We Learn from Military History? (London: Brassey’s Defence Publishers, 1986), 116.

18. Dastrup, King of Battle, 129.

19. Henderson noted that without the cooperation of infantry, “artillery is not likely to produce the slightest result. It is an important principle, therefore of combined tactics that infantry should co-operate with the artillery in the initial bombardment.” Colonel G. F. R. Henderson, “Tactics of the Three Arms Combined,” in Selected Readings in Military History: Evolution of Combined Arms Warfare (Fort Leavenworth, KS: Combat Studies Institute, 1983), 37.


21. In reference to both Boer wars British artillery authority Ian V. Hogg writes: “In both affairs, one army had gone to war with its artillery drilled in the old system of wheel-to-wheel fighting in the open,
The Japanese use of artillery particularly impressed an American Army officer who observed that war. Major Joseph E. Kuhn noted the emphasis the Japanese placed upon fire control. One officer controlling all the siege artillery had telephone lines to observers who reported the results of each shot. They also used large-scale maps marked in one-centimeter grids, enabling them to fire by reference to specific grid coordinates. Also, the Japanese initially made an effort to conceal their batteries and to fire indirectly from behind cover, making it difficult for the Russians to detect their location.

Still resistant to change, American artillery thinkers began taking steps to facilitate the transition to indirect fire. In May 1905, the Board of Preparation of Drill Regulations for Field Artillery was working to develop a fire control system. Dastrup writes that Japanese field artillery in the Russo-Japanese War affected the thinking of American artillerymen, including Chief of Field Artillery Brigadier General John P. Story, who attributed Japanese success in the war to their use of indirect artillery fire.

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shooting over open sights at a fully visible enemy. The other had concealed their guns . . . and used the advantages of modern high-velocity rifles with smokeless powder to pick off the exposed gunners. It was from these experiences that that the first moves toward indirect fire—shooting from concealed positions began.” Hogg, A History of Artillery, 100; Perhaps not as well known as Hogg, Curt Johnson writes that “the real problem for the British was the Boer mounted riflemen . . . these men were expert shots and adept at picking off gunners from a distance. In their response however, the British artillerymen . . . learned the technique of indirect fire and also to utilize every scrap of cover and dip of ground in the sparse veldt. The Boer War was in fact the first war in which indirect fire and firing from concealed positions were extensively used. Johnson, Artillery, 38-39. Bailey observed that the British tried indirect fire during the Boer War and “concluded it was impractical in mobile warfare.” Bailey, “The First World War and the Birth of Modern Warfare,” in Knox and Murray, eds. The Dynamics of Military Revolution 1300-2050, 136.


23. Johnson, Artillery, 43.

24. Letter, Captain T. C. Dickson to Commanding Officer, Frankford Arsenal, 2 May 1905, Records of the Chief of Arms, Field Artillery Board, 1904-1939, Textual Records Division, Record Group 177, National Archive and Records Administration, Suitland, Maryland.
Without totally accepting indirect fire, the War Department subsequently adopted the aiming point method of indirect fire as standard in 1905. Rather than sighting the guns directly on a visible target, the guns would be aimed in the general direction of an unseen one, using stakes driven into the ground, and firing would be done indirectly.

The Army’s continuing ambivalence regarding indirect fire is evident in the thinking of artillery Captain O. L. Spaulding who wrote that same year indicating that many artillerymen were not ready to completely abandon direct fire because indirect fire involved so much more preparation and positioning of the guns. Written as a lecture for the Infantry and Cavalry School, he described how easily a crew could turn a field gun by traversing its carriage by means of gear operated by the gunner, emphasizing that the new system of laying a gun to fire indirectly had eliminated much of the complexity involved under the old one. Then, fifteen pages later, he affirmed that because a battery had the capability of firing either directly or indirectly, it should employ the former upon a plainly visible target and the latter upon those not seen, adding that indirect fire involved many details which appeared at first sight, to be “somewhat troublesome.” Yet, in 1907, the War Department came out with a virtual endorsement of indirect artillery fire


26. Russell Gordon Carter, a veteran artilleryman of World War I, explains, when a battery goes into position, it fires one shot at a landmark whose distance from the gun is known. Aiming stakes are driven into the ground in front of the guns. An observer than takes up a position at a known distance from the gun and the fall of that first shot is “registered” in relation to the aiming point. By trigonometric calculations, the horizontal distance to a new target from the guns and the angle from the guns can be calculated. From the initial round, the observer “senses” from the burst what adjustments in range and deflection are necessary for subsequent shots to hit the target. Carter, *The 101st Field Artillery AEF, 1917-1919*, 57-58.

in “Drill Regulation” when it recommended hiding field guns.

In January of that year, President Theodore Roosevelt signed a bill separating field from coastal artillery. In May, the War Department reorganized the field artillery into six regiments with two battalions per regiment and incorporated field artillery into the division. U.S. Army doctrine regarding field artillery usage before the Russo-Japanese War was basically that of direct fire. The reorganization of field artillery and conversion to indirect fire opened an era in which infantry became increasingly reliant on artillery to pave the way for him. This in turn, required greater coordination between the two combat arms.

In an effort to keep abreast of the latest tactical doctrine and technology, President Theodore Roosevelt sent Captain Dan D. Moore abroad in 1908 to observe European field artillery training schools. Upon his return to the United States, Moore’s report on the German Artillery School at Juterbog, Germany, influenced the War Department so


30. Dastrup, *King of Battle*, 158-59; The incorporation of field artillery into divisions was only a provisional measure. McKenney notes that even by 1912 the U.S. Army was still dealing with the need to create permanent tactical divisional units. McKenney, *The Organizational History of Field Artillery*, 103.

31. Nesmith, “The Quiet Paradigm Change,” 332, 342; One early thought regarding new tactics that Dastrup found was that “field artillery on the offensive should temporarily silence the enemy’s field pieces by forcing gun crews to take cover through short, violent bombardments. This would allow the infantry to advance without facing artillery fire. If the offensive artillery could not do this, it had to keep enemy gun crews so busy with counter-battery fire that they would not have time to shell the attacking infantry. Field pieces then, had to fight enemy artillery and support the infantry simultaneously.” Dastrup, *King of Battle*, 155.
strongly that in 1910 it ordered him to Fort Sill, Oklahoma to organize the School of Fire for Field Artillery. In September 1911, under the name the School of Fire for Field Artillery, it began teaching its first class of artillerymen.

The establishment of the Field Artillery School at Fort Sill represented a major step in advancing the professionalism of American field artillery. Also contributing much to its professional development was the publication of the *Field Artillery Journal* which created a forum for discussion. The same month that the new school opened, the *Journal* first appeared as a bi-monthly publication.

That same year, Major William Snow, who would later become the first chief of Field Artillery translated an article for *Field Artillery Journal* describing the system in which the forward observers communicated the results of the shot to the battery by using a series of arm motions and hand signals. One might note that this system could only work if the artillerymen adjusting fire and the gun crews remained in sight of each other. For example, the observers indicated the shot was over if both extended one arm toward the target, or if one extended both arms and the other pointed one arm at the target.

Less than a year after he published the article, each field battery had three field telephones and each regiment and battalion two, which greatly accelerated the transmission of fire commands from the forward observer. However, the one great


33. Ibid.; McKenney observes that prior to 1911 there was no centralized school for the instruction of modern tactical methods other than Fort Monroe, Virginia which became the Coast Artillery School in 1907. McKenney, *The Organizational History of Field Artillery*, 102.

weakness of telephones that World War I demonstrated was that shellfire would cut the lines, disrupting communications repeatedly, and impairing the forward observer’s ability to adjust fire at all time. The armies of the world would soon learn how easily they could train their artillerymen to use indirect fire, but would find it difficult to employ it effectively in fluid situations of combat without an observer in place to direct fire.

As mentioned before, the original function of forward observers was to observe and report enemy troop movements. By 1913, the U.S. Army’s concept of the forward observer’s function remained much the same as it had been twenty years before. Rather than serving to observe the fall of fire, his job was to update artillery commanders of the progress of advancing infantry and its needs. Now, they were to communicate by using field telephones or hand signals.

Internal combustion engines made mechanical power available to move field guns, but the armies of the world remained committed to using horses to move artillery. Shells landed miles beyond the guns firing them, but no consistently effective method of directing observed fire existed. Yet, during the First World War, the supremacy of artillery as a destructive force became undisputed. William Odom notes that “World War I witnessed a quantum increase in the destructive power and use of artillery fire.”


After the war, Major General William Snow remarked that “this was the first war in history where artillery inflicted more casualties than the small arm or the musket.”

The U.S. Army Medical Corps concluded that artillery caused over eighty-seven percent of all AEF battle casualties. It could simply outrange deadly automatic weapons and modern small arms fire, and with more widespread, devastating results.

At the outbreak of World War I, most of the belligerents were using modern weapons such as machine guns and long-range artillery to fight with outdated tactics. House observes that above all, “none of the combat arms had trained for really close cooperation with the others.” The problems of command, control, and communications as they applied to artillery meant that that the field army headquarters or corps planned most operations including those for artillery. This meant that even after forward observer procedures had improved, commanders, not junior grade officers, maintained command and control of artillery fire.

After the war began in Europe, the U.S. Army stuck to its traditional doctrine in the little training that took place. For infantry, this included continuing emphasis on rifle marksmanship practice. To conserve ammunition, field artillery conducted fewer firing exercises, and combined training of infantry and artillery rarely occurred. Field artillery


never practiced under the conditions it would eventually fight under after the United States entered the war. American thinking held that mass barrages based on using map coordinates rather than observation to fire on targets was a waste of ammunition. Upon their arrival in Europe, they would soon learn that wasting artillery shells was a matter of little concern to their Western allies.

Just prior to April 1917, the American field artillery consisted of nine regiments within the Regular Army. This included 408 officers and 8,252 enlisted men. After the nation declared war, it added twenty-one more regiments, most of these coming from the National Guard.

The effort to achieve combined arms effectiveness between infantry and artillery had begun, but would not improve much by November 1918. A treatise on the methods of modern warfare written in 1917 noted that once the infantry has left its trenches the connection between infantry and artillery is “impaired,” particularly if the telephones lines became severed, resulting in long delays in providing information to the artillery commander. This, in turn, impaired the commander’s ability to provide “effective fire on suddenly discovered objectives.”

In the early stages of offensive actions, artillery provided infantry with well coordinated support. As House notes; “Massed fires were normally the result of carefully planned artillery concentrations, in which known targets were pre-designated


well ahead of time, their positions plotted on maps or overlays.” One American officer explained the problem in essence when he asserted that his supporting artillery was sufficient in situations in which details could be foreseen and planned in advance, but otherwise “it fell down.”

To improve infantry-artillery coordination during World War I, the American Expeditionary Forces made use of the French Liaison Officer (LNO) system that called for each artillery regiment to send an officer to the infantry commander and each battery a sergeant to the infantry battalion commander. In addition, other artillerymen called “forward observers” stationed themselves in the infantry trenches so that, in theory at least, artillery remained informed of the needs of the infantry. The LNO ordinarily stayed near the regimental commander of the infantry unless the LNO needed to check something with regard to his detachment’s duties.

There were several problems with the liaison system, all involving command, control, and communications. First, front-line infantry officers rarely notified anyone of their intended targets since they were too occupied with the details of the battle. Also, they were generally incapable of reporting their own positions. Second, the system lacked the ability to provide responsive fire. The batteries either received no information


from the front lines or got it in an untimely manner. Third, artillery-infantry communications experienced difficulties because of an inadequate supply of telephone wire, or because the infantry had moved to an unknown location.

Infantry commanders, for whatever reason, generally failed to provide the liaison officer with the information necessary for him to effectively direct fire. The AEF further weakened overall command and control by designating the infantry commander in charge with the title and responsibility of “Fire Director.” This was an expedient to allow him to direct his supporting artillery fire without the added step of first discussing it with his liaison officer. As Shugart notes, it reduced “the artillery LNO to the status of a telephone operator.”

Many battery commanders were reluctant to assign their best young lieutenants liaison duty when they had more utility if they remained with the battery. Instead, they habitually assigned it to their least experienced officers and those considered to be most expendable. This did little to instill infantry battalion commanders with confidence in their assigned liaison officers.

Yet, many liaison officers performed their duties capably. In fact, the primary problem with the liaison system may not have been the men but simply the


communications system. Lieutenant Colonel Robert M. Danford, who later became Chief of Field Artillery, wrote: “Battle experience has demonstrated that wire line cannot be maintained in forward areas without interruptions thus breaking communications with liaison and other forward observers at critical times.”

The chain of command further weakened the effectiveness of the LNO’s communications. Rather than linking the firing battery directly to a front-line observation unit, all requests for fire had to first pass through artillery regimental headquarters. Perhaps the intention was to avoid friendly-fire casualties. Whatever the reason, in most cases, it worked to decrease the timeliness necessary for effective responsive supporting fire.

Although American Expeditionary Forces used observed fire to a limited extent and although artillerymen known as forward observers occupied forward positions, those who controlled artillery fire during World War I generally did so from observation posts. One infantry officer, Lieutenant George Hays, defined “observation fire” as “fire executed on targets picked up by artillery observation parties.” He noted that “during the World War, observation fire was practically negligible.” Thus, the AEF practiced

53. According to artillery officer, Major Lloyd E. Jones, “There was never a lack of good liaison officers, but the difficulty was in keeping in communication with him.” Jones, “Infantry-Artillery Liaison in Combat,” *Field Artillery Journal* (Sep.-Oct., 1930): 504.

54. R. M. Danford to Chief of Artillery, 27 October 1933, Office of the Chief of Artillery. National Archives and Records Administration, Modern Military Records, Record Group 177, Suitland, MD.


very weak control over its artillery fire.

The routine use of unobserved fire had other bad consequences, other than simply failing to destroy the enemy. The incidence of friendly fire casualties rose. This was not simply due to unobserved fire alone, but rather poor surveys, bad fire control, and the heavy use of ammunition. Yet artillery amicicide happened so frequently and routinely during the First World War that staff planners typically included some modest allowance for friendly fire casualties in their estimates of the human cost of an operation. One German field artillery regiment, the 49th, became known by German infantrymen as the 48½ because of its reputation for firing short.

The liaison officer's job was to keep the infantry and artillery in coordination with each other, but in both World Wars, he sometimes functioned as a forward observer. During the First World War, the battery commander had the task of conducting artillery fire, designating targets, and calling for fire missions. During the Second World War, the LNO continued to coordinate the actions of infantry and artillery, but with the battery commander no longer in charge of conducting fire, either the liaison officer or the forward observer could then conduct artillery fire.

The system in use during World War I did not lend itself to good observation,

57. The purpose of an artillery survey is to facilitate accurate massing of fires, either observed or unobserved, by all battalions of the division artillery. The minimum time allotted for a survey in planning an operation is 6 hours of daylight. War Department Field Manual FM 6-100: Tactics and Techniques of Division Artillery and Higher Artillery Echelons (Washington, DC: 1944), 31-33; Basically, the survey consists of plotting all battery locations on a map in reference to a target area then determining how closely actual distances from guns to targets compare to the same distance when computed using maps. The field artillery battalion then uses the survey to prepare firing charts to be used by fire direction personnel as fire missions are conducted.

resulting in poor control. The smoke and haze of battle obscured both the battery commander’s view of the forward observers’ signals and, in turn, the forward observers’ ability to see the target. This placed a much greater reliance on using field telephones which were quite reliable by that time, but subject to losing connection if hit by a shell or bullet. German gunners realized this and tried, if possible, to keep the allied positions under an ongoing barrage of explosives and gas so that they could disrupt to the greatest extent the all-important communications between the infantry and its supporting artillery. If the telephone lines were cut and the break could not be found, as often happened, communications would then depend on runners. During a battle on July 18, 1918, the infantry and artillery units of the 26th Infantry (“Yankee”) Division had communication problems. As a result, they made heavy use of runners, and these couriers then “died in droves.”

With observation hampered by poor visibility, and communications at times lacking, battery commanders took all precautions to avoid hitting friendly troops with their fire. With this thought foremost in their minds, they tended to fire longer if a single round fell short. Then all subsequent rounds would fall beyond intended targets. Those guilty of hitting their own troops with friendly fire quickly lost their commands. During the 2nd Infantry Division’s battle at Beaurepaire Farm in July 1918, commanders unable to discern the location of assault troops on the battlefield, were unwilling to call for


60. Grotelueschen, The AEF Way of War, 165.

artillery fire for fear of hitting their own men.

Nothing destroyed a nation’s infantrymen’s morale quicker than if they thought they were being shelled by their own guns. As Shrader indicated, German infantrymen referred to their 49th Artillery Regiment with a habit of firing short as the 48½. In France, an American brigadier general riding in his car just happened to be passing by a field as some American artillery shells dropped short. The next day the general relieved the officer responsible of his command and reassigned him to the 101st Infantry as a liaison officer.

Because of the inability of forward observers to continuously see targets and maintain communications, while simultaneously keeping track of the location of friendly troops, the French developed a system of unobserved fire called map firing in 1916. The method depended upon marking the targets on the map; field artillerymen used lengthy mathematical computations to aim the guns at the targets before opening fire. However, the introduction of the Fire Direction Center and the use of forward observer parties accompanying maneuvering infantry, would make map firing much less important during World War II.

To integrate the data gathered from all its sources, the French created artillery maps of enemy positions developed from all sources of observation and intelligence. The


64. Dastrup, *King of Battle*, 162.
SRA, an army and corps group organization, then reviewed the information from all sources including artillery observation posts, aerial observation, photographs, adjacent corps, and staff intelligence, as well as special observation posts for the group itself. The SRA issued bulletins to battery commanders and even made telephone calls depending upon the urgency of the report. When a battery received incoming fire, it was required to file a shell report citing the number and caliber of the projectiles.

After the formation of the AEF, the United States adopted the French system but called it the Artillery Information Service (AIS). The AIS employed two special systems the French had developed that used an intersection of signals originating from separate places to locate targets. Flash ranging used optical instruments set up at four different surveyed locations to send simultaneous readings of the flash of an enemy gun to a controlling station. Sound ranging worked very similarly except it used a series of microphones wired to a centralized automatic recording instrument. AEF engineers performed this duty and became so proficient at it that they could pinpoint the exact location of an enemy battery to within fifty meters.

Prewar U.S. Army doctrine stressed the need to use observed fire, but the static nature of trench warfare made it expedient to rely on unobserved fire, at least, until the front lines had moved ahead. Until the latter stages of the war, they rarely did. After completing a survey and registering the guns, each side knew where the other lay in relation to friendly troops. So unless an attack resulted in a breakthrough or some change


66. Ibid., 56-57.
in position, there was little need to use observed fire.

Because both sides generally knew the enemy’s location in advance of an attack, the British introduced another form of unobserved fire, the “rolling barrage” or what the Germans referred to picturesquely as “waltzing fire” in 1916. Under this system, the artillery laid a curtain of shells that progressed toward the enemy at a predetermined rate. This required the infantry to remain a constant distance of a few hundred yards behind a wall of fire, while moving forward and praying that none of the shells would fall short. Sometimes the attackers’ advance would lag behind the barrage because it had to avoid large shell craters and other obstacles in its path churned up by exploding shells. If the rolling barrage moved too far ahead of the assault force, it gave the enemy defenders time to recover after the shelling passed, and the advantage of using the artillery barrage simultaneously with the infantry attack tactic would be lost. But if the rush was successful, the attackers had little need to be concerned with enemy artillery fire. If enemy troops rushed out to meet them, their own artillery could not be sure that it would not hit its friendly infantry. However, if the attacking infantry failed to reach the enemy trenches in time, it could count on receiving a heavy barrage of enemy artillery. Field artillerymen preferred the rolling barrage because it made their job simple. At a minimum, they needed to keep the enemy defenders pinned within the trenches until the advancing infantry was upon them.

Lieutenant-Colonel Neil Fraser-Tytler, a British artillery officer with a howitzer battery, experienced some of the war’s hardest fighting. Once in France, while looking

down upon a row of German trenches from the forward slope of a ridge, he observed:

“No one ever expects to see a Hun or to hurt anybody, the whole country being a maze of solid white lines of chalk trenches, and one might as well fire into various furrows of a twenty-acre field with a shot-gun and hope to kill the one hare in it.”

In this particular incident, Fraser-Tytler described, in allegorical terms, how ineffective harassing fire, even when observed, could be against a well-entrenched enemy. From his distant vantage point, the observer generally could not see his intended target. In comparison, unobserved fire yielded even less effective results. Even if they did nothing to change the system during the war, the American Army noted the difference in results between the two modes of fire. In “General Notes on the Use of Artillery,” the author stated that “the purpose of artillery observation was twofold: 1) the surveillance of enemy batteries, fieldworks, and movements, and 2) adjustment and control of fire. Proper conduct of artillery observation was considered to be of capital importance because “an artillery without observation is blind and useless.” [original author’s emphasis].

Unobserved fire was not totally blind and useless, just much less effective than it would have been otherwise and very expensive in terms of the number of artillery shells fired. Even the Germans had no means of constant direct observation and also resorted to map-firing. As a result, unless allied troops were caught in the open, enemy barrages typically inflicted no serious damage. Harassing fire was not intended to be

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conducted in coordination with assaulting infantry, and neither side enjoyed any advantage using it. Artillery veteran Jay M. Lee described an enemy artillery barrage directed at American batteries that were spaced some distance apart. Most of the German shells fell harmlessly in between. Lee admitted that a few shells landed directly on protected dugouts, and that there were several narrow escapes, yet, “that compared with the tons upon tons of shells which came over and hit nothing but the ground, the actual casualties were relatively small.”

One artillery weapon first used in World War I that compensated for the lack of observation, and, thus enhanced artillery’s effectiveness, was poisonous gas. Initially, its users simply opened the valves on a cylinder of gas and let it drift with the breeze toward the enemy. If the wind direction remained constant, it was effective, but if it shifted, its utility was lost. In 1916, the Germans developed gas-filled artillery shells as a means of delivering poisonous gas fumes to a targeted area without depending upon the prevailing winds. Soon after, the British and the French began using their own gas-filled artillery shells and by 1917 employing gas shells for counter-battery fire. Gas had certain advantages of artillery shells filled with charges. High explosives might take days to put enemy artillery out of action, while gas shells could do the same thing in a few hours. By 1918, artillery commanders typically fired gas in place of high explosives for counter-battery fire. Reliance on gas shells decreased the need for observed fire because it did not need to hit a specific target to be effective: it merely had to blanket the targeted area. Gas proved particularly effective in heavily wooded areas. Even a few standing trees

would absorb some shell fragments and help shield troops already under cover. In contrast, trees afforded no protection for troops from the harmful effects of gas, while acting to retard the dispersal of toxic fumes.

The U.S. Army needed not only observation of targets, but an effective, reliable means of communicating to be able to provide infantry with responsive and coordinated artillery fire. As mentioned before, by the time of the First World War, field telephones were reliable but lines were vulnerable to enemy artillery bombardment. Enemy patrols also severed telephone lines as they found them.

Although radio technology was still in its infancy in 1918, the armed forces of the world had come to recognize the value of radio communications. Despite that, the adaptability of radios for combat communications on the ground remained limited because they lacked general reliability. It meant that, during the First World War, the use of radio by ground troops in forward positions was not practical. Despite its lack of feasibility in the front lines of the ground war, radio did have tremendous immediate application for use in the air.

The use of airplanes for the first time in a war stimulated interest in developing

71. Augustin M. Prentiss describes the use of artillery to deliver toxic chemicals “one of the most remarkable developments in the World War.” Prentiss, *Chemicals in the War: A Treatise on Chemical Warfare* (NY: McGraw-Hill Book Company, 1937), 432; Donald Richter notes that because of an ongoing shortage of artillery shells, the British relied heavily on cylinders to deliver gas to enemy lines throughout the entire war. Richter, *Chemical Soldiers: British Gas Warfare in World War I* (Lawrence: University Press of Kansas, 1992), 37; Boyd Dastrup observes that firing gas shells over a broad front could neutralize enemy artillery in two to four hours. Dastrup, *King of Battle*, 162; Mark Groteleuschen notes that gas shells had an advantage over the high explosive artillery shells normally used when gas shells landed among trees. Groteleuschen, *Doctrine under Trial*, 52.

the radio and pointed the way to a new method of artillery observation. As G. E. C. Wedalke indicated in his history of early radio: “the airman’s ability to see what the enemy was doing on the other side of the hill and to spot where artillery shells were falling completely revolutionized land warfare.” If an aerial observer had no means of communicating what he saw until after he landed, his observations were of little value. The British had begun experimenting with radio transmitters and receivers in planes so that, by the time the war began, they were outfitting their military aircraft with radios capable of two-way transmission. During the Battle of the Somme, 316 British planes were equipped with radios, but their use was not without difficulties. A pilot flying solo had to simultaneously control the plane, and observe where shells had fallen while transmitting the information to the ground. The noise from the planes’ engines not only drowned out the voices of pilots and the ground crews, but also created a tremendous amount of static, which, in turn, limited the number of planes that could be used along a given length of front at one time. Despite problems, aerial observation made some contribution to the outcome of the war. After March 1918, the Germans abandoned their use of aerial observation, but, had they maintained it, they might have prolonged the war.

On the ground, radio was not easily adaptable to use in the front lines, as the early radio sending and receiving sets were monstrous, bulky contraptions. No one had designed a portable set light enough for one man to carry, although many foresaw the


74. Ibid., 122-24.
advantages of having one. In 1916, a student of field artillery “suggested that a portable radio described in Popular Mechanics might be ideal for a forward observer ‘if it could be made practical.’” Despite the obvious utility to be gained, no one developed portable radios for field use during the war. Not until the interwar years would such radios begin to appear, and even then they remained very heavy and bulky.

Because the United States fought World War I in concert with the Entente nations in the West, many American units were compelled to serve under the direction of the French and adapt to European methods of fighting, abandoning General Pershing’s doctrine of open warfare. Yet, by the time the AEF began to enter combat, Great Britain and France had already been fighting trench warfare for nearly four years and were well accustomed to using map firing, sound-and-flash ranging, and gas-filled artillery shells as a means for compensating for the inability to maintain observed fire. The Western nations had come to depend upon a system of pre-planned fires. As American Infantry Captain R. H. Case noted, veteran officers admitted that a “rigid schedule of fires is seldom the most efficient because an attack just does not progress as planned.”

A rigid schedule of artillery fire might keep enemy troops temporarily under cover, or even destroy some of their foremost emplacements, but it seldom destroyed the enemy’s capacity to continue to resist. Military historian Mark E. Grotelueschen does

75 Stebbins, “Indirect Fire,” 76.

76 Dastrup writes: “Unable to tie the combat arms into an effective communications network, commanders had to depend upon elaborate plans and rigid schemes of barrages of unobserved fire and seldom employed observed fire.” Dastrup, King of Battle, 169.

not claim that the Western nations’ use of artillery was consistently ineffective. It could be very effective at times, but its effectiveness was generally limited to applications involving so-called “set piece” operations which generally obviated the need for close combined arms cooperation or the need for closely observed fires. He attributes the emphasis on detailed planning, limited objectives, and set piece attacks based on overwhelming firepower involving rolling barrages to a shift in doctrine that was taking place within the AEF away from American ideas about methods of fighting open warfare.

In most set piece attacks, the coordination of artillery with infantry was satisfactory. However, in numerous cases involving more fluid combat situations, it broke down. Close and continual observation of artillery fire and a reliable system of communication would have enabled the AEF to routinely exploit its gains, but these features were lacking. For example, the 26th “Yankee” Division was an American unit involved in heavy fighting after it entered the war. Grotelueschen found problems with

78. A “set piece” attack means that attackers know the general location and strength of the defenders and that the locus of battle is not likely to change once the attack is underway. Grotelueschen observes that after a few years of trench warfare, “most Allied officers also had concluded that the only reasonable course of action was to make limited, meticulously planned, set piece attacks based on crushing artillery barrages.” In addition: “There is no record on any training that might have enabled the (AEF) regiments, brigades, or division as a whole to learn how to combine fire and maneuver in some form of mobile attack in an environment devoid of trenches and overwhelming defensive firepower.” Grotelueschen, The AEF Way of War, 35, 64.

79. Grotelueschen notes: “Combat commanders were discarding the theoretical vision of open warfare and relying on a doctrinal framework and operation approach that were closer to the Allied version of trench warfare and much more in line with the capabilities of AEF combat forces.” Ibid., 275-76.

80. “For nearly every [1st Infantry Division] attack, if not all, the division used rolling barrages to simplify infantry-artillery coordination during the attack; however, because the barrages were so thin and the German resistance so tough the infantry often needed to contact the artillery for additional special fire support during the attacks. The division rarely accomplished this difficult task and infantry battalion commanders reported that ‘the infantry and artillery were unable to cooperate due to lack of liaison.’” Ibid., 104.
its infantry-artillery coordination during its most fluid combat situations, or, in other words, those most closely resembling open warfare. In almost every case, adequate observation and communications were lacking, and as a result, there was no close artillery support for attacking infantry.

Summing up the AEF conduct of the war, Grotelueschen writes: “Massive use of coordinated firepower, more than anything else, was the answer to the challenge of successful offensive on the battlefield.” After the war, Lieutenant Colonel Paul B. Malone, a veteran combat infantryman of the AEF, made a case for the high degree of combined arms effectiveness between infantry and artillery that would emerge during World War II. Malone stressed that artillery must be able to provide almost instantaneous support of infantry on the battlefield and that infantry and artillery should act as a single fighting unit.

Not until the interwar period would the U.S. Army realize that even placing forward observers in observation posts at the foremost trenches did not put them close enough to targets to be able to direct fire effectively. They needed to stay with riflemen as they advanced. The thinking then was that, if the observer were too far forward, he

81. Grotelueschen found that during operations of the 102nd Field Artillery from 10 to 18 September 1918, “lack of liaison with forward infantry elements rendered effective use’ of (his) artillery impossible because the rainy weather prevented good observation and a lack of wire restricted telephone communications. Grotelueschen, The AEF Way of War, 184; Shugart observed that “artillery barrages were blankets of fire on the battlefield that did not allow an artillery liaison officer, or infantry commander to fire on a specific target that presented a threat to the infantry,” adding “Often attacks stalled once the infantry advanced beyond their planned artillery fires or lost the liaison contact between the frontline and their supporting artillery. Shugart, “On the Way,” 107-08.

82. Grotelueschen, The AEF Way of War, 358.

83. Ibid., 360.
might become a casualty and the battery would lose all immediate observed fire capability. British artillery regulations advised their artillery observers to stay far enough forward to be able to observe targets continuously during an attack, but warned that it was “not usually sound for them to remain in the foremost firing line.”

During World War I, artillery liaison officers and their enlisted men performed some of the duties that forward observers would handle during World War II. As they performed these duties, they sometimes found themselves in the middle of combat, and a significant number became casualties. In the interwar years, some Artillery officers thought that the liaison experience predicted what might happen to forward observers if they accompanied maneuvering infantry. On July 18, 1918, a liaison officer of the 7th Field Artillery with his contingent of enlisted artillerymen was with a detachment of the 28th Infantry as assaulted enemy positions. After he became separated from the group he came under fire from a German sniper. After trading shots with the German, he suffered a wound in the arm thus ending his ability to provide liaison support. The ideal place to station forward observers became a tradeoff. Pierce explains: “Observation was easier when the observer was near the target, but conduct of the adjustment was easier and more


85. Regarding the number of liaison personnel casualties incurred during World War I, Major C. M. Busbee reported: “One Field Artillery Battalion, during the late war is known to have lost 26 men during a period of two days in an effort to keep its telephone lines, principally its liaison lines open. Still another had six liaison officers fall as casualties during a period of a little over a week. Jones, “Infantry-Artillery Liaison in Combat,” 501.

rapid when the observer was near the battery.”

Lack of artillery observation during the war resulted in lack of control of artillery fire. Because the battery commander was typically located at a post somewhere between the batteries and the forward observers, his ability to communicate with one was enhanced at the expense of the other, thus weakening his ability to control fires in a timely and responsive manner, even on observed targets. With no feasible way for forward observers to maintain communications with the battery commander as infantry advanced, they were limited in how far to the front they could progress, even if they might be able to observe, to some extent, what was happening. Finally, because the higher echelons of command frequently planned and controlled the majority of artillery operations, the battery commanders and forward observers who might have been able to command more appropriately under different circumstances were not involved in the command function. Thus, command of artillery suffered as well during World War I.

After the war, the U.S. Army convened several investigative boards to discuss the performance of American field artillery in that war, and to determine the changes necessary to increase its effectiveness in the future. Among these were the Hero, the Lassiter, the Westervelt or Caliber, and the Superior Boards. Only the Hero and Superiors Boards really placed much emphasis on improving observation of fire or


88. Dastrup, King of Battle, 180-84; Shugart indicates that “undoubtedly the Caliber remained Field Artillery’s most influential with successive Chiefs of Field Artillery continually referring to it as the benchmark on what types of future howitzers and guns the field artillery would need.” Shugart, “On the Way,” 25.
coordinating the actions of artillery with infantry.

Named for Brigadier General Andrew Hero, a board member, the Hero Board was charged with studying AEF artillery combat operations in World War I. Most of the board’s recommendations in its 840-page report addressed training and the optimal size of field guns to be used in tandem and omitted any reference to improving artillery’s ability to provide more responsive fire support. The Hero Board did express concern about aerial observation, but virtually ignored the problems pertaining to the widespread use of unobserved fire throughout the war. The Board criticized aerial observation more severely than ground observation, indicating that, except in isolated instances, observation from airplanes had also been unsatisfactory. Among its major complaints was the lack of field artillery training for aerial observers. Most artillery officers queried believed that observation from the air was necessary for effective observed fire. Almost prophetically, Brigadier General T. N. Horn of the 7th Field Artillery noted that a field artillerymen could become an effective aerial observer, but a pilot or anyone in a plane required field artillery training to be able to effectively adjust artillery fire from the air.

Based on the conclusions of the board, its members apparently placed little faith in the comments of some its respondents. Brigadier General H. W. Butner criticized the fact that the liaison officer on duty often became merely the infantry commander’s telephone operator. Butner stressed the importance of allowing liaison officers to use their own judgment, noting that some had while others sent requests for fire solely at

89. Ibid., 16.

90. Dastrup, King of Battle, 181.
the direction of the infantry. Forward observers did the same and for that reason, both artillery functions lost many opportunities to inflict optimal damage on the enemy.

Another criticism involved the placement of forward observers. Typically they were too far to the back to direct fire effectively. Brigadier General U. G. McAlexander addressed this issue remonstrating the artillery for setting up observation posts wholly apart from the infantry and typically much further to the rear, observing that it diminished effective coordination of effort between the batteries and those adjusting fire.

In reference to ground observation, Schofield Andrews, G-3, 90th Infantry Division, suggested three things to facilitate the command, control, and communications necessary to achieve close artillery support of infantry in battle: first, competent artillery personnel to direct fire; second, good communications between the observer and the batteries; and third, the observer at the front must have immediate authority to obtain the fire requested while eliminating all intermediate channels. Andrews observed that in fluid combat situations, artillery lacked “a combination of observation and direction of fire by a trained artillery personnel [sic] and the authority to give fire at the front instead of at the rear.” He also suggested removing fire control from the level of the division and brigade and relegating it to the echelon of the battalion. Although the official recommendations of the Hero Board report overlooked Andrews’s advice, it is perhaps


92. Ibid., 685.

93. Ibid., 685.
ironic that by the time of the Second World War, the Army had done just that and given control of fire to the battalion.

Some who addressed the Hero Board took the opposite view regarding the optimal place to position forward observers. Colonel R. S. Abernethy suggested that they should work from a place that would subject them to “the least possible amount of unnecessary noise and confusion in the vicinity.” In his opinion, the front lines represented the least advantageous positions for artillery observers and argued that artillery officers, even more than their infantry counterparts, “should avoid posts that draw fire.” The colonel’s suggestion ignored the fact that placing artillery observers in such a position might provide maximum observation for neutralization of targets.

In its final report, the Hero Board paid little attention to improving artillery’s ability to provide timely and responsive field artillery fire. Instead, it recommended materiel solutions for the answers. Neither the Lassiter Board nor the Westervelt (also known as the Caliber Board) gave any serious thought to improving observation methods or coordination of infantry with artillery. As it turned out, only the Superior Board paid particular attention to the subject of combined arms tactics. The Board completed

94. Ibid., 686; Shortly before the attack on Pearl Harbor, Captain Walter D. Adkins, Field Artillery, noted that “the majority of those who have practiced the new fire direction technique as taught at the Field Artillery School are more than sold on it. We feel that it is the solution in the effective handling of battalion fires.” Adkins, “This New Fire Direction Technique,” Field Artillery Journal (December, 1941): 985.

95. Hero Board, 689.


97. Dastrup notes that the Lassiter Board had a major impact on the eventual decision to abandon horse-drawn artillery in favor of motorization. The Westervelt Board was sometimes called the Caliber
its study on July 1, 1919. In its final analysis, it described close cooperation between arms so essential to success on the battlefield to be one of the primary lessons of the war. The board also recommended making division’s artillery an organic part of each division.

Even if the various boards convened to study artillery’s operations during the First World War did not question why field artillery was unable to provide adequately observed fire, some artillerymen did. Lieutenant Colonel John B. Anderson, an artillery officer, warned that, “in open warfare, it is impossible to carry out the fixed defensive barrage, and in the accompanying creeping barrage; no schedule of liaison between infantry and artillery can be established in advance. The artilleryman must see for himself and often act instantly on his own initiative.” Describing his own experiences during the war, Anderson indicated that his fellow artillerymen used unobserved artillery fire so routinely within their regiments and often with such poor results, that “in one division it was necessary to publish an order to make these officers observe their fire and make the necessary corrections in range and deflection.”

The warnings of Anderson and others who deplored the use of unobserved fire and lack of spontaneous artillery support went largely unheeded during the interwar years. The real impetus for change in forward observation techniques would come not from the top of U.S. Army Command but from its lower echelons. From studying the Board because it studied the question of the optimal size of field guns to commit to the battlefield. Dastrup, *King of Battle*, 182-83.


history of the First World War and applying what they learned to field exercises, the instructors and students of the Field Artillery School at Fort Sill found a way to create a truly responsive system of fire support.

After a short period of transition in 1919 that saw four different Field Artillery School commandants in nine months, the appointment of Brigadier General Ernest Hinds to that post in October ushered in a new era of stability. The school then consisted of four Departments: Gunnery, Tactics, Materiel, and Equitation. One of Hinds’ first decisions was to shorten the length of time spent teaching technical subjects like chemistry and interior ballistics and increase the time spent teaching liaison and tactics.

In 1922, the War Department combined a number of Field Artillery basic officers’ schools at Fort Sill into one and transferred the Field Artillery Field Officers’ School from Fort Bragg, North Carolina to Oklahoma. By this time, the emphasis on tactics was even stronger, with more than three-fourths of the total 1,404 hours allotted used for teaching tactics and firing exercises. The student curriculum for students emphasized liaison, communications and fire direction. Throughout the 1920s, field artillery training continued to emphasize tactics, but mostly the old system that utilized the battery commander to adjust fire and had already been proven to be not very ineffective. By the latter half of the decade, however, the Field Artillery School began to consider new means of fire direction.

In the mid-1920s the Field Artillery School’s Tactical Department began


101. Ibid., 39-40.
publishing *Field Artillery Notes* throughout the school year to provide updated guidance and instruction for artillery tactics and techniques. *Field Artillery Notes* began to proclaim that someone other than the battery commander should direct and adjust artillery fire in battle. However, it overlooked the fact that the battery commander had the responsibility of computing the gunnery data for each of the three guns under his direction. As the decade moved along, the idea of creating a battalion fire direction center began to creep into field artillery doctrine despite opposition from those who wanted to cling to the less centralized but traditional method. These changes meant that when the forward observer assumed the battery commander’s responsibility for conducting fire, he would not be burdened with making mathematical calculations on the spot during the heat and confusion of a battle. An even bigger discovery would come when American artillerymen learned how easy it was for a single forward observer to mass the fires of multiple batteries simultaneously on a single target.

In 1929, Major Carlos Brewer, head of the Gunnery Department at the Field Artillery School, discovered a book on the shelf in the school library about British artillery officer Neil Fraser-Tytler’s experiences during the Great War, *Field Guns in France*. The author described how he had established observation posts at the very foremost positions and adjusted fire using map coordinates with very effective results. Brewer described the success Fraser-Tytler had experienced with his new method of forward observation to his fourteen colleagues in the Gunnery Department, and, soon, 103. Robert O. Kirkland, “Orlando Ward and the Gunnery Department: The Development of the FDC,” *Field Artillery Journal* (June 1995): 40.
th ey too had read the book.

Fraser-Tytler’s placement of the artillery observer led to a revolution in forward observation. Rather than adjusting fire from the traditional place of the battery commander at an observation post some distance from the front lines, the British officer described how he had run a telephone line from his battery to the very front. From there he was able to see not only his target but where the fire he was directing had landed. After word of his initial success of directing fire from the front lines had spread, additional telephone lines were strung out to his position putting him in contact with several additional batteries, which enabled him to mass fires on the Germans very successfully in 1916. By the time Brewer’s tenure as head of the Gunnery Department ended in 1932, he had developed a system similar to the one that the Briton had described.

Brewer’s discovery coincided closely with two other new developments, the advent of generally reliable field radios and the creation of the fire direction center. Both had significant implications for improved artillery observation and the use of forward observers in the Second World War. Field radios provided a piece of equipment for communications less susceptible to damage by enemy fire than field telephones but more prone to malfunction and largely solved field artillery’s communications problems.

Until that time, the normal firing unit was the battery and it was the battery’s


105. Fraser-Tytler, Field Guns in France, 90-91.

function to conduct fire. Because the battery commander had normally given the verbal commands to adjust fire, the first step in the new technique switched adjustment of fire to the forward observers—a monumental shift in command and control of artillery fire. The next step was to find a method of massing the fires of a battalion on a target when only one battery had adjusted and no maps were available. By the spring of 1931, the new method had been successfully developed by use of a so-called observed fire chart.

One postwar proposal intended to reduce the number of tasks the battery commander had to handle simultaneously involved assigning a larger share of observation to the liaison officer. The ever increasing distance between infantry and artillery battalion commanders during combat plus the increased range of field guns significantly reduced the battery commander’s ability to observe all that was happening. As Wesley Brigham noted in 1932, unobserved fire was too costly and ineffective to meet infantry’s most urgent needs.

Apparently the Chief of Field Artillery was considering this because in his annual report for 1933, he mentioned the new emphasis on training liaison officers to observe and adjust fire by radio without maps. To assign forward observation to the liaison officer as one of his main duties would have diminished his ability to keep abreast

107. Lieutenant Colonel Frank G. Ratliff, Field Artillery, explains the method for massing fires was developed by surveying the location of all batteries relative to each other, plotting them on a chart, then after one battery had adjusted fire, the target was plotted using the adjusting range and deflection. That point was used to compute the data for the nonadjusted batteries. The chart itself, was called the observed fire chart. Ratliff, “The Field Artillery Fire Direction Center,” *Field Artillery Journal* (May-June 1950): 117.


of the tactical progress of the infantry during combat, and to coordinate artillery with infantry actions. During World War II, artillery liaison officers often became involved in observing and adjusting artillery fire, but by then these had become part of the normal responsibilities of the forward observer.

President of the Field Artillery Board, Colonel A. McIntyre, responded in March 1934 by criticizing the Field Artillery School for teaching that observation and conduct of fire were among the primary functions of the liaison officer. He stressed the need for the officer to keep in contact with the infantry commander at all times, but admitted that the advantage of using the liaison officer to observe and adjust fire if only he could see the target. He recommended a distinct separation of the liaison and forward observation duties, indicating that forward observation duty and conduct of fire represented separate functions apart from liaison and that the same soldier cannot do both. He also suggested that forward observers have priority use of radio equipment.

The birth of the modern forward observer system used during World War II took place after Major Orlando Ward replaced Major Carlos Brewer as head of the Gunnery Department at the Field Artillery School. In March, 1932, Ward conducted a firing exercise at Fort Sill to adjust fire from individual guns in batteries and to mass the fires from an entire battalion on selected targets. Acting as a forward observer, and using his own improved firing calculation methods as well as Brewer’s FDC prototype, Ward

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could adjust and mass fires so accurately and with such relative ease, that he “compared it to ‘squirting a hose.’” It represented a major advancement in artillery’s ability to conduct more responsive as well as more effective fire in support of infantry. Lieutenant Charles C. Blanchard described a similar exercise for massing the fire of an entire battalion by a single forward observer that took place two months later, noting that the fire reached the target within eight minutes after the initial call had been made.

With these new developments, it appeared that by the early 1930s the Field Artillery devised a system that would greatly enhance the responsive capabilities of American artillery so sorely lacking in World War I. First, however, it would have to convince its peers that this new method of observation that made use of a Fire Direction Center was a viable one. Many experienced, senior artillerymen resisted using the Fire Direction Center. General Upton Birnie, Chief of Field Artillery from 1934 to 1938, strongly opposed it because it took the firing prerogative away from the battery commander.

The FDC combined the function of computing firing data with tactical fire direction and relieved the battery commander of his standard duties of calculating the fire data, conducting the fire of his battery, and more importantly, choosing which targets to shoot at.


113. Regarding these interwar developments, Scott R. McMeen observes that “with the introduction of these new fire directions techniques, the artillery made what can be fairly described as a quantum leap in its ability participate in mobile warfare.” McMeen, “Field Artillery Doctrine Development 1917-1945” (M.A. thesis, U.S. Army Command and General Staff College, 1991), 37.

engage. He no longer served as an artillery observer nor did he need the skills taught by
the Field Artillery School’s Tactical Department. So, for several years, two departments
of the same school gave their students conflicting instructions regarding responsibility for
conduct of fire, one school of thought reassigned it to the forward observer, while the
old school insisted that it should remain with the battery commander.

Although the improvement in the battalion’s ability to mass fires using the FDC
was obvious, the battery commander retained responsibility for shooting all types of
unobserved fire. Captain John J. Burns gave a boost to the impetus for doctrinal change
when, in 1939, he wrote that utilizing the battery commander to conduct fires was now
obsolete. He based his argument on the concept that the battalion was a more effective
fire unit than a single battery because as long as the battery commander initiated his own
firing missions it precluded two different batteries from simultaneously firing at the same
target. Burns recommended using the FDC to prioritize calls for fire missions and to
designate them to either the battalion or a single battery.

FDC techniques that had been part of the field artillery curriculum since 1934 did
not begin to gain acceptance until the end of the decade. Like other large bureaucratic
organizations, the turnover in senior Army personnel due to aging and retirement offered
opportunities for promising new ideas and methods which the older generation of leaders
had forgone, to gain acceptance. Thus, junior grade officers who had received their Field
Artillery School training in 1930s gave credence to the FDC as doctrine as they gained


rank over the decade. The issue was settled in 1941 when Army Chief of Staff General George C. Marshall observed a demonstration of massed fire by a division at Fort Sill. He then ordered Chief of Field Artillery General Robert Danford to implement the new system as standard procedure. By February 1942, this landmark change regarding the FDC had been incorporated into official U.S. Army doctrine by way of Field Manual 6-40, “Firing.”

By replacing the old system of battery commanders directing individual batteries with the Fire Direction Center, and by using common base points, the new system at the level of a division or corps headquarters could mass the fires of several battalions with ease. From the creation of the battalion FDC came one of the most destructive and stunning firing techniques used during the Second World War, the TOT, or Time on Target. During World War I infantrymen were quick to learn that once an enemy barrage was interrupted, it would normally take some time before the guns could be adjusted and the barrage resumed. This gave them time to vacate the area or at least take cover, and to nullify or reduce the effectiveness of subsequent barrages. The Time on Target or TOT was simply a multi-gun barrage timed to have the initial bursts all land at exactly the same time.

The battalion FDC solved a number of problems simultaneously, eliminating the party line system in field artillery communications and the resulting bottleneck that had hampered artillery’s ability to fire multiple batteries simultaneously on a single target.


118. Ibid., 95-96
The establishment of the Fire Direction Center also transformed the meaning of a forward observer from a somewhat generic term to something specific, while the new role created for the forward observer gave him many of the battery commander’s former responsibilities. The newly developed field radio backed up and at times supplanted the field telephone as a system of communications.

In the space of eight decades, radical changes in military technology had at times pushed and, at other times, pulled military doctrine with it. The capability of artillery shells to carry for miles, well out of sight of the gunners, and the corresponding increase in range and accuracy of small arms eventually led to indirect artillery fire where cannoneers, unseen by the enemy, fired at an unseen targets, creating the need for an observer to the fore to detect targets, call for artillery fire, adjust the rounds and, report the results.

Because of the increased killing power of bolt-action rifles, machine guns, automatic weapons and, later, tanks and planes, the advantage in ground combat went to that side which could successfully combine the effects of two combat arms as a force multiplier. This required rethinking and then teaching modern combined arms tactics. Not until the Second World War would infantry and artillery be the first to achieve this. During the First, field artillery was hampered by a command structure that lacked flexibility and a communications system that would not enable it to make use of what

119. John Henry Grate, the last surviving Civil War veteran from Ohio who died in Atwater Township in 1949 at age 103, when interviewed in 1946 said simply: In our time, we had to see the enemy to kill him.” Jim Carney, “Civil War Tribute to Rise Again,” Akron Beacon Journal, March 17, 2009, B6. Bailey observed that the catalyst that led to the use of indirect artillery fire “was the brutal shock of 1914 which invalidated all existing doctrine. The armies of that time “had failed to yield to the multiple pressures
command it had. As a result, infantry-artillery cooperation did not work well on the attack.

During the interwar period, several new developments in field artillery created improved levels of command, control, and communications with regard to field artillery. Dastrup notes: “The combination of motorized guns, the fire direction center, and forward observers supplied the Army with unprecedented firepower and mobilized and integrated the combat arms into an effective team for the first time since the introduction of indirect fire.” The mechanization of field artillery facilitated the forward observer’s ability to take wire longer distances into the field, and lengthened telephone lines. The advent of practical field radios filled the gap in communications, further enhancing artillery’s ability to maintain continuous contact with the battalion.

The forward observer teams were the vital link in acquiring this new level of combined arms effectiveness. Removing conduct of fire from the battery commander and giving it to the forward observer gave field artillery more deliberate, responsive, and sophisticated command and control of artillery fire. With forward observer teams in the frontlines, the liaison officer at the infantry battalion headquarters coordinated, monitored, and controlled the forward observer parties. Forward observers, both on the ground and in the air, provided infantry the close, responsive fire support lacking in World War I. By 1944, the Army declared that, in ground combat at least, the forward

for change that they were free to ignore in peacetime—but not in war.” Bailey, “The First World War and the Birth of Modern Warfare,” in Knox and Murray, eds. The Dynamics of Military Revolution 1300-2050, 151.

120. Dastrup, King of Battle, 226.
observer “is potentially the most powerful individual in the forward area.”

Concerns raised during the interwar period regarding the ability of forward observers to perform their technical artillery function effectively, if placed in the thick of battle, proved ungrounded. During World War II, forward observers won high praise from the infantry they supported for their ability to deliver swift and effective supporting fires. As it turned out, they often brought an added dimension of leadership and initiative to the infantryman in battle as well.


122. Military historian Russell F. Weigley observed that: “exceptional communications equipment permitted American artillery to excel in the ability of a single forward observer—often flying in a Piper or Stinson liaison plane—to request and receive the fires of all batteries within range of a target.” Weigley, *Eisenhower’s Lieutenants: The Campaign of France and Germany, 1944-1945* (Bloomington: Indiana University Press, 1981), 28; Peter R. Mansoor likewise noted: “directed through a combination of radio-equipped forward observers and fire direction centers, American artillery had the ability mass fires on the enemy that impressed both friend and foe alike.” Mansoor, *The GI Offensive in Europe: The Triumph of American Infantry Divisions, 1941—1945* (Lawrence: University of Kansas Press, 1999), 257.
CHAPTER TWO

MOBILIZING FOR WAR: THE 37th DIVISION, OHIO NATIONAL GUARD, AND THE 87th DIVISION

The 37th Division, Ohio National Guard and the 87th Infantry Division were, in most respects, two typical American divisions. In the Pacific theater of war, the 37th fought in campaigns on New Georgia, Bougainville, and the Philippines. In Europe the 87th saw combat in the Saar Valley, the Ardennes, and the Rhineland campaigns. The artillery of both divisions, one fighting the Japanese, and the other the Germans, then may be regarded as broadly representative of all American artillery usage during the war.

Both had some unique features, too. The 135th Field Artillery Battalion of the Ohio National Guard was among the first field artillery units to motorize during the 1930s. Up to that time, American artillery units were still horse-drawn. This had huge implications for forward observers during the Second World War who generally traveled by jeep to their starting point to accompany infantry. Another unique feature of the 37th Division with particular application to forward observers was General Robert W. Beightler’s inclination to rely heavily on his field artillery. Although he was certainly not the only general to use his artillery extensively, Beightler was convinced that doing so spared the lives of many of his infantrymen.

1. In his postwar report General Robert S. Beightler wrote: “each campaign saw the Division shoot up greater and greater amounts of artillery ammunition. The figures finally reached astronomical totals, but it is significant that our casualties were proportionately lower, compared to the great amount of fighting we had to do, than almost any other outfit with similar hard fighting.” Beightler, Major General Robert S. Beightler’s Report on the Activities of the 37th Infantry Division, 1940-1945. 3.

Brigadier General William Wallace Ford commanded the 87th Division Artillery
from March 13, 1944, until the division’s deactivation. As a young colonel, Ford was instrumental in convincing the U. S. Army that light, single engine aircraft could be used for aerial observation to direct artillery strikes. Ford also became the first officer to earn, and the only general to wear, an artillery liaison pilot’s wings. The 87th Division also breached portions of Germany’s Westwall twice, first in December 1944 at Medelsheim, then in February 1945 at Kobscheid. Few American divisions could make that claim.

For three years prior to the outbreak of war in Europe, U.S. Army Chief of Staff Malin Craig had been tried to streamline the army’s combat organizations. One of the most significant organizational changes made before the United States entered the war took place in September 1939 when Craig ordered a restructuring of the Army’s infantry divisions from the “square” to the “triangular” setup. Expeditionary Forces in World War I were organized as square infantry divisions, so called because they were two by two, that is, two infantry brigades, each controlling two infantry regiments, with three field artillery regiments within an artillery brigade. In addition, each division had an engineer regiment, a machine gun battalion, a signal battalion, and a division supply and sanitary train. At full strength, each infantry regiment consisted of nearly 4,000 enlisted men and officers, and included three infantry battalions and a machine gun company. Each battalion, at full strength, had about a thousand enlisted men and officers. With support troops included, the total strength of the square division stood at about 40,000 men. In contrast, during the Civil War, the size of a typical Union volunteer regiment included about one thousand enlisted men and officers.

The triangular division facilitated mobility because it required much less road
space to its smaller size than the square division, and this in turn, enabled it to deploy
more rapidly. The increase in mobility offered many important advantages not only for
the field artillery but for infantry as well. With usable roads, several squads of riflemen
could be squeezed into a single two-and-half ton truck and transported to a starting point
for maneuver in combat.

One of the first field artillery units to experiment with motorization was the 135th
Field Artillery, still organized as a regiment at the time. In August 18, 1935, units of the
135th conducted a motorized test march to Fort Knox, Kentucky. With a contingent of
103 motor vehicles towing twenty-four 75 millimeter guns, it made the long journey from
northern Ohio to Fort Knox. One group started from Toledo and traveled south while the
battery from Youngstown moved diagonally across the state, with both columns picking
up additional units as they progressed. The Youngstown battery had the longest distance
to travel, 460 miles. The two lines converged at Patterson Field, just north of Dayton,
where they camped Sunday night. The next morning, the entire regiment drove on to
Fort Knox. Fortunately, there were no mechanical breakdowns en route.

The return trip began on Saturday, August 31. Once past Cincinnati, each battery
commander was allowed to select the shortest route from there to reach his home station.

3. Ibid., 16.

Some chose to cover the entire distance home in one day. Under the headline “Appearing in camp completely motorized for the first time, Battery C of Alliance and other Field Artillery Proves Motors Here to Stay,” the *Alliance Review* reported on September 3, 1935, units of the 135th Field Artillery proved . . . that motor equipment has definitely arrived as a method of military combat.” The article went on to say that the Alliance unit made the 400-mile trip from Fort Knox, Kentucky in about twenty hours and that, until this year, the regiment had been using horse-drawn machines.

In 1938, the 37th Division was still organized under the old system of the square division with a single field artillery brigade, the 62nd, which included the 134th, 135th and 136th Field Artillery Regiments. The 134th Regiment was primarily from the cities of southeastern Ohio. The 136th was generally from southwestern Ohio, while the 135th came principally from northern Ohio. About a third of the members of the 135th Field Artillery were from Stark County. In 1939, the 135th Field Artillery celebrated its centennial year, with the *Field Artillery Journal* noting that “the 135th FA and its sister regiment, the 134th FA, constitute the oldest National Guard Regiments outside of the original thirteen states.”

Germany’s swift foray into France in May of 1940 prompted concern in


Washington that the Nazis might also begin taking over French colonial possessions in Africa and use them as a springboard to invading South America. The American public reacted to the fall of France with increasing alarm over the nation’s military preparedness. In turn, Congress began making tentative plans to mobilize the National Guard. On September 16, 1940, President Roosevelt federalized the first installment of the Guard. That same day the Selective Training and Selective Act of 1940 (also known as the Burke-Wadsworth Act) became law, the first peacetime draft in the nation’s history.

Entry into Federal service for the second wave of National Guard came on October 15 and included the 37th Division commanded by Major General Robert S. Beightler. All these units were to report to Camp Shelby, near Hattiesburg, Mississippi, which was still under construction when the first elements of the 37th Division arrived on October 21. The first of nearly 10,000 draftees assigned to the 37th Division began arriving at Camp Shelby on January 22, 1941. These men would bring the division up to its full strength of 18,000. To help ease resistance to the draft, the War Department assigned only Ohio draftees to the Ohio National Guard unit.

The success the Wehrmacht continued to enjoy in Europe during the summer of 1940 made the call to active duty more palatable for most of the National Guardsmen.


10. Sligh notes that Executive Order 8530 of September 16, 1940, federalized four National Guard Divisions, the thirtieth, forty-first, forty-fourth and the forty-fifth, while ordering coastal artillery and observation units squadrons to report to their armories. Ibid., 126.

This was because the atmosphere of crisis Nazi Germany had created worldwide convinced many National Guardsmen now in federal service that mobilization had not been in vain. However, by the spring of 1941, it seemed less likely that Britain was about to fall, and by June a major morale crisis had developed as most of the young men became anxious to return to their homes and families. Of course, this discontent was not limited to the Ohio National Guard, but “by June, the letters O H I O began appearing on latrine walls, artillery pieces, and cars.” This supposedly meant “Over the Hill in October,” and implied that the men would leave en mass if their federal service exceeded a full year. *Life* Magazine even published an article in August titled “This is What the Soldiers Complain About,” based on a reporter’s interviews with members of an unnamed National Guard unit from the north training in the south. General Beightler wrote a letter to the editors of *Life* insisting that most of the story had little application to his division. In September, *Life* printed Beightler’s letter with an editorial note that the 37th Division was not the article’s subject.

Finally, the Japanese attack on Pearl Harbor on December 7, 1941, removed all hope of early release from federal service. Even at that date, the 37th was still organized as a square division. On December 9, Beightler spoke to his officers and

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12. Ohl notes that with the threat of immediate U.S. entry into the war apparently less imminent, “many Guardsmen were now eager to get back to their jobs and families. The draftees were only slightly less eager in this regard, even though they were mostly younger than the Guardsmen and had fewer civilian obligations.” The intent of the War Department initially had been to limit the length of service to one year. But with the likelihood of reductions in strength as Guardsmen and Reservists were discharged, in June 1941 it requested Congress to extend the length of military service. In August, Congress passed a law obligating all Guardsmen and draftees for an additional eighteen months service. Ohl, *Minuteman*, 85.

13. Ibid., 86.

14. *Pictorial History of the 37th Division, Army of the United States, Camp Shelby, Mississippi*,
noncommissioned officers warning that “the division, already well along in its training, would likely ‘be in the vanguard of our forces when more of the Army is called upon to take [an] active part.’” In time, the truth of the general’s word were fulfilled when, in April, 1943, the first elements of the 37th Division arrived on Guadalcanal.

By the end of 1941 the U.S. Field Artillery was still searching for the right airplane to be used for aerial artillery observation and to trying authorize their permanent attachment to infantry divisions. The Army Air Corps strongly opposed this measure. Since the late 1930s, the Army had been using the North American O-47 for aerial observation, a large, bulky plane that required a relatively long takeoff area. Although the plane could reach a top speed of 221 miles per hour, it had poor maneuverability further reducing its suitability for aerial observation. In 1936, two officers of the Texas National Guard, Lieutenant Joseph F. Watson, Jr., and Captain George K. Burr who owned their own light, single-engine planes, began using them to direct artillery fire during their unit’s summer training exercises. Meanwhile the development of early prototype helicopters siphoned away funds available to the U.S. Army Air Corps. Even as the problem of finding the right aircraft for observation use was under


15. Ohl, Minuteman, 92.

16. Raines, Eyes of the Artillery, 55.

17. Ibid., 19-20.

18. Edgar Raines indicates that most Air Corps officers paid little attention to what the two Texans had demonstrated. This may be because the O-47 ‘s poor maneuverability may have rendered it vulnerable to enemy attacks. Another explanation is that the Army’s emphasis regarding the Air Corps then was on developing its strategic capabilities and using planes to direct artillery drew little interest. Ibid., 23.
review, the Field Artillery helped itself by taking the lead among the ground arms in seeking a solution to the problem. Fortunately, Chief of Field Artillery Major General Robert Danford also liked the idea of assigning aircraft directly to field artillery units rather than to a much larger corps headquarters. In addition, he favored allowing Field Artillery develop its own system for using the aircraft.

During the 1940 maneuvers held at Camp Beauregard, Louisiana, Ford, then a captain commanding Battery I of the 1st Artillery, expressed his dissatisfaction because of the difficulty he and other artillery officers had in finding an Air Corps observer to perform aerial observation for their units. Lieutenant Colonel John B. Wogan of the 68th Field Artillery wrote an article, published in the February 1941 edition of Field Artillery Journal, arguing for the creation of organic aviation units within the Field Artillery for the purpose of air observation. Wogan offered many sound reasons to build his case, writing that: “the artillery handles its own communications and its own supply of ammunition, but for some unfathomable reason, it must keep its hand off its air observation which is just as vital to its proper functioning as are its communications and ammunition.” He added that during the First World War, reconnaissance planes had not maintained contact with supporting artillery units at crucial times, noting that “This arrangement has been a miserable failure in the past, and there is nothing to indicate its success in the future.” Wogan then declared: “It has been repeatedly and emphatically stated by many field artillery officers that they did not witness or hear of a successful air-

19. Ibid., 31-32.

ground artillery mission throughout all the maneuvers of the past years. This condition will not change as long as we must depend upon another agency for air observers and observation planes.”

Prior to their actual use in combat, the U. S. Army Air Corps objected to the idea of relying on unarmed observation planes to direct artillery fire because they thought that enemy aircraft would simply blast them out of the skies. Ford addressed this issue directly, writing that, like Colonel Wogan and General Danford, “he wanted both pilots and observers drawn from the Field Artillery.” Then Ford took Wogan’s argument one step further, writing that if it were necessary to gain air superiority or even air parity before landing ground forces on the European continent, than there was a place for light aircraft on the battlefield. Largely through Ford’s efforts, by June of 1942, the Field Artillery had obtained organic aviation units after a three-and-half year battle. That same year, Ford attained the rank of lieutenant colonel.

During the 1941 war maneuvers, the three companies that would ultimately be selected to build the planes, practically “forced their airplanes on the Army for testing and trials in Louisiana.” By July 1942, the Army had selected the three to build the


22. Raines, Eyes of the Artillery, 40; In his memoirs, Ford buttressed his argument with these points, “Our little flivver plane will have no armament at all … Upon approach of hostile aircraft our pilot will put the little ship into a series of tight turns, barely off the ground; high speed enemy fighters, much less maneuverable, will have difficulty in bringing their guns to bear.” William Wallace Ford, Wagon Soldier (North Adams, MA: Excelsior Printing Company, 1980), 119.

23. Ibid., 80, 66.

airframes of the observation planes and one company, Continental, to build the engines. Taylorcraft built a plane designated the L-2. Aeronica of Middleton, Ohio, made the L-3 sometimes referred to as “the flying bathtub,” while the Piper Corporation of Bradford, Pennsylvania, built the L-4.

In 1935, Clarence Gilbert Taylor sold the rights to a light airplane he had developed called the Taylor Cub to Pennsylvania banker William Piper. Taylor then moved first to Butler, Pennsylvania, where he established the Taylorcraft Corporation. Then after the city of Alliance, Ohio, offered Taylor a plant rent-free, Taylor moved his new company to Alliance. The National Guard Armory in Alliance was also where Battery C of the 135th Field Artillery Regiment trained.

While the Taylorcraft L-2 was the fastest of the three, it was also the most dangerous. At slow speeds, it could stall without warning. For some length of time, about half the students at Fort Sill trained by flying the L-2 and the others, the L-4. The instructors taught the pilots to use very short, unimproved landing fields and land over barriers. It was soon discovered that the L-4 was much better suited for taking off and landing on short, bumpy landing fields because it could fly slower and required less distance to take off and land. The L-2 could not use short landing strips with any kind of obstacle. Bruce Ihlenfeldt, a pilot instructor at Fort Sill, later recalled that: “All of the

25. Ibid., 15, 21, 27.

26. Ibid., 48-49.

27. Ibid., 15.
injury accidents we had at Fort Sill during the war were in the L-2. I don’t recall any in the L-4 that resulted in death or injury.” While the L-4 was not perfect, in Ford’s opinion it was the safest for low-speed maneuverability and for short takeoffs and landings. Artillerymen referred to all three planes generically as “Grasshoppers.” Ford spent most of 1943 with the Department of Air Training, until October 23, when he left on temporary duty. By March 1944, Colonel Ford had become commander of the 87th Division Artillery.

Maybe there was an advantage in sending National Guard units into combat before regular army divisions during the Second World War. Although the Guard had typically been deprived of adequate funding in the interwar years, nonetheless it underwent continual training during that time. For National Guard field artillery battalions, this meant working with the French 75-millimeter howitzers left over from the First World War. Nevertheless, in the last years before the war, they gained valuable skills and expertise from their training and had much more time to work and train together as a team than their Regular Army counterparts.

In contrast to the Ohio National Guard’s relative longevity, the 87th Division was

30. Ibid., 288.
31. Peter Mansoor notes that “despite the success of the mobilization system used by the United States during World War II, too many organizations entered combat deficient in the cohesiveness, teamwork, and skills that generally make small units successful in battle.” Mansoor, *The GI Offensive in Europe*, 48.
not re-activated until December 15, 1943, at Camp McCain, Mississippi. In less than year, the division would deploy to Europe, and during that time, many new faces would join the unit. Final preparation for combat training began at Fort Jackson, South Carolina, on February 21, 1944. Six weeks later, Secretary of War Henry Stimson visited the division along with the director of the War Department Bureau of Public Relations, Major General A. D. Surles. Colonel Ford, the division commander General Landrum and Assistant Division Commander, General McKee, accompanied the two dignitaries from the War Department as they made their inspection.

By Thanksgiving Day, 1944, most of the 87th Division had reached England. By the first week in December it had landed at Le Havre, France, and was approaching Metz where it would officially start its war. By then, the 37th Division had wrapped up its first campaign on New Georgia and was in the initial stages of its second on Bougainville.

32. An Historical and Pictorial Record of the 87th Infantry Division in World War II, 1942-1945 (Reprint: 87th Division Association, 1988, 11-12.

33. Ibid., 17.
CHAPTER THREE

FIGHTING THE JAPANESE AND GERMANS: ASYMMETRY AND SYMMETRY

Symmetry, parity, or relative equality in warfare can exist between opposing forces in a multitude of different military facets, in technology, training, or logistics, or at the levels of tactical or strategic doctrine. On the home front, these factors may include manpower mobilization, natural resources, and industrial capacity. In addition, opponents may be evenly matched in some areas, moderately matched in some, and very unevenly matched in others. What is worth noting is that in ground combat, there was a large overall disparity in nearly all of these things between the Japanese and the Americans, while in the American ground war against Germany, relative symmetry existed. Because this is a study of the field artillery experience at the level of tactical doctrine, it is not necessary to explore in depth all the contributing factors listed above.

Primary Differences at the Level of Tactical Doctrine

The German Army was much more advanced and experienced in the practice of combined arms warfare than the Imperial Japanese Army. Part of this success was due to its ability to coordinate effectively artillery support of infantry attacks, and this, in turn,

1. A prime example of asymmetry in weaponry is the Battle of Omdurman, Sudan, Africa, which took place September 2, 1898. Armed with Maxim machine guns, British Field Marshal Kitchener’s outnumbered troops withstood an attack by the fanatical Dervish sect of Baggara Arabs armed only with spears. In the battle that ensued, the British and their allies lost forty-eight, while the spear-toting Dervishes lost 11,000. William H. Hallahan, Misfire: the History of How America’s Small Arms Have Failed Our Military (New York: Charles Scribner’s Sons, 1994), 285.
was largely due to their use of forward observers. In fact, with few exceptions, German artillery doctrine was very similar to that of the United States.

In contrast, the Japanese were not nearly as far developed in the combining of combat arms on the battlefield. This was due largely to their faith in the superiority of their own infantrymen. Japanese tactical doctrine put great emphasis on three factors: offensive actions, surprise, and rapidity of movement. The foundation of this doctrine is the idea that a simple plan, executed with power and determination in combination with speed and maneuver, will upset the plans of enemy forces and prove successful. Japanese

2. In December 1941, the editors of Field Artillery Journal recognized the contribution of German forward observers to the success of their combined infantry-artillery efforts, noting that: “The special importance of observed fire has shown itself clearly… the co-operation between infantry and artillery necessary for the successful support of an attack was always good; and in this case the artillery forward observer played a very important part.” Editor, “Reasons for the Success of the German Field Artillery,” Field Artillery Journal (December 1941): 990.

3. Field Artillery Journal also noted the symmetry in field artillery doctrine between the United States and Germany thus; “The most striking thing about them is the close similarity with our own texts and doctrines. For years, our artillery commanders … have preached mobility, flexibility of command, and fire control, and above all, the ability concentrate artillery fire power for maximum effect . The Germans have proved the golden value of these ideals in modern war, and in doing so, have proved our own manuals and methods.” Ibid.

4. Jonathan House observes: “During the conquest of Malaya and Burma in 1942, the Japanese made a virtue out of the lack of heavy weapons.” House, Toward Combined Arms Warfare, 134; Author Richard Overy notes “Military culture in Japan demanded the highest sacrifices from soldiers, even a willingness to kill themselves. . . . The unwillingness to surrender, and the ability to survive for long periods of time in conditions of appalling deprivation, made the Japanese soldier a difficult enemy to defeat.” Overy, Why the Allies Won (London: Jonathan Cape, 1995), 222; Historians Allan R. Millett and Williamson Murray termed tactical air support “rudimentary, partly because of poor communications and partly because pilots were still enthralled with the one-on-one combat of the ancient warrior.” They see Japanese artillery support of infantry as “generally poor, largely because of quantitative weaknesses, modest firing range, and ammunition shortages.” Millett and Murray indicate the Japanese Army suffered from a lack of unity of command: “The Japanese simply did not have the time to work out many of the practical details of such highly-involved questions as infantry-tank-artillery liaison, control by higher commanders, and logistics of mechanized forces.” Millett and Murray, eds., Military Effectiveness: Volume III: The Second World War, Mershon Center, The Ohio State University, Series on Defense and Foreign Policy (Boston: Unwin Hyman, 1988), 34-35.
field service regulations stressed: “the object of all maneuver is to close quickly with the enemy.” The Japanese believed that the sheer determination of their soldiers could almost single-handedly win battles. This is what Millett and Murray termed “a reliance on the notions of spiritual strength and cold steel … to make up for material efficiencies.” Underlying all operations was the idea of “faith in certain victory.” The lives of individual Japanese soldiers were only important as a means of service to the Emperor.

The Russians, as well as the Japanese, frequently used human wave attacks, only in their case, the attackers had guns at their backs. The Japanese infantryman went voluntarily. Yet, the Japanese Banzai charge was a self-defeating tactic. British Field Marshal William J. Slim believed that Japanese commanders suffered from what some have called “Victory Disease.” Based on their triumphs early in the war, they had “an unquenchable military optimism,” that almost never made any provision for setbacks or delays. National pride and individual vanity, therefore, played a large role in the inadequacies of Imperial Army’s doctrine and tactics.


7. A 1938 Japanese field manual indicated that “field or mountain artillery shells passing more than one meter over the heads of friendly troops will not cause any physical damage.” Pacific Unit M.I.D. War Department, Applied Tactics, Japanese Army: Translation of a Japanese Manual, Revised 1938 (Washington DC, October, 1943), 184.

8. Overy observes that the fighting early on, drained the Japanese military of its best resources and that “levels of attrition were too high to build up adequate reserves.” Overy, Why the Allies Won, 223.

9. Slim noted that “the fundamental fault of (IJA) generalship was the lack of moral, as distinct from physical, courage.” They were not willing to admit they made mistakes, so they passed on to their underlings the same orders they had received, knowing that with the resources at hand, the mission was
Although many American GIs believed the Japanese Army fought fanatically, most admitted they were brave soldiers and tough fighters. John Stannard, a member of the Americal Division, called the Japanese soldiers “first class infantry soldiers, brave, tough, strong, patient, dedicated, obedient, loyal. They were the best.” Even though sound Japanese military doctrine was sorely lacking throughout the war the spirit of the individual soldier made the Japanese Army a difficult foe to defeat.

In contrast, most American soldiers in Europe did not consider the Germans to be nearly as zealous with the exception of some SS troops. By September 1939, Germany had developed a fairly sophisticated combined arms system of mobile warfare. House  


11. One of the first books published in the United States during the war dealing with the tactics of the Japanese Army observed that “Malaya was lost to well-trained soldiers who only had fair equipment but who had in generous measures the human characteristics of will-to-win, stamina, resourcefulness.” Paul W. Thompson et al, How the Jap Army Fights (New York: Penguin Books, Inc; Washington, DC, Infantry Journal, 1942), 118; Millett and Murray claim: “it (was) the combination of obedience and ferocity that made the Japanese Army, whatever its condition, so formidable, and which would make any army formidable. It would make a European Army invincible.” Millett and Murray, Military Effectiveness: Volume III: World War II, 36.

12. Author Charles Whiting indicates that it was the Leibstandarte Division, an element of the Waffen-SS that was responsible for the infamous Malmedy Massacre of American troops in Belgium December 17, 1944. Whiting offers two examples to prove that training for members of the Leibstandarte Division may reflect their almost fanatical devotion to duty. Young officer candidates were ordered to dig one-man holes with a shovel. Shortly afterwards, a platoon of tanks drove directly over their positions. “It was just too bad for a man who had not dug his hole deep enough.” Other training involved exposure to grenade blasts. Instructors ordered each candidate to place a grenade on top of his helmet. After it was balanced there, the instructor withdrew behind cover and ordered the candidate to stand at attention and pull the pin. “Usually, there was no damage done if the cadet kept rigidly still and let the explosion dissipate itself above his steel-clad head. However, if he got rattled and let the grenade fall …” Whiting, Massacre at Malmedy: The Story of Joachim Peiper’s Battle Group, Ardennes, December 1944 (New York: Stein & Day, 1971), 23.
writes that during the May 1940 invasion of Belgium, German training in combined arms tactics was particularly obvious during the sweep through the Ardennes. Combat engineers made a rapid advance over a poor road network possible, while German anti-aircraft guns played a key role in warding off Allied air attacks. Although the German Army was ahead of the U.S. Army in its development of combined arms tactics, after entering the war, the United States soon caught up. In terms of tactical doctrine, then, symmetry between the German and American armies existed but not between the Japanese and Americans.

Technology, weaponry, and logistics also played important roles in the match-up of opposing armies. Here the same pattern of asymmetry with Japan and symmetry with Germany was apparent. The Japanese army was particularly weak in motorization and mechanization. During the early years of the war in China, foreign observers of the Japanese military reported that Japan was attempting to motorize its artillery, yet throughout the war, most of it remained horse-drawn. The weapons of the Japanese

13. House notes that “the fall of France demonstrated not only the importance of combined arms mechanized formations and blitzkrieg penetrations, but also the German advantage over the British and French in combined arms training and procedures. House, Toward Combined Arms Warfare, 86.

14. Richard Overy claims that in just two years the American army became “the most modern army in the world.” Overy. Why the Allies Won, 225. House notes that the U.S. Army “gradually corrected these [associated] problems and developed more effective combined arms teams during the breakout from Normandy.” House, “Toward Combined Arms Warfare,” 129.

15. A German artillery officer, Colonel M. Blumner visited the Japanese Army in 1937 and reported that “owing to the shortage of horses in Japan, motorization of the artillery is greatly stressed. The heavy artillery is already motorized throughout. At least one fourth of the heavy field artillery (105-mm guns) is motor-drawn. On the other hand, most of the division artillery remains horse-drawn for the present.” “Japan Modernizes Her Artillery,” transl. by Sergeant Fred W. Merten, DEML, Field Artillery Journal (Sept., 1937): 339; Overy observed that “Japan made no effort to embrace new developments. The army remained an infantry army, reliant largely on horses. The Divisions nominally designated as ‘motorised’ had only 350 vehicles each.” Overy, Why the Allies Won, 221.
infantryman were not up to par with those of the United States and Europe. The standard rifle issued to Japanese infantryman was the model 1905 Arisaka, a Mauser bolt-action 256 caliber. Not only was the Arisaka difficult to fire rapidly, it had a limited range of accuracy. The Japanese Army had neither effective armor support for its infantrymen nor an effective antitank gun to combat American tanks.

If Japanese weaponry and technology were lacking, their logistics were even worse. The battle for Guadalcanal has been called a battle of logistics, and one that the Japanese lost, setting the pattern for the rest of the war in the Pacific. Writing in 1991 in his introduction to the reprint of *Handbook on Japanese Military Forces*, David Isby observed that, by 1944, the Japanese were paying a price for neglecting logistics and communications. “They saw themselves as warriors, conquerors, and samurai. The job of getting the men their food and equipment was not what a warrior did. The fact that the economy could never produce enough food or materiel certainly discouraged them from looking to these elements as deliverance from their strategic and tactical problems.”

The ordinary Japanese foot soldier was issued approximately one-fourth the amount of daily rations his American counterpart received. Stanley Frankel and others who have

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17. Millett and Murray noted that “Japanese armored forces were feeble in tank versus tank (which did not figure in the conflict in China anyhow) and lacked the striking power of western armies.” Millett and Murray, *Military Effectiveness, Volume III: World War II*, 34; Thompson observed in 1942 “The Japanese Army has nothing that can be strictly designated as an antitank gun … the lightest is the 37-mm. model 1922 infantry gun … [which ] is yet relatively untried.” Thompson, *How the Jap Army Fights*, 27.
19. Millett and Murray indicated other significant shortages included “fuel stocks, medical and veterinary care (including aid stations and casualty clearing centers) road and runway maintenance,
given historical accounts of fighting on the Pacific Islands frequently mention how the few Japanese prisoners the Americans did capture were frequently starving.

A comparison of Japanese and U.S. field artillery reveals the same pattern of asymmetry. Japanese field guns were generally lighter than their western counterparts, although the projectile weight per caliber was about the same. As a result, the projectile velocity was slower than comparable guns of Europe and the United States, leaving the Japanese guns with less range and power than American guns. In addition, Japanese field guns characteristically lacked sophisticated sighting, consistent accuracy, and variety of ammunition. Japanese artillery doctrine made poor use of counter-battery fire and employed inefficient tactics. Brigadier General Harold Barker, who attributed the 136th Field Artillery with saving his life on New Georgia, classified Japanese counter-battery fire as generally poor, either because they lacked sufficient medium range artillery or because they were unable to master the basic principles of artillery.

Reasons for poor Japanese counter-battery fire may vary. First, during the early fighting in China, there was little need for it. Chinese artillery fire was so ineffective, the Japanese even placed their batteries in the open, with the result that their artillerymen

bridging and land and sea transportation.” On paper, the Japanese had a wide range of support services, but, “in practice, the quantity of support was scant or nonexistent, and the quality varied from satisfactory to abominable.” Millett and Murray, Military Effectiveness, Volume III: World War II, 38.

20. To increase range, the barrel or tube of a howitzer must be made thicker to withstand the explosive charges within the breech when the gun is fired. A thicker tube makes a heavier gun. War Department, Military Intelligence Division, Japanese Field Artillery, Special Series No. 25 (Washington, DC: United States Government Printing Office, 1944), as cited in Donald B. McLean, editor & compiler, Japanese Artillery: Weapons and Tactics (Wickenburg, AZ: Normount Technical Productions, 1973), iii.

suffered as high a casualty rate as the infantry. Also, as the Japanese infantry attacked, artillery batteries were moved forward to within 500 to 800 yards of the infantry line of departure. This enabled them to support the main position of the attack without moving. However, it potentially exposed them to enemy counter-battery fire. Last, among the fundamental principles of Japanese artillery tactics was firing in mass. Yet no specific missions were assigned, such as the support of particular infantry units. The commander of division artillery controlled direct support in the assault as well as counter-battery fire. Such centralized control of counter-battery fire limited Japanese artillery’s ability to provide effective counter-battery fire as it was needed.

In the latter stages of the war, chronic shortages of ammunition hampered the Japanese Army. Even though these shortages undoubtedly reduced the overall effectiveness of their artillery, the Americans could not disregard enemy artillery fire. As their ammunition became short, Japanese artillerymen would often fire a few intermittent shots, giving the impression that this was only harassing fire, and then hit the Americans with a heavy barrage.

In sum, Japanese artillery was not the equal of its American counterpart, in


tactical doctrine, equipment, or mobility. It never achieved the same degree of coordination with its infantry. Also, the Japanese Army placed less reliance on forward observers on the ground than did the U.S. Army. As a result it used less observed fire with poorer results.

A comparison of German to American artillery shows much closer symmetry. German field pieces were on par with, and in some cases, superior to American field guns. They could have been even better except that, at the beginning of the war, the nation’s high command believed that the war would not last very long. Consequently, they ruled out continuing research on their most recent but unproven artillery weapons, if they anticipated they would take more than a year to develop. Thus, they abandoned many projects that might have proven worthwhile. By the time they lifted the ban on development a few years later, they had stretched their resources too thin.

Mechanically, the German 105-millimeter howitzer was almost identical with its American counterpart, but the Germans had not developed rapid fire direction procedures or sufficient communications essential to massing fires quickly by battalion.

The Wehrmacht’s tactical use of its field artillery was good but not as effective as the Americans. Like the Americans, they placed great emphasis on the importance of

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26. In a chapter titled “Lessons of Bataan,” Colonel Milton A. Hill observed that during the battle of Bataan, “the firing of Japanese artillery was not as good as our own, probably owing to the lack of observation because of our good camouflage.” Thompson, How the Jap Army Fights, 132.


29. House observed that throughout the war, German artillery had to adjust on targets of
observed fires, using forward observers. A *Field Artillery Journal* article in December 1941 drew on German sources to describe what the Germans considered to be the most successful features of their field artillery. Despite any propaganda value that might have been intended, the article attributed their artillery’s success largely to excellent training and to relying heavily upon observed fires which they credited to the work of their forward observers.

Further evidence of the importance of artillery observation to successful German operations is found in a translation of a German field manual in 1944. Regarding the use of observation posts, it stated that infantry and artillery may at times share the same observation post, but the ranking officer present will decide priority and would generally allot to artillery the best observation points, although he would still arrange for a “reliable inter-communication for exchange of observations.” This revealed the high priority the German Army typically gave its artillery over infantry with regard to observation.

The German Army also placed great importance upon the use of counter-battery fire. *General der Artillerie* Karl Thoholte claimed that over three or four months of continuous and heavy defensive fighting, German counter-battery fire knocked out 4,000 enemy batteries on the Eastern Front, adding that, in instances where enemy artillery was the main factor affecting his power to attack, counter-battery fire quickly became his

opportunity using well-known terrain features, and it was extremely difficult and time-consuming for them to mass fires. House, *Combined Arms Warfare in the Twentieth Century*, 101.


artillery’s primary mission. The general also indicated that he could not use counter-
battery fire as extensively in the latter stages of the war on the Western Front, because it
required large amounts of ammunition, by then unavailable, and that this represented a
primary reason for the German failure.

A relative lack of mobility for Germany’s field artillery proved to be one of its
prime weaknesses. The Germans had not obtained sufficient motorized transport and
were heavily dependent upon horse-drawn artillery. Petroleum was already in short
supply in Germany when America entered the war, and would become even shorter as the
war went on. So, instead, they used horses to move most of the combat and field trains
of the infantry in December 1941. Commenting on Germany’s continuing dependence
upon horses, Artillery General Thoholte noted that an important lesson he had learned
from the Eastern Front was that artillery reinforcement needed to be as mobile as
possible. General Thoholte praised American artillery, calling it the most mobile of all
first-rate powers, adding that the whole army was the most motorized in the world.

An overall comparison of German to American artillery then, shows that in terms
of doctrine, tactics, and equipment, they were fairly evenly matched. Where German
artillery fell down in particular, was with its mobility. The Wehrmacht’s overdependence

32. The Editors, “A German Reflects Upon Artillery: Interrogation of Karl Thoholte, General der

990.

34. The Editors, “A German Reflects Upon Artillery,” 709-10, 714; Author Curt Johnson claims
that using horses to move field guns seemed “archaic” by the 1940s and that many have frequently
upon horses for transport affected not only its artillery’s mobility, but its all-important system of logistics as well. Without adequate logistical support, German artillery suffered not only from a lack of ammunition, but from shortages of food – for both men and horses, and medicine as well.

The comparison of opposing armies made thus far in this chapter has focused largely on the ways in which they differed, although the German and American armies certainly had more similarities than differences than did the Americans and Japanese. To understand what made the American field artillery experience in the Pacific different than in Europe, secondary differences between the two theaters of combat must be studied. These are what might be called leveling factors since they affected both sides equally, wherever they were. In particular these include climate, topography, and population density and how these affected field artillery usage.

To begin with, climate had a tremendous impact on a variety of things ranging from adverse effects it had on equipment to those it had the health of the men. The obvious differences in climate included the tropical heat, humidity, and rainfall of the islands of the Pacific compared to a climate like that of the northern United States found across most of Western Europe. Aside from the discomfort from fighting in high heat and humidity, a host of diseases not encountered by Americans in Europe plagued soldiers fighting on the Pacific islands. On Okinawa, Major Eugene R. Smyth emphasized the importance of health and sanitation issues because unless the strictest safeguards were maintained, the resulting diseases could quickly impair combat efficiency very seriously.
Smyth mentioned the distribution of atrabrine among the troops and how his unit had spent fourteen months in the combat zone without a single case of malaria and a few cases of dengue fever which was very prevalent on some of the islands. He added that although prevalent diseases included amoebic dysentery and liverflukes, only one or two cases had occurred in his artillery battalion, usually among forward observer parties after they had spent a few days in the swamps. He emphasized that, although difficult to control, skin diseases were 99 percent preventable. Rats created a problem on Okinawa, but, by 1945, the army began using C-47s to spray large land areas with DDT.

Until the latter stages of the war, the U.S. Army concentrated more on fighting the enemy than on controlling tropical diseases in the Pacific theater. Sergeant Don Allison and Technical Sergeant Abbie Cohan, members of Battery C, 135th Field Artillery Battalion, 37th Division, contracted malaria, while six others in the battery became sick with other unspecified illnesses after the battery reached the Pacific Theater. Soldiers on Bougainville also encountered a variety of insects including centipedes and snapping ants that plagued them routinely. Centipedes lived in their foxholes. Ants twice as large as black ants in the United States made themselves a particular nuisance. Their bite felt “like a stab from a hot needle.” Maybe even worse was a thorny barbed vine which grew plentifully in both the trees and on the ground.

Differences in climate between the Pacific and European Theaters also meant a disparity between the number of non-battle deaths in the two theaters. In his summary of


37th Division battle casualties, Stanley Frankel lists 1,127 killed and 218 who later died of wounds, or a total of 1,345. Frankel’s compilation indicates 73 members of the 37th Division who died from non-battle causes. If these are added to the others, the total becomes 1,418 and means that approximately 5 percent of the Division’s deaths came not as a result of battle. A reasonable conclusion, then, is that the majority of the division’s non-battle-related deaths were the result of disease.

The incidence of fatal disease among American soldiers was much greater in the Pacific than in the European Theater. During the entire war, 26,518 American soldiers serving in all theaters died from diseases. Of these, 2,474 died from disease in Europe, while 10,828, or more than four times as many died in the Pacific Theater. The Adjutant General’s Army Battle Casualties Final Report, a report of all Army casualties incurred in no less than twelve theaters, indicates that more than twice as many combat deaths occurred in the European Theater than in the Pacific; 135,576 in Europe and 50,385 in the Pacific Theater. Thus, in sheer totals, without any computation of what percentage of military personnel serving in each of these theaters died from these two causes, the gross number of battle deaths was four times higher in the European theater than in the Pacific, while the number of fatalities due to disease was


four times higher in the Pacific than in the European theater of war.

Of course, the adverse effects of fighting in a tropical climate did not apply to the American Army alone. As mentioned before, Japanese soldiers suffered much more seriously from poor diet and lack of medical care. An Americal Division Operations Memo for Bougainville reported that “Prisoners of war and Japanese bodies examined show that almost 90% of the 6th Division was suffering from malnutrition, malaria, dysentery, beri-beri, or skin diseases. Thus their fighting efficiency both physically and spiritually was greatly impaired.”

Although American soldiers fighting the Germans also died from causes unrelated to battle, the prevalence and severity of the diseases and in particular, the mortality rate in Western Europe may not have been on the same scale as that of the Pacific. Living outdoors involves many unpleasantries in any theater of the war, but the climate of western Europe compares favorably with many parts of the United States. Although Americans in the European Theater escaped the heat and humidity of the tropics that their counterparts in the Pacific endured year round, nevertheless they had to contend with other extremes such as living in a foxhole during the bitter cold of winter.

By definition, a casualty is a soldier lost to active service as a result of death, injury, or capture, so not every casualty is a fatality. During the war, air and ground troops suffered 91,000 cold-weather casualties, such as frostbite or pneumonia or other related ailments, 45,283 occurring between November 1944, and April 1945. This

represents nearly half of all American air and ground cold weather casualties during the entire war, and about 9 percent of those incurred during the last six months of the war in Europe. On average, about 7.6% of all American soldiers in Europe became casualties due to cold weather, or nearly one out of every fourteen. No comparable figure exists for the Pacific Theater. So the forward observer fighting the Germans stood a much higher risk of becoming a casualty of cold weather than his counterpart who faced the Japanese.

Differences in climate between the two theaters also affected the communications systems of the combatants, significantly. The constant humidity of the Pacific islands affected the reliability of battery-operated field radios. This often forced forward observers to rely on field telephones to communicate with the battalions. The Observer’s Checklist intended for artillery officers departing for the Pacific, reported that on Buna and Guadalcanal, artillerymen used wire almost exclusively because of the unreliability of their radios. However, if the 600-series radio equipment had been available, the situation might have been different. If field radios were inherently unreliable in the years of 1942 and 1943, the constant humidity of the Pacific island jungles had a particularly adverse effect on their performance.

Unfortunately, artillerymen could not necessarily depend upon telephone lines on


42. The Observer’s Checklist compiled for field artillerymen deployed to the Pacific Theater mentioned that, in the Pacific, even flashlight batteries were troublesome. United States Field Artillery School, Observer’s Check List, Southwest Pacific Area, 9/26 – 12/23, Fort Sill, Oklahoma, 1942. Morris Swett Library, Fort Sill, Oklahoma, 9, 12.
the islands, either, but not because of the climate. Lieutenant Colonel John W. Ferris described the problems encountered when relying upon them in the jungle, explaining that as long as they remained intact they worked more reliably than contemporary portable radios, but the telephone lines had problems of their own. Of course, the Japanese cut them whenever they found them, but American soldiers unintentionally caused many breaks. As the assault troops advanced, they cut a narrow trail through the trees and vegetation and strung their telephone lines along the sides. As these forward areas became secured, the support troops that followed widened these lanes to make space for vehicles, cutting down many trees along the way and in the process, severing the telephone lines. Lack of manpower and time among the engineers prohibited trying to protect or even save the lines and they cut them indiscriminately to save time. The only solution for artillery was to provide wire crews working simultaneously with the men on the bulldozers, stringing new telephone lines to replace the severed ones.

In contrast, in Europe by 1944, field radios seemed to have been used with a much greater degree of reliability than in the Pacific, probably primarily because of less precipitation and lower humidity. Yet another reason is that, throughout the war, radio technology gradually improved. In France, in the summer of that year, Captain Harry R. Ostler acknowledged that the forward observer parties had, for the most part, come to depend upon the field radios, emphasizing his complete faith and dependence in them. He asserted that if those involved maintained their sets properly and followed proper

transmitting discipline, the widespread use of radios presented no problems under normal circumstances – in that part of the world.

However, the use of radios had two drawbacks that may have been more serious in Europe than the South Pacific. First, in any theater of the war, radio antennas were conspicuous enough that they tended to draw fire. John Colby, 90th Infantry Division historian, describes the experience of forward observer parties with radios:

“Unfortunately the radio had a long whip antenna that could be spotted easily by the enemy and often was. In our view, those radios attracted fire like magnets. Even more unfortunately, the attracted fire tended to eliminate the FOs as well as the man who carried the radio.” In any case, the forward observer was a priority target for German snipers.

Second, the Germans were apparently more skilled than the Japanese at detecting the sources of American radio waves. Through the process of triangulation, they could locate the point of origin of a radio transmission, then use their own artillery to fire on it. In instances where American units suspected that this was happening, they either

46. Most of the historical literature on snipers indicates that artillery observers were high on the sniper’s list of priority targets in any army. British Major H. Hesketh-Pritchard observed that during World War I, snipers “can make it very hot for the enemy’s forward artillery observing Officers.” Hesketh-Pritchard, Sniping in France: With Notes on the Scientific Training of Scouts, Observers, and Snipers (London: Leo Cooper, 1994); 11; Peter R. Senich indicates that during World War II, first on the list of priority for German snipers were observers of the enemy’s heavy weapons. Senich, The German Sniper, 1914-1945 (Boulder, CO: Paladin Press, 1982), 117; Adrian Gilbert listed the German sniper’s standard priority targets as “other snipers, observers, officers and the crews of infantry support weapons.” Gilbert, Sniper: The Skills, the Weapons, and the Experience (New York: St. Martin’s Press, 1995), 89.
switched back to the field telephone, or limited their use of radios.

In addition to climate, the amount of physical, geographical space in which individual campaigns took place played a role in creating differences in how the ground war was fought in the Pacific and Europe. Ground combat on the Pacific islands was fought over an area encompassing thousands of square miles in total, yet each island campaign occurred within the confines of a relatively small area of land. Space available to maneuver in ground combat was limited and land forces engaged in combat on the jungle islands fought in relatively confined geographical areas in the Pacific compared to the battles fought on the large land masses of Europe. Among the largest Pacific battlefields were the islands of Luzon and Okinawa. The largest of the Ryukuan Islands, Okinawa, is approximately sixty miles long, and forty-five miles across at its widest point. On the other extreme is the island of Iwo Jima, a land mass of volcanic ash, encompassing probably less than sixteen square miles. In contrast, soldiers fighting on the continent of Europe were not physically confined to a limited geographical area. This meant that there was more room to maneuver and fight on land in Europe than in the Pacific and was a significant factor affecting how the war was fought in both theaters.

Fighting an enemy in a relatively small, confined area meant that the artillerymen at the batteries were typically in closer contact with enemy infantrymen than their counterparts in Europe. Although there are some very notable exceptions in Europe,

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47. Describing the experience of the 29th Division with radios in France, Joseph Balkoswki noted that “in front-line foxholes, 29th Division riflemen eventually became wary of using their radios because they feared the Germans could pinpoint the source of transmissions by triangulation.” Balkowski, Beyond the Beachhead: The 29th Infantry Division in Normandy (Harrisburg, PA: Stackpole Books, 1989), 117.
American artillerymen in the Pacific were more likely to engage the enemy directly in ground combat at the battalion level than were their counterparts fighting the Germans. For example, Lieutenant Bruce Wells mentioned that during one phase of the fighting at Damulaan, a Japanese suicide party managed to infiltrate one of the batteries. As a result, artillerymen fought the enemy as infantrymen in close combat. In the brief firefight that ensured, one Japanese soldier made it beside the trail of a howitzer before he was killed, while a second one managed to detonate a heavy satchel charge in the breech block of an American howitzer. By dawn, the artillerymen had killed all eight enemy except one severely wounded soldier, who was taken prisoner. 48

Topographical differences between the Pacific and European theaters also affected field artillery in other ways. Artillery officer John Casey explained that on Guadalcanal, as it would be on many other islands, it was often necessary to use high angle fire. One reason was because the artillery batteries were so close to the enemy. Moreover, high angle fire put shells on a trajectory that would enable them to hit enemy troops dug into the reverse side of a slope, or to avoid hitting tree tops and exploding shells prematurely. In fact, because they were fighting within a relatively confined geographical area, keeping the guns an optimal minimum distance from the front lines became a problem at times. Artillery Captain Ralph M. Fuller indicated that high angle fire was very useful for jungle warfare, because quite often operations there took place only 500 to 1,500 yards from the batteries on the beachheads. For optimal effect, Fuller geographical area, keeping the guns an optimal minimum distance from the front lines

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advised artillery battalion commanders to position their guns as far from the units they supported as possible. Fuller recommended 2,800 yards or about a mile and a half as the minimum distance at which artillery could support infantry units with the use of high angle fire.

Differences in the features of the terrain such as plants, trees, and the density of foliage also made a difference in how the Army chose to fight and how it used its artillery between the two theaters. As forward observers on New Georgia and Bougainville quickly learned, they would frequently have to use sound instead of sight to sense rounds and adjust fire. From Okinawa, Major Eugene R. Smyth noted that the forward observers in his battalion adjusted fire by sound at least three fourths of the time in combat and became very proficient at it. There was an added advantage to using sound because it could also be used at night. Forward observers adjusted artillery fire by sound out of necessity on the Pacific islands, where the thick growth of tropical vegetation made it virtually impossible to see the flash of a burst indicating where shells were landing.

Forward observers in Europe also used sound adjustment to some extent when visibility was limited.

From his combat experience in France, Captain Eugene Maurey came to realize that he was often close enough to enemy guns and mortar positions that he could hear their propelling charges and determine the distance and direction from his position by ear. Elated by his success while serving with the 79th Division through the Foret de Parroy,


50. Smyth, Fighting the Nips, 43.
Mauer wrote an article, published in *Field Artillery Journal*, describing his methods and encouraging other forward observers to try them, as the circumstances allowed. Maurey later published an account of his experiences as a forward observer during the war, one of only a few to do so.

Comparatively less foliage in Europe than on the jungle islands of the Pacific meant fewer places for concealment increasing the danger of gun positions drawing counter-battery fire. Muzzle flash and smoke from the blast typically gave away the Americans’ positions. Captain Richard Van Horne suggested using firing positions in the natural depressions in the ground.

One feature of the Normandy terrain that afforded natural concealment for American and German batteries, alike, was the hedgerow. It gave them natural protection as well as cover. The raised earth provided additional defilade and the foliage helped conceal the muzzle blast of the guns. Also it was easy to blend the camouflage in with the local terrain. Here, the forward observer, with the ability to adjust fire by sound, had a real advantage.

A third element in what might be called leveling factors between armies fighting in the Pacific and Europe was population density. Differences in population density between the two theaters made a significant difference in how the ground war was


fought, and in turn, had implications for field artillery and forward observers. Although much of the fighting in Europe took place in relatively rural areas, Europe had many more inhabitants per square mile than the majority of islands in the Pacific.

Differences in population density affected the quality of maps available for general military use, and for artillery in particular, which depended upon precise topographical maps to direct artillery fire accurately. Prior to World War II, cartographers worldwide had placed more emphasis on mapping Europe accurately, than the remote, sparsely populated islands in the Pacific. As a result, early reports of the ground fighting in the Pacific indicated that the maps available were not entirely satisfactory. Commenting on the inaccuracy of maps made by combining smaller, individual sections for artillery use on New Georgia, Lieutenant Colonel Robert Gildart complained that the grids appearing on the maps made from aerial photos were rarely true squares and sometimes when two sheets were matched, the scales that had been used were not identical. Instead, they had been assembled by using the details on photographs of adjacent areas, distorting both the scale and the azimuth. Consequently, a map of this kind was unsuitable for use for field artillery firing. He did mention, however, that in addition to the unsatisfactory photomap, a multi-color map of the New Georgia area was available on a scale of 1:20,000 and that it was very satisfactory.

Part of the problem with maps, too, was trying to locate reference points in a jungle. Gildart observed that on a map or photo showing only the natural features of a

jungle, it is hard to determine the location of friendly troops with precision. Here, the absence of any manmade landmarks probably made it difficult to distinguish one hill from another. An army bulletin summarizing the lessons learned from Bougainville stressed the importance of obtaining and making better maps before beginning an operation.

In contrast, the maps available for artillery use in Western Europe were noticeably more reliable. Captain Harry Ostler praised the quality of maps available to him in France. He noted that both the survey section and the fire direction center could use the same maps, thus increasing the number of personnel in the battery available for forward observer parties.

Perhaps, the greatest significance of population density was the concern for avoiding civilian casualties and what the U.S. Army now calls collateral damage. An estimated 100,000 civilians perished during the struggle to liberate Manila from the Japanese. During the battle, the 37th Division relied heavily upon its field artillery. However, Manila, the largest urban battle the United States fought in the Pacific Theater of Operations, was atypical of combat in that theater. Most of the Pacific islands where fighting took place were very thinly populated. The more numerous urban centers and higher population density of Europe meant an increased concern for avoiding civilian

55 Ibid., 84.
57 Ostler, “In France … With 105s,” 17.
casualties there. After the Rhine crossing, it was customary for the German citizens of small villages to hang white flags out the windows of their homes as the American approached as a sign that they could expect no resistance and to spare their town destruction by American artillery.

More people in Europe meant more buildings, and because forward observers seek an elevated position to get the best view for directing artillery fire, Europe gave them an advantage not normally found in the Pacific Theater. Whenever they could, forward observers used towers and tall buildings, and, because almost every little village had a church of some kind, church steeples proved to be a most common spot for observing artillery fire, for German and American forward observers, alike. Because military observers of any kind are prime targets, artillery fire destroyed the steeples and damaged the churches in many of the villages throughout Western Europe, killing and wounding many forward observation personnel.

For example, in the French village of La Hayed Puits, a German forward observer crew set up an observation post in the steeple of the village cathedral. As the American 79th Infantry Division approached the town, the German infantrymen on the ground quickly left. The German FOs lingered too long, however, because a round from the 312th Field Artillery Battalion made a direct hit on the steeple. Shortly after, when the

58. Joseph Balkoski notes that forward observers in Normandy normally sought the highest point available for adjusting fire. In towns, church steeples typically afforded the best places for artillery observation. Balkoski, Beyond the Beachhead, 110; Jim McGhee recalls how, during his first mission as a forward observer, a German sniper shot at him as he climbed a church steeple in Gravelotte, France. McGhee, Golden Acorn Memories, 11-12. In other correspondence, McGhee relates how German artillery once hit a church steeple killing a new member of his observation team and how he tried to hit a church steeple in the Belgian village of Vesqueville where German forward observers were believed to be working.
riflemen of the 314th Infantry Regiment entered the village, they found the bodies of the
German forward observers sprawled out on the public square.

Conclusions

In a comparison of the U.S. Army’s practice of combined arms warfare during
World War II to that of the Japanese and Germans, notable asymmetry existed in the
Pacific Theater and relative parity in the European Theater. With the exception of its
field artillery, the Japanese infantry never worked well in coordination with its other
combat arms, and in the case of artillery, its coordination was not particularly good.
Germany’s practice of combined arms was ahead of the U.S. Army when America
entered the war, but over time the United States caught up.

The Japanese predicated their military doctrine upon bold and swift attacks. The
idea was that courage and spirit could make up for any material deficiencies, but in
practice, it had disastrous results. In effect, Japan’s tactical doctrine was mired
somewhere between General Pershing’s belief in the primacy of the rifleman and that of
the armies of late nineteenth-century Europe, a doctrine that cost them so heavily in
World War I. In contrast, the tactical doctrine of the Wehrmacht, while also
emphasizing the importance of bold, aggressive action and especially mobility,

59. The Cross of Lorraine: A Combat History of the 79th Infantry Division, June, 1942-December,

60. Describing the mindset of the great military leaders during World War I, Hallahan captured the
essence of Japanese military doctrine in World War II when he wrote: “Courage, elan, glory, invincible
confidence, pride, battle ribbons, regimental colors, all the manly virtues – these counted for more than any
weapon.” Hallahan, Misfire, 310.
recognized the advantage gained by using all available combat arms together in concert. Japan’s overall war effort was also severely handicapped because it lacked an abundance of natural resources, failed to maximize its industrial capacity, and placed little emphasis on a viable system of logistics. Fortunately for the world, Germany overextended itself by committing the same error it had in World War I, fighting on two fronts simultaneously.

Japanese field artillery was not the equal of American artillery. Japanese artillery doctrine followed a rigid chain of command that failed to provide for spontaneity and responsiveness. Japanese field guns lacked the range and accuracy of American ones, and ammunition shortages were commonplace. Japanese counter-battery fire was largely ineffective. Japanese optical equipment, however, was superior to that used by the Americans, and U.S. field artillerymen used captured Japanese optical equipment whenever they could get it.

In contrast, German artillery doctrine and practice was very symmetrical with that of the United States. German field guns were generally on par with American ones. Germany, however, lacked the ability to mass fires as effectively as the United States. German artillery’s lack of motorization and dependence on horse severely hampered its mobility, and in turn, its overall effectiveness.

Factors regarding the physical conditions in the two separate theaters of the war, such as climate, topography, and population density, also played a role in the shaping of

symmetry and asymmetry between the Japanese and Americans and Germans and Americans. The climate of the Pacific theater was rough on both men and equipment. More American soldiers died from disease in the Pacific than in the Europe. Humidity and dampness increased the unreliability of field radios in the Pacific. In Europe, cold temperatures there would also drain radio batteries quickly and sometimes freeze the operating mechanisms on various weapons at the most inopportune times. The climate also caused thousands of casualties due to frostbite while cold weather casualties in the Pacific theater were typically not a problem. The topographical features of the jungle islands forced forward observers, at times, to rely on sound rather than sight. Fighting on an island made it more difficult to distance oneself from the enemy and sometimes forced field artillerymen to resort to using dangerous high-angle fire. Finally, soldiers fighting in Europe tried to kill the enemy while trying to avoid killing innocent civilians, something Americans fighting in the Pacific had less reason for concern.

Despite the asymmetry in the Pacific and symmetry in Europe in ground combat, most American soldiers probably would have chosen to serve in the European rather than the Pacific Theater of war. David Kaufman, a native of Cleveland, Ohio, trained with the 87th Division but was reassigned to another unit before the division went to France. Kaufman ultimately served in the Pacific Theater in a heavy weapons company with the 129th Infantry Regiment and fought the Japanese on Bougainville and Leyte. Years later, he attended an 87th Division reunion so he could visit his old friends he had known during training. During the reunion, the question came up: which was tougher, fighting the Germans or fighting the Japanese. “The men at the 87th reunion said they all
preferred the former not the latter. The Germans took prisoners.”

PART II

Asymmetry in the Pacific
CHAPTER FOUR

BAPTISM OF FIRE: THE 37th DIVISION ON NEW GEORGIA

The participation of the 37th Division in the New Georgia campaign would provide its infantry and artillerymen with their first opportunity to execute the evolving doctrine of combined arms warfare. This would take place in the hostile environment of a tropical island where the terrain and climate compounded the misery of fighting a tenacious and often invisible enemy. The forward observation teams quickly learned that their greatest problems would center around tactical control, observation, and communications. The need to be abreast, if not forward, of maneuvering infantry to observe the enemy and direct and adjust fires made the dangerous job of conducting fires even more hazardous. Communication problems were also challenging. Terrain and climate made the use of heavy field radios difficult and often infeasible, while support troops struggling to perform their vital logistical functions at times inadvertently severed telephone lines.

New Georgia also gave the Division’s forward observers their first opportunity of the war to put their training from Fort Sill to use. Prior to World War II, the term “forward observer” was a generic one. During the First World War, it might have been used to describe a battery commander, an artillery liaison officer, or any of the enlisted men assigned to help these two officers observe the fall of rounds. It was the battery commander, though who conducted artillery fire. Typically he worked from an observation post to carry out his duties, although some of the enlisted men stood very
close to, if not in the front lines with the infantrymen, to help the battery commander adjust fire. If the riflemen they supported managed to break through the enemy lines and continue their advance, the forward observers remained behind. Not until World War II would forward observers stay with the maneuver elements of infantry operations and control the conduct of fire. As Captain Conrad Boyle noted, during the First World War, “No agency of communication existed at that time which would allow forward observers to exercise dependable control of the fire power available to them.” By the time the United States Army committed ground forces to the offense in World War II, this had changed.

Now an artillery officer, usually a second lieutenant, who had received training in forward observation methods, was designated as the forward observer. He had a minimum of two enlisted artillerymen assigned to him to make up a forward observation team. With at least one party per infantry battalion and more often one per rifle company, the group maintained perpetual contact with the infantry’s company or regimental commander they accompanied. Whether the riflemen advanced, retreated, or stayed in place, the team remained with them, until it was relieved. The frequency of relief varied somewhat. Perhaps because relief was available to these front line artillerymen more often than to combat infantrymen the Army did not formally recognize


these soldiers as combatants with a ribbon similar to the Combat Infantryman’s Badge. However, if one could talk to a forward observer veteran of the 37th Division today, it would be difficult to convince him that the service he performed on the islands of New Georgia, Bougainville, and Luzon, directing artillery strikes under Japanese fire did not represent an act of combat rather than a support function.

In February 1942, the War Department directed the Division to reorganize into a triangular division and later that same month ordered it to report to Indiantown Gap, Pennsylvania. Here, the division received even more intensified training in preparation for its overseas assignment. True to General Beightler’s prediction, the 37th Division was among the first Army divisions to deploy to a theater of war, but nearly a year after deployment would pass before the Buckeye Division first entered combat.

Originally slated to go to Northern Ireland and then to New Zealand, a third change of orders assigned the Buckeye Division to the Fiji Islands. On May 26, 1942, a convoy left San Francisco harbor carrying the 37th Division to its temporary assignment in the South Pacific. By mid-July, the entire Division had reached Fiji after a brief stopover in New Zealand.

3. Frankel, The 37th Infantry Division in World War II, 30-31; John Miller, Jr., indicates that during December 1942, the 37th Division, “the only other complete U. S. Army division in the South Pacific except the Americal, was then holding the strategically important Fiji Islands and could not be moved.” Miller, United States Army in World War II: The War in the Pacific: Guadalcanal: The First Offensive (Washington, DC: Historical Division, Department of the Army, 1949), 214.

4. Ohl, Minuteman, 95-96; Frankel, The 37th Infantry Division in World War II, 36-37.

5. Headquarters, 135th Field Artillery Battalion, Vicinity of Tamavua, Viti Levu, Fiji Islands, Unit History for 1942, January 15, 1943, Sheet 2. National Archives and Records Administration, College Park, Maryland, Record Group 407.
After ten months in the Fiji Islands, the 37th was reassigned to Guadalcanal, arriving on April 6, 1943, six weeks after the fighting had ended. Stanley Frankel’s 37th Division History does not record any American casualties resulting from Japanese stragglers left on the island. However, from the first day of their arrival the Japanese subjected the newcomers to air attacks.

Captain John Casey, an artillery officer who fought on Guadalcanal offered a preview of what the 37th Division artillerymen would soon experience. He observed that it was often necessary for cannoneers to aim the guns at a much higher angle than normal to hit Japanese positions on the reverse slopes of open ridges because shells fired at the flatter trajectories typically used, would either skim over, landing harmlessly beyond them, or fall short, one of the cardinal sins a forward observer could commit, because of the possibility of unintended casualties. The flatter the trajectory of an artillery shell, the less likely it is to be pushed by the wind. Conversely, winds are more likely to play a greater part in determining where a shell lands, when the round follows the abnormally higher trajectory which Casey described. To use high angle fire accurately demanded closer tolerances in adjustment by forward observers than usual. Although its use had the desired effect, it was at times unpredictable and posed a risk to friendly troops. It could only be brought to within four hundred yards of American lines because its steep vertical

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6. Frankel, The 37th Infantry Division in World War II, 64. In Chronology 1941–1945, compiler Mary H. Williams does not note the arrival of the 37th Division on Guadalcanal on April 6. Williams indicates that organized resistance there ceased on February 9, 1943, on April 7, 1943, a force of seventy-one Japanese bombers and 117 fighters attacked the Guadalcanal area in force, and on September 9, 1943, the 37th Division returned from New Georgia to Guadalcanal to train for the upcoming Bougainville operation. Williams, United States Army in World War II: Special Studies. V. 4: Chronology 1941-1945 (Washington, DC: Office of the Chief of Military History: Department of the Army, 1960), 91,103, 132.
plunge made it more susceptible to unpredictable drifting from prevailing winds. To use it safely and effectively depended upon close coordination between the observer adjusting the fire and the batteries and Fire Direction Center.

Describing observation methods used for adjusting fire, Casey explained that only two methods were available, aerial and ground observation, and he felt that the latter produced better results. Forward observers on the ground carried the same basic equipment that the combat infantryman did in addition to the heavy portable field radios used to communicate with the Fire Direction Center. For backup, they laid telephone wire as they accompanied the infantrymen.

The humidity generally found in the islands of the Pacific took a much heavier toll on the batteries used in field radios than the European climate. Although enemy artillery and mortar shells severed American telephone lines in the Pacific and the European Theater alike, the Japanese used their artillery sparingly on New Georgia. During combat, forward observers needed a way to be able to discern exactly where


8. Charles A. Henne, an officer with the 3rd Battalion, 148th Infantry commented that on New Georgia, his battalion’s patrols carried sound-powered telephones and the SCR 536 radios, but the radios rarely worked when needed. Another radio, the SCR 284 was so heavy and sensitive to the humidity that they routinely left it behind. Henne, “Battle History, 3rd Battalion, 148th Infantry, Volume IV: The New Georgia Campaign: Operation Toenails, 1943,” United States Military History Institute, Carlisle, PA, 14.

9. Author Brian Altobello notes that prior to the American invasion of New Georgia, the Japanese removed many of their heavy field pieces to the islands of Enogai, Bairoko, and Vila. Although the Japanese commander on New Georgia had an antiaircraft detachment and a mountain artillery regiment, the American pre-invasion bombardment destroyed many of the guns remaining and by the time of the landing, many were without ammunition. Altobello, *Into the Shadows Furious: The Brutal Battle for New Georgia* (Novato, CA: Presidio Press, 2000), 224.
shells were landing to avoid directing artillery fire on their own men. On the islands, visual sighting of targets was limited at times because mammoth trees and thick jungle growth often obscured the observers’ view, not only during daylight, but even at night, when the flash which would normally be most visible in the darkness. So again, the ability to adjust artillery fire by sound became an important asset to many forward observers in the Pacific Theater.

Guadalcanal, the first American offensive land engagement of the war in the Pacific, proved false all pre-war concerns about artillery’s effectiveness in the jungle and the forward observers’ ability to operate effectively from the front lines during the confusion and noise of battle. It also demonstrated the blurring of functions distinctly assigned to infantrymen and artillerymen that would occur wherever forward observers served. Casey noted that as part of the maneuvering infantry, “We learned to travel light and quietly. Circumstances quickly taught us minor infantry tactics. We drank out of shell holes. We went for days without chow. The honeymoon was over. The artillery went to war.”

In most of the island campaigns of the Pacific, logistics played a crucial role in the final outcome. Guadalcanal and New Georgia were no exceptions. To offset their shortage of ammunition, Japanese artillerymen on New Georgia resorted to a ruse which frequently proved successful. In the midst of American artillery barrages, they would sometimes lob in an occasional mortar or artillery shell on American positions in an

effort to make the GIs and Marines think that the exploding shells were their own artillery firing short. Often it worked. Immediately some concerned infantry lieutenant or captain would make an urgent request for American artillery to cease firing.

Except for air raids, life on Guadalcanal for the men of the 37th Division in the spring and early summer of 1943, although primitive, was comparatively safe. Less than two hundred miles north lay the island of New Georgia, where Japanese aircraft from Munda began their bombing raids on Guadalcanal. By capturing Munda airfield, U.S. fighter planes could use it to escort bombers from Guadalcanal in raids on Japanese positions on Bougainville and from the latter could launch attacks on Rabaul, the largest Japanese naval installation in the South Pacific.

The plan of attack for the New Georgia campaign, code named Operations Toenails, called for United States Marines joined by the Army’s 43rd Division to carry out initial assault while the 37th to stand by on reserve. Beightler detached a number of units from his Division including the 3rd Battalions of the 145th and 148th Infantry and the 136th Artillery Battalion, which had been training with the 43rd Division since June to accompany the 1st Battalion of the 1st Marine Raiders to land at Rice Anchorage on the northwest coast of New Georgia.

The battle for the island lasted about a month. On July 5, the 3rd Battalion of the 145th Infantry landed, followed by the Marines and the 3rd Battalion of the 148th Infantry. On July 9, the 136th Field Artillery fired its first shot in anger and from then on

11. Ibid., 566.
was occupied daily with frequent fire missions around the clock until the fight for New Georgia ended on August 4, 1943. During that entire time, no place in the jungle remained consistently secure. On the night of July 20, a large enemy force attacked the 43rd Division command post at Zanana Beach.

Because the enemy was so near to the American headquarters, the forward observers called artillery rounds almost on top of themselves. To do this successfully required a high degree of coordination and control between the Fire Direction Center people, the gun crews, and the forward observers who were “sensing” the rounds as they fell. By using a method of fire adjustment called “sound and fragment” they directed the initial rounds to fall a safe distance forward of their positions, then walked them back by listening for the sound of the impact, bringing the rounds to an zone between one hundred to five hundred yards from the edge of the bivouac area. The only short round of the entire barrage was one of the initial registration rounds.

The 136th laid down a protective curtain of fire around the camp’s perimeter all night. This broke up the attack while inflicting heavy casualties on the Japanese. Brigadier General Harold R. Barker, 43rd Division Commander, who occupied the command post during the attack, was so grateful that the following day he paid a personal


visit to the 136th Field Artillery Battalion to thank them for saving his life.

Ground combat has sometimes been called “the meat grinder,” and the type of fighting infantrymen undertook on New Georgia, attacking well-concealed Japanese emplacements became just that. Because the Japanese hid their fortifications so well, advancing U.S. infantrymen generally did not see them until they were literally on top of them. Once aware of their presence, they often withdrew a safe distance and called in artillery or mortar fire to try to destroy them, or if that was not possible, they tried to defoliate the ground in front of them. The 43rd Division captured Munda on August 5, ending the most intense phase of the struggle for New Georgia. Yet, fighting continued against the remaining Japanese survivors who offered substantial resistance for nearly two more months.

On New Georgia, American fighting men witnessed the same Japanese ploy that Captain Casey had described during the fighting on Guadalcanal. Realizing that they were overmatched by their American counterparts, the Japanese would wait until the 37th guns had unleashed a barrage, and then attempt to imitate the pattern of American fire. One American after-action report noted that frequently throughout the entire campaign, unit commanders would call to complain that their own artillery was hitting their men.

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17. Frankel, The 37th Infantry Division in World War II, 83.

18. Frankel describes fighting on July 28 when the 1st Battalion, 145th Infantry Regiment, lost 16 killed and scores wounded in a single day. Ibid., 96-97.


20. Ibid., 119.
Very typically, what they deemed as friendly fire falling was really enemy 90-millimeter or 75-millimeter shells.

As they watched the artillerymen accompanying them adjusting artillery fire, the American infantrymen naturally blamed them when they believed that friendly rounds had fallen upon them. In turn, forward observers were generally sensitive to their claims. Sometimes, given the proper circumstances, one could determine the origin of an exploded shell. One American artillery officer on New Georgia described how he was able to confirm that rounds landing inside of American lines were Japanese. Immediately after he had called for his initial rounds, the Japanese fired upon American positions to his right, convincing the infantrymen there that they had received a short round in their midst. After all firing had ceased, the forward observer sent an officer to the place where the alleged American shell had landed. “I told him to inquire if the smoke from the explosion was black (that’s a characteristic of the Jap howitzer shell which I had observed when several of them had sited [sic] our battalion CP one time); the 105-millimeter shell smoke bluish. Well, the witnesses allowed as how the smoke was blackish and furthermore, the officer found the Jap fuse.” Unfortunately, not every incident where Americans alleged that short rounds had landed among them was so readily verifiable.

One infantry battalion commander affirmed that using artillery and mortars against cleverly concealed Japanese defenses could be very effective while saving

numerous American lives, but that jungle warfare placed certain limitations upon its use. These included the difficulty in determining the position of friendly lines, the time required to position batteries in such a way as to permit high angle fire, and the withdrawal of troops. For forward observers, these posed challenges in control and coordination their training had neglected.

Prior to fighting in the Pacific Theater during World War II, United States field artillery had very limited experience in jungle warfare. Paragraph twenty-eight of Field Manual FM 31-20 Jungle Warfare warned that the great weight and bulk of the field guns would hinder their mobility and that the dense growth of the jungles would constrain the explosive burst of projectiles. It added that the density of jungle growth would greatly reduce the effectiveness of indirect fire because it would limit the visibility of observers whether on the ground or in the air. Lieutenant Colonel Robert C. Gildart rejected these claims. Based on his own experience on New Georgia, he asserted that artillery’s

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22. Ibid.

23. Historian Janice E. McKenney observed that shortly after the Spanish-American War, the Ordnance Department of the United States Army appointed “a board of officers to investigate the efficiency of American weapons in the Cuban and Puerto Rican campaigns. The board reported that artillery employment was too limited to produce any useful evaluation.” McKenney, The Organizational History of Field Artillery 1775-2003 (Washington, DC: Army Lineage Series: Center of Military History, United States Army, 2007), 89; In his account of the Philippine Insurrection, Colonel William Thaddeus Sexton notes that while field artillery could be put to good use in the Philippines, it was most effective in an urban environment and situations where the enemy remained in place. However it was not well suited for those situations where any degree of mobility was required, noting on several occasions where the infantry could not take along “wheeled transport” of any kind. Sexton notes one occasion when an artillery piece became stuck in the mud and “virtually disappeared from sight.” It is also apparent from his writing that the army clung to the use of direct fire of artillery in the Philippine War. It is no wonder then, that military strategists questioned the effectiveness of indirect fire in an jungle environment prior to 1942. Sexton, Soldiers in the Sun: An Adventure in Imperialism (Washington, DC: Infantry Journal, 1944; Freeport, New York: Books for the Libraries Press, 1971 reprint).
success in combat there invalidated these claims.

By the early stages of the Second World War, with the use of forward observers, field artillery could now provide the continuous close, responsive support to riflemen in combat lacking in World War I and with it, infantry and artillery came to achieve genuine combined arms effectiveness. Their placement at the very fore of battle enabled forward observers to routinely observe and control fires in a way that the battery commanders of the First World War rarely experienced. Portable field radios enhanced artillery’s communications capabilities making possible the effective massing of fires using the Fire Direction Center that had evolved during the inter-war period. There was some basis of truth in FM 31-20. Dense jungle growth did hamper observation efforts. However, Colonel Gildart noted that at times, observation on the ground was impossible except in portions of the zone of action. Forward observers did not always see the targets on which they adjusted fire. Consequently, field artillery relied on a combination of aerial observation when feasible, and ground observers adjusting fire by sound.

Whether visibility for observation was better from the air or on the ground depended largely upon the individual topographical characteristics of a particular area. In a rather contradictory statement, the 37th Division Artillery Narrative for New Georgia explained that ground observation near Munda Air Field was virtually non-existent. Yet the same paragraph described air observation as particularly good around the airfield (an


25. Ibid., 8
area cleared of vegetation) while asserting that just to the east, the jungle growth precluded effective sighting from the air. In conclusion, the writer cited ground forward observation as the most satisfactory method of adjusting fire. The conclusion one may derive from this article then is that while an observer in an aircraft may have a broader visual perspective and cover much more ground in less time than someone on foot, dense jungle growth rendered air observation less useful than ground observation. Either way, artillery still represented a highly effective weapon in a jungle environment. As noted previously, General Barker felt that he owed his life to the well-placed fires of the 136th Field Artillery Battalion.

Often two forward observers on the ground, working together but from separate locations, adjusted fire by sound when friendly troops occupied a broad front. Both sent a sensing to the Fire Direction Center which then made a comparison and then selected a composite to insure the safety of each man. Their greatest difficulty lay in adjusting rounds in the area three hundred yards immediately to their fore. All rounds landing in this region seemed to produce the same sound.

Another artillery officer, Lieutenant Colonel Howard F. Haines, describing the difficulties that were encountered when adjusting fire by sound on New Georgia, noted that forward observers frequently made their initial sensings by sound. After it was determined that a round of smoke had landed in a safe location, he would call for a volley


of high explosives to try, if possible, to see the bursts. Adjusting fire by sound was especially difficult. Sound echoes in the jungle and sound waves reaching the ear may not arrive from the direction in which they originate. Even night and day, rainy and clear weather make a difference in the way that sound approaches the listener in the jungle.

The sound of a shell exploding at tree top level differs from that of one hitting the ground and may in fact vary in range over one hundred yards due to the slope of fall. To complicate matters, infantry commanders, unable to see the flash of the burst, perceived that friendly fire was falling much closer to them it actually was.

Because sound adjustments were comparatively slower than visual sensings, their use also increased the time necessary to mass fires. Colonel Gildart asserted that, “Past experience indicated that with this method each battery within a battalion should be adjusted rather than massing fire on the adjustment of one.” This was a reasonable precaution, for if the sensings of one or even two observers working together were in error, only one battery rather than an entire battalion might fire short before the mistake was discovered and corrected.

Of course, adjusting artillery fire by sound was not always necessary; visual observation of targets by ground observers was still possible from time to time, and could be extremely precise. One incident involving visual sighting occurred on July 27, as 37th Division Artillery was firing a brief mission in support of Colonel Theodore Parker’s 2nd


Battalion, 145th Infantry. The regimental commander overheard this exchange on the radio as he was awaiting the prelude to the infantry’s assault; “Right twenty-five [yards],’ a forward observer with the infantry told his battery executive officer. ‘What the hell?’ the battery exec countered, ‘the effective radius of one round is thirty yards. Why the twenty-five yard shift?’ ‘Well, I missed one of the little bastards.’

Aerial observation in the Pacific Theater could be more advantageous than ground observation, but not always. In a section addressing reconnaissance, the 37th Division Artillery Narrative explained that aerial observers naturally approached the enemy much quicker than an observer on the ground enabling American artillery to open fire quicker before the enemy could respond. However, the advantage and success of spotting enemy installations from the air depended heavily upon the terrain. In areas with little cover like the beaches and the area around Munda Airfield, it gave excellent results, but the features of the jungle almost universally obscured targets from aerial observation.

Positioning field artillery forward observation teams with maneuvering infantry during World War II led to a blurring of the distinction between the roles played by the two combat arms, infantry and artillery. Lieutenant Colonel Howard F. Haines noted that on New Georgia, “The forward observers and liaison officers stayed with, fought with, and became part of the infantry battalions, going through the campaign with them without relief and then frequently being sent into combat with another battalion when their own

31. Headquarters, Division Artillery, Artillery Narrative, New Georgia, 8.
was temporarily inactive.” The front-line artillerymen also left the line when they
too, became casualties.

Forward observer personnel, the commissioned officer and his accompanying
enlisted men, did more than provide a technical function. Quite often they became
combat riflemen and aid men. Lieutenant Colonel Haines described an incident in which
a forward observer party had been adjusting fire from a beach when a group of seven
Japanese soldiers attacked them, cutting them off. They then shot their way out, killing
all seven. One forward observer killed a Japanese with a hand grenade. An American
lieutenant was walking down a trail beside a sergeant. The sergeant fell with a bullet
through his head. The lieutenant turned quickly and, with his Thompson submachine
gun, killed the three enemy soldiers who had fired on them.

Although the battle for New Georgia was short-lived in comparison with those
that were to come on Bougainville and in the Philippines, field artillerymen of the 37th
Division Artillery, officers and enlisted men alike, were well represented among the
recipients of the decorations awarded for that campaign. For example, First Lieutenant
Scott A. McKinnon, of Canton, Ohio, a forward observer on New Georgia, received the
Bronze Star not only for his effective adjustment of fire but for his actions as a combatant
which probably saved the lives of his men. When enemy troops ambushed him and his
two men as they adjusted fire in an exposed area, Lieutenant McKinnon ordered his men


33. Ibid.
to withdraw, then covered their withdrawal with rifle fire, killing three and possibly two more Japanese soldiers before reaching safety himself.

The positioning of forward observation teams with maneuvering infantry during World War II not only led to a blurring of distinctions between combat arms for those involved, but a blurring of rank among forward observation personnel as well. The designated forward observer was a commissioned officer, usually a lieutenant. As the war progressed, however, after so many forward observers had become casualties, many field artillery battalions resorted to using noncommissioned officers as the designated forward observer. In the meantime, the NCOs and enlisted men comprised the remainder of the forward observation team or party accompanying the lieutenant. These enlisted men also earned many awards for their actions, not as technicians but as combatants.

Technician Grade V Burt E. Silverthorn of Cleveland, Ohio, was awarded the Bronze Star for his actions on New Georgia. During the assault on Munda Airfield, Silverthorn served as a member of a forward observer party accompanying an infantry battalion. During the night, Japanese artillery shelled their position, wounding all the members of the forward observer team except Silverthorn. Leaving the cover of his position, he assisted in treating and evacuating the wounded despite being badly shaken by the concussion of one shell which landed six feet away. Then under intermittent enemy artillery fire and small arms fire, he took over for his wounded lieutenant, calling

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34. Headquarters, 37th Infantry Division, General Order #40, APO 37, 28 Apr 1944, 5. National Archives and Records Administration, College Park, MD, Record Group 407.
for the protective fire which enabled the battalion to hold on during the night.

As mentioned before, the Combat Infantryman Badge and the Combat Medical Badge were two insignia created during the Second World War to indicate that the wearers had participated in some continuing manner in ground combat. On October 27, 1943, War Department Circular Number 269 first authorized the Combat Infantryman Badge in part, “to foster esprit de corps in infantry units.” Only infantry personnel were eligible to earn and wear the CIB, as it is still called today.

Originally designated as the Medical Badge, the War Department created the Combat Medical Badge, or CMB, on March 1, 1945, to “be awarded to the officers, warrant officers, and enlisted men of the Medical Department assigned or attached to the medical detachment of infantry regiments, infantry battalions, and elements thereof designated as infantry . . . .” Its evolution stemmed from a requirement to recognize medical aidmen “who shared the same hazards and hardships of ground combat on a daily basis with the infantry.” Both the CIB and the CMB quickly became highly coveted awards among Army personnel serving in the major theaters of the war, particularly the CIB since career soldiers wearing it frequently found that it enhanced their ability to be promoted. This in turn, led to abuses. Gerald Astor called it a “sham” the way in which some officers “earned” their CIBs: “There were officers who drove into

35. Headquarters, 37th Infantry Division, General Order #38, 4.

36. War Department, Circular No. 269 (Washington, DC, Oct. 27, 1943), 1.

the rear of a combat zone, which could be maybe a mile wide and a mile deep. They’d
stay there for a certain length of time, then fill out the papers for a CIB. That gave them
the same status as the poor slobs forced to be in the equivalent of the killing zone.”

The CIB is not a sham when awarded to those for whom it was intended and no
one who knows anything about the nature of ground combat would ever argue that the
combat infantrymen and the combat medics did not deserve these badges of distinction.
Unfortunately, the Army never created a similar badge for the forward observer
personnel who also “shared the same hazards and hardships of ground combat on a daily
basis with the infantry.” On New Georgia, forward observation teams routinely occupied
the first fifty to one hundred yards of the front lines, when they were not actually out in
front of them. The citations for Technician Silverthorn and Lieutenant McKinnon are but
two of many received by field artillerymen for their actions on New Georgia. These
awards attested to two incidents that took place in combat, where forward observers
performed more than simply their technical function as artillerymen. As front-line
artillerymen, they blurred the distinction between the combat arms of infantry and
artillery. In addition, as enlisted men did the work of officers, they blurred distinctions
between rank.

Typical of almost every island campaign the United States fought in the Pacific
Theater in the Second World War, the battle for New Georgia took longer to complete
and resulted in many more American casualties than military planners had foreseen.
Originally intended to involve only the 43rd Division, it required three army divisions

38. Gerald Astor, A Blood-Dimmed Tide: The Battle of the Bulge by the Men Who Fought It (New
ands several Marine battalions to take the island. Army and Marine casualties included 1,094 dead and 3,873 wounded. Official estimates of Japanese dead exceed 2,400. Casualties for the 37th Division on New Georgia included nineteen officers and 217 enlisted men killed in action or died of wounds, and 1,010 wounded. The division estimated it killed 1,426 Japanese and took just 20 prisoners. In only 12 days ending on August 5, its field artillery battalions fired just under 25,000 rounds of artillery shells.

Also typical of the battles in the Pacific islands was the way the Japanese generally fought to the death rather than allowing themselves to be captured. The 37th Division History does not specify how many, if any, of the twenty Japanese prisoners the division took, may have been unconscious or physically incapacitated when taken prisoner. In many of the larger battles that followed, twenty prisoners would have been a large number. It does tell, however, of several occasions where wounded Japanese soldiers played dead, then opened fire on American soldiers as they passed by, knowing that death was certain.

After the war, General Beightler summed up the New Georgia campaign, calling it a “shoe-string affair,” compared with the subsequent campaigns in which his division would fight. The Japanese on New Georgia, impressed Beightler with “their ability to organize strong defensive positions and their willingness to fight to the last man. But he also thought that his men were as good fighters as the Japanese and, when backed with

40. Frankel, 37th Infantry Division in World War II, 107-8.
the U.S. Army’s superiority in artillery, were unbeatable.”

After the war, he expressed the respect he had gained for his own artillery in the summer of 1943 and the benefits derived from relying on it heavily, calling New Georgia “the testing and proving ground” for the Division’s artillery. The general concluded that his superiority of artillery in battle tipped the scales in favor of his division, and as noted earlier strongly believed that the number of casualties his men incurred was inversely proportional to the amount of artillery shells fired.

As a veteran of the First World War, General Beightler knew something about the human cost of winning battles. Steeped in General Pershing’s doctrine of open warfare emphasizing the primacy of the rifle, Beightler was realistic enough to realize that rifles and bayonets, alone could not overcome well-concealed machine gun emplacements. He was also aware that the infantrymen of the AEF succeeded not because of any tactical advantage, but, as James W. Rainey notes, “by smothering German machine guns with American flesh.” When General Beightler saw the level of success in the execution of combined arms tactics between his infantry and artillery on New Georgia, he was encouraged to rely more heavily upon his artillery to reduce his division’s casualties in subsequent campaigns. His comments really allude not to the achievements of artillery alone, but to the newfound success field artillery experienced,

41. Ohl, Minuteman, 120.
fighting in combination with infantry during World War II, success on a level not imaginable only twenty-five years earlier.

Conclusion

For the 37th Division, New Georgia represented its initial opportunity to execute combined arms warfare in action in a Pacific island environment. For the Buckeye Division’s artillerymen, it was their first chance to begin ironing out problems of command, control, and communications in the practice of combined arms tactics. Of the three, problems with command were minimal.

The Division’s forward observers experienced problems immediately, however, with control, both in observing and adjusting fires. From the realization that the forward observation teams must be up front with the infantry came the eventual blurring of distinction between combat arms that for the 37th began on New Georgia. In a jungle environment where, at times, it was impossible for a man on foot to see more than twenty feet ahead, they developed the ability to use sound rather than sight to sense the fall of rounds. Finally, under the heading of control, they had to deal with the distinction between ground and aerial observation and the advantages and disadvantages inherent in both. However, this was not a problem unique to the 37th Division.

Visual sighting of targets on the South Pacific islands remained problematic during the Second World War, much as the use of observed fire in general had been throughout the First, but for a different reason. Now the nature of the terrain not the placement of the observer was the reason. Bougainville, where the 37th Division would next fight, was no different in that respect than New Georgia. The Battalion Intelligence
Officer for the 129th Infantry recalled that during the Bougainville campaign that he often flew as an observer in a small plane over the island and that other than the natural beauty of the island, “there was little to see under the dense cover provided by the trees.” Such was the typical nature of the terrain on the islands of the Pacific, and while an observer in an airplane has a much wider view than a man on foot, this advantage means little in land concealed under the heavy vegetation of tropical growth.

The problem of control through observation was a perpetual problem on New Georgia while problems with communications, although troublesome, were not quite as perplexing. Although the United States Army was making extensive use of portable field radios by this time, forward observers on New Georgia depended on telephones more than they did radios to call for and adjust fire. At times, however, phone lines were broken, and when they went out, it was typically because friendly, not enemy troops, had inadvertently cut the lines. As crews widened the roads in areas away from the fighting and rerouted them they felled trees; when the trees came down, the wire came down with them. Repair crews were almost always at work, two men repairing while three guarded against possible snipers. All this additional support activity meant that the number of personnel required in the jungle was far in excess of that authorized in the newly created Tables of Organization and Equipment, drawing artillery’s pool of manpower even thinner. Yet, U.S. artillery and infantry forces on New Georgia relied heavily upon


telephones because, as Colonel Gildart indicated, “We only have one radio light enough for an observer to carry and yet still powerful enough to communicate through the jungle to the FDC. This set is the SCR-511 (used in conjunction with an SCR-284 as a base set); and it is fragile and susceptible to dampness.”

Not available during the First World War, portable field radios held great promise for use in the Second. But in the field, they did not always function properly or consistently, and were difficult to maintain under less than ideal conditions. However, the single most significant improvement in forward observation since World War I was achieved simply by placing those responsible for observing and adjusting artillery fire at the front. Despite difficulties in visual observation, and maintaining communications, forward observers were no longer somewhere between the batteries and the front lines but rather in the foremost positions possible and, in some cases at Munda, in advance of the lines. Nor did the noise and confusion of battle that they encountered there prohibit them from effectively adjusting fire during the battle.

The division’s use of field artillery on New Georgia seemed to indicate that all the limitations that had prevented field artillery from providing close artillery support of infantry during the First World War had either been eliminated or would soon be worked out. From their new position within the front lines, forward observers did more than just call for and adjust artillery fire to help win the war: they took part in the fighting.

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46. Ibid.

47. U.S. Army Ground Forces, Field Artillery School, “In the Pacific Areas,” Artillery in Combat Number 4, 1944-45, 9, Combined Arms Research Library, Fort Leavenworth, KS.
For *Field Artillery Journal*, General Barker listed what he considered to be the most outstanding features of the New Georgia campaign. Noting that the tactical employment of artillery on New Georgia conformed closely to the procedures spelled out in existing manuals, Barker wrote that “one of the most gratifying results of the New Georgia Campaign from the artilleryman’s viewpoint was the confidence and enthusiasm displayed by our infantry for their artillery.” At times, the infantrymen wanted artillery fire placed as close as fifty yards from their front lines. He also noted the importance of the ability of forward observers to use sound adjustment, adding that at times it was the only way from which way results could be obtained and that they became very proficient at it. In his final analysis, he praised “the superior work of the personnel employed in maintaining contact with the front line infantry units such as liaison detachments, FOs, and communications personnel,” commenting that “at least sixty percent of all artillery officers were with the infantry on the mainland at all times.” Finally, he lauded the ability of American artillery to mass fires at battalion, division and, corps levels.

World War II witnessed the development of close coordination between infantry and artillery that was so sorely lacking during the First World War. For example, on New Georgia, American artillery fired rolling barrages like those employed in the previous war beginning close to the infantry and moving ahead 500 yards in fifty to one


49. Ibid., 534.

50. Ibid., 536.
hundred yard increments. In those instances when the infantry followed closely, few if any casualties were incurred. However, when they delayed their departure from the front lines by an hour or more, they took heavy casualties from Japanese automatic weapons and made little, if any advance. In summary, the work of forward observers during the New Georgia campaign was “outstanding.”

The 37th Division artillery experience on New Georgia also demonstrated the asymmetry that existed between Japanese artillery and its American counterpart. During the upcoming battle for Bougainville this imbalance would become even more pronounced. Japanese infantry doctrine and tactics would put their attacking riflemen at a decided disadvantage against the Americans’ ability to mass fires effectively, and that would signal the doom of the Imperial Army in the Pacific.


52. Ibid., 15.
CHAPTER FIVE

BOUGAINVILLE: MASSED FIRES AND MASSED SLAUGHTER

The battle for New Georgia gave the forward observers of the 37th Division their first opportunity to apply their training to battlefield conditions. For the most part, it served them well. The major exception, however, was the frequent need to adjust fire by sound rather than by sight. Their first taste of combat also provided them with a close look at an enemy who was extremely cunning. The Japanese trick of firing a few artillery shells into American positions in between 37th Division salvos made forward observers even more cautious in carrying out their work. The fall of New Georgia provided additional air fields from which to launch air attacks against the Japanese, but their planes still posed a threat from bases on Bougainville, Buka, and Rabaul. The northernmost and the largest of the Solomon Islands, Bougainville is 125 miles long and thirty to forty-eight miles wide, a much larger island than New Georgia.

Bougainville is not one of the more well-remembered battles in the South Pacific. However, for the men who fought there it became an ordeal and an experience they most likely never forgot for the rest of their lives. United States military planners considered its capture in 1943 as absolutely essential to prepare for the invasion of New Britain and

1. Frankel, History of the 37th Infantry Division in World War II, 119.
the reduction of Rabaul, Japan’s largest air and sea base in the South Pacific. As this chapter will demonstrate, Bougainville provided a much greater test of the 37th Division’s ability to combine infantry and artillery tactics in a difficult setting—the jungles of the South Pacific. The island campaign thoroughly tested control and communications. Its most distinguishing aspect—massed fires and massed slaughter—came with both combat arms operating to their fullest potential in the defense. The slaughter demonstrated the distinctly asymmetrical nature of the ground war in the Pacific, at the tactical level, and the way in which a flawed Japanese infantry doctrine played into the hands of America’s military strength.

Bougainville’s topography favored defensive action, with high volcanic mountain ranges, dense rain forest, thick jungles, swamps and a few broad plains. But the island was about five times larger than New Georgia, with more open area. Although dense jungle growth would again obscure visual sighting of targets, the open areas would increase opportunities for forward and aerial observers to adjust fire on targets by sight rather than sound.

The American invasion of Bougainville began when elements of the 21st Marine Regiment landed at Torokina on November 6. The 148th Infantry landed on November 8 and was assigned to the 3rd Marine Division. The 129th and 145th Infantry followed a few days later. Most of the 37th Division Artillery had landed near Torokina mid-month,

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including the 136\textsuperscript{th} Field Artillery on November 17 and the 135\textsuperscript{th} two days later.

November proved largely uneventful for the Buckeye Division, except for its artillery units. By November 23, Marine and Army reconnaissance had designated an area approximately eight hundred yards square for artillery bombardment to precede an assault by two battalions of the 3\textsuperscript{rd} Marines. On the next morning seven howitzer battalions, four Marine, and three from the 37\textsuperscript{th} Division, opened fire at the appointed time with a concentrated barrage. One half hour later, a Japanese battery began directing accurate fire on the assembly positions of the Marines. Soon the Japanese artillerymen found that they were overmatched.

A forward observer party on Cibek Ridge spotted the enemy position and called for counter-battery fire from the 37\textsuperscript{th} Division’s 155-millimeter howitzer battalion, quickly destroying the Japanese guns. American artillerymen fired a total of sixty tons of high explosives upon Japanese emplacements. The 135\textsuperscript{th} Field Artillery Battalion History notes that the Division’s artillery fire on that date killed an estimated 1,021 enemy soldiers. Japanese prisoners later indicated that those not physically injured by the

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4. Ohl, Minuteman, 119-27; United States Army, Report After Action: Operations of the 37\textsuperscript{th} Infantry Division Bougainville, B.S.I., 8 November 1943 to 1 May, 1944: Section III: Artillery Narrative, National Archives and Records Services Administration, College Park Maryland, RG 407, 2.


7. Headquarters, 135\textsuperscript{th} Field Artillery Battalion, Battalion History – 135\textsuperscript{th} Field Artillery Battalion
intensity of the fire had left the line requiring treatment for extreme neurosis.

In the Pacific Theater, Army forward observers, at times, directed artillery fire for the Navy and Marine Corps. Today, the United States Field Artillery is known as the Army’s integrator of joint fires and effects, with the ability to coordinate the firepower of other branches with its own. In 1943, the joint fires concept was still in its infancy.

On the morning of November 29, Major Richard Fagan’s 1st Marine Parachute battalion, accompanied by Company M of the 3rd Raider Battalion and a forward observer team from the 12th Marines, carried out a raid against Japanese installations east of the Saua River. The party came ashore “virtually in the middle of a Japanese supply dump.” The immediate Japanese reaction left the Marines pinned down close to the beach for hours. A forward observer from the 155th millimeter gun battalion then adjusted artillery fire on the Japanese positions enabling the Marines to withdraw to safety that night. On November 30, Captain Milton Bagby, of the 136th Field Artillery, adjusted the fires of two naval destroyers as they shelled Japanese positions along the coast from the Saua

-- Apr. – Dec. 43; New Georgia Islands, Solomon Island Campaign, 6 January 1944, Battalion History for September, October, November, December, 1943, 3. National Archives and Records Administration, College Park, MD, RG 407.


River east.

By mid-December 1943 the Marines, with support from the Army, had carved out an area roughly four-and-half miles by six miles and had constructed three airstrips within. Near the end of the month, the Americal Division arrived at about the same time the 3rd Marine Division departed. As he was leaving the island, the Marine artillery commander expressed his gratitude to the U.S. Army for its cooperation and described the efficient conduct of American artillery on Bougainville, calling it “an example of exceptionally smooth operation between two units of different Federal forces,” adding “[it is] also evidence of a spirit of comradeship and cooperation worthy of the best traditions of the United States military forces.” The 3rd Marine Division Combat Report for the Bougainville operation also lavishly praised the artillery support furnished by the 12th Marines and the 37th Division, describing accurate artillery fire as “the dominant factor in the driving the Japanese forces out of the Torokina area.” The report credited at least half of the enemy’s casualties to artillery fire.

The Americans met less enemy resistance than they might have when they arrived on Bougainville in November because Japanese General Hyakutake thought the initial landings represented a feint, and that the bigger landing would come later. Hence, he had declined to shift the bulk of his troops to the area around Empress Augusta Bay. By

12. Ibid., 4.


February, the commander of the Eighth Army Area headquartered on Rabaul, General Hitoshi Imamura, directed Hyakutake to prepare for an offensive, codenamed TA, to break through the perimeter and capture the three American airfields on the southwestern side of the island.

Japanese intelligence grossly underestimated American troop strength, figuring that the 15,000 men Hyakutake would have available, supported by the largest concentration of Japanese artillery ever assembled in the Solomons, could succeed. Instead, by the beginning of the new year, Major General Oscar Griswold, commander of all U.S. forces on Bougainville, had more than 50,000 troops to hold the ground which had been gained, a figure more than doubling Japanese estimates.

Every manner of Allied intelligence from coast watchers, to long and short-range ground patrols, prisoners, and even a few deserters indicated that the Japanese were marshalling their forces for a large-scale offensive. By mid-February, patrols and brief fire fights indicated that the enemy was concentrating troops around the top third of the arc formed by American forces defending Cape Torokina. Papers taken from enemy corpses gave General Griswold the exact details of the Japanese plan of attack, and other valuable information including the general location of enemy artillery units.

From these captured documents, American intelligence on Bougainville learned that the Japanese planned to attack on March 6, later delayed until March 8. With a huge advantage in men, the only American disadvantage was position. The Japanese held


most of the high ground in front of the American zone, enabling them to observe their enemy’s activity along the perimeter. To execute TA, General Haykutake called up the 6th Japanese Division. The 6th had seen long service in the war in China, and had taken part in the infamous Rape of Nanking.

At about the same time, evidence from patrolling indicated increased Japanese activity in front of the 37th Division lines near the Tsinamatu River. Division Headquarters then decided to contest the area and sent two companies from the 145th Infantry to reinforce those already in place beyond the perimeter. A force of about five hundred men advanced about a half mile before digging in and requesting artillery fire for the morning of February 16 prior to making their attack on Japanese positions. Author Harry Gailey noted that some of the rounds fell short, landing in the midst of the Americans, killing three members of the 145th and wounding twenty.

This may have been another case where the Japanese threw in a few artillery rounds to make the Americans think they were being hit by own fire. Forward observers during the Second World War carried a tremendous responsibility. Undoubtedly some were responsible for friendly fire casualties through their errors. Today, those directing artillery fire use computerized range finders to adjust fire, but in 1944, they did it by

17. Ohl, Minuteman, 128-29.

18. Beightler, Major General Robert S. Beightler’s Report, 5; Frankel, The 37th Infantry Division in World War II, 142; Ohl, Minuteman, 129.

19. Gailey, Bougainville, 136-37; Stanley Frankel records the same incident but with no mention of friendly fatalities, indicating in his account that during the night, the reinforcements set up a new perimeter several hundred yards to the rear. During the artillery barrage the next morning, several short rounds fell into the area, wounding fourteen members of the 129th Infantry Regiment. Frankel, History of the 37th Division in World War II, 139.
eye, or if necessary, by ear. In any case, those who were there have branded this incident an artillery failure.

Nonetheless, the forward observer’s instructions do not necessarily always determine where an artillery round lands. Bags of gunpowder propel an artillery shell. These are numbered and so many bags of a particular lot number are used according to the range to the target. If a factory worker in an ammunition plant fails to put the correct amount of gunpowder in a bag, or mislabels it, the shell will not fall where intended.

The famous war correspondent, Ernie Pyle once witnessed a near calamity involving powder charges during a visit to an artillery battery as it was about to fire a mission. As a member of a gun section picked up a powder bag, he noticed that it was only half filled with gunpowder. The artilleryman said to Pyle; “If we’d shot that little one, the shell 21 would have landed on the battery just ahead.”

In the Pacific Theater, fatigue could become a problem when gun crews worked around the clock. Describing his concerns for the ammunition his unit used on Bougainville, Captain Robert F. Cocklin wrote that: “Our biggest difficulty is keeping the

20. In 1945, the Army defined Dispersion errors as “errors inherent in the dispersion pattern (such as those caused by manufacturers’ tolerances and those errors inherent in the piece and the ammunition).” The conclusion was that such errors could not be controlled; only errors due to personnel could be reduced. The War Department, War Department Field Manual FM6-40, “Field Artillery Gunnery,” Washington DC, 1, June 1945, 16; Despite concern that extensive use of barrels or tubes could cause bursting, the Field Artillery placed a heavy emphasis on the importance of “keeping ammunition lots straight . . . and the avoidance of mixing zone weights of shell without appropriate correction. The shooting of one and only one ammunition lot is of utmost importance in the 105mm. How. [sic] and smaller calibers.” The General Board, United States Forces, European Theater, “Condemnation and Replacement of Artillery Tubes in Combat,” Bad Nauheim, Germany, 1945 or 1946, 2.

lot numbers straight. Quite often the difference in lot numbers makes a considerable
difference in the range of rounds fired, so too much emphasis on this angle is
impossible.” If a tired member of a gun crew picked up the wrong lot numbers during
a fire mission, the resulting shot would not land where the forward observer had
calculated that it would, and no one might ever know the real reason.

Hill 700 on the right held by the 145th Infantry represented the highest ground
possessed by the Americans. The Japanese plan of attack called for two units to stage
a series of attacks, beginning on March 8, along the perimeter and to advance to Piva
airfield followed by a third force attacking on March 11. This was an overly ambitious
plan because the Japanese were severely under strength in men and artillery and had no
air support, whatsoever.

The Japanese attack began on March 8, 1944, with the bulk of its force being
directed at the 37th Infantry Division. Some of the bloodiest fighting on Bougainville
took place over the next two weeks as the Americans and Japanese engaged in a series of
violent, see-saw battles to hold several lines of pillboxes situated on the hilltops. Hill 700
became the chief objective of the Japanese 23rd Infantry. Because of its steep slope,
Beightler had not anticipated the Japanese would concentrate their attack there, but
apparently they wanted the high ground. In the first five days of battle alone, the 37th

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24. Ibid., 356-57.
25. Gailey, Bougainville, 150; John Miller, Jr. indicates that “Hill 700 which commanded the
Division lost five officers and seventy-three enlisted men killed. Artillery fired in defense of Hill 700 amounted to 20,802 105-millimeter rounds, 10,000 75-millimeter rounds, 13,000 81-millimeter and 811 4.2-inch shells.

An interesting phenomenon occurred the morning of the opening attack: both sides used direct fire artillery. The Japanese probably had to, and the Americans did it because it was to their advantage to do so. At 6:15 on the morning of the attack, Japanese 150 and 75-millimeter guns began shelling American positions along the Suaa River and the adjoining hills.

Because the Japanese artillerymen were using direct fire, American forward observers were able to spot their gun flashes and adjust effective counter battery fire. While the 6th Field Artillery Battalion and the 129th Infantry Cannon Company were able to fire directly at the Japanese, the 135th, 140th, and 136th Field Artillery Battalions fired indirectly, their fires adjusted by a forward observer. Effective American counter battery fire quickly destroyed or silenced many enemy gun positions.

Japanese artillery fire on the morning of March 8 caused few American casualties. As the enemy began to shell the Piva airstrip, Lieutenant William D. Jennings, of Toledo, Ohio, forward observer with the 135th Field Artillery immediately spotted the gun flashes, and after he had made his adjustments, the 135th hit the Japanese with a heavy fire.

entire beachhead was steep, with slopes of 65 to 75 percent in all directions. American intelligence estimates, though not ruling out an enemy attack here, had tended to discount its probability. Miller, Cartwheel: The Reduction of Rabaul,” 359.

26. Ibid., 364.

barrage of counter-battery fire. Frankel noted how afterward, one prisoner sadly remarked, “Each time we fire one round, you send back a hundred in return. No good”

For his bravery in action from March 8 through 25 while accompanying the 145th Infantry, Jennings received the Bronze Star medal.

On the evening of March 8, four battalions of 37th Division artillery and two of the Americal Division prepared to fire on Japanese troops assembling behind Hills 1111 and 1000 to assault the American lines. At the designated time, an intense concentration of artillery fire lasting for two hours smothered this zone of activity. A Japanese prisoner later reported that this barrage had been so intense that he and his comrades had moved as close as they could get to the American lines to avoid annihilation by their artillery. Anticipating that the Japanese would move close to American positions to preclude endangering friendly troops with their own artillery fire, forward observers had moved the fire ever closer to the 37th Division front lines. On this day alone, the 136th Field Artillery fired 1,239 rounds, or nearly ten times the number fired daily on average.

The forward observer had a hazardous job not only because of his proximity to an enemy trying to kill him, but also because he had to position himself close enough to where his own artillery fire landed to see the shell bursts. When necessary to stop an enemy attack, most forward observers would not hesitate to call for fire virtually on top of their own positions. Despite suffering heavy losses the night before, the Japanese


continued their attack on the morning of the ninth. At 7:30 a.m., aware that the Japanese were advancing toward his position, Lieutenant Robert P. McClendon, forward observer with Battery F, 135th Field Artillery, alerted the battalion and instructed them to “pour it on as close to me as you can get it.” Two other battalions joined the 135th in firing upon McClendon’s position. The 135th Field Artillery Battalion History reported that on March 10, all its forward observation teams were working with separate infantry units in the field.

Early on March 13, the Japanese mounted an attack against the lines of the 145th Infantry, directing heavy machine gun and rifle fire against them while charging an Observation Post #5, manned by artillerymen of the 135th Field Artillery. “With the officer adjusting artillery fashion, one enlisted man threw grenades (all the while exposing themselves) while the other burned out several carbines cutting down the enemy, one of whom almost reached OP dugout.” Although they did this to save their lives, the incident was only one of many demonstrating the way in which placing forward observation teams in the front lines blurred the distinction between the two combat arms of infantry and field artillery during the Second World War.

The beginning of the end for the Japanese on Bougainville came on March 17, when they began their final series of attacks. Following rapid Japanese penetration into American lines, the fighting again became a back-and-forth struggle for a few days.

31. Ibid., 146.


33. Ibid., 4.
Then came a lull while the Japanese brought in reinforcements. On March 23 during the evening, they began to advance in what became their last serious effort to penetrate the American perimeter.

Early on the morning of March 24, they made their strongest attack and deepest penetration. After having cut off their advance with an artillery barrage, a combined infantry-tank counterattack drove the Japanese back and restored the American lines. The Japanese were now finished but did not know it. American intelligence had obtained vital information the evening before, regarding the details of the attack including where and when it would begin. General Beightler then visited General Griswold and after relaying the news of the impending attack, requested an extraordinarily large supply of ammunition and permission to receive priority for all calls on artillery within the Perimeter. Griswold granted both requests.

At 10:45 that morning, all the battalions of the 37th plus three of the Americal Division opened fire on the Japanese front and rear areas. Stanley Frankel observed that what followed was “the heaviest artillery concentration yet seen in the Pacific war, completely destroying all Japanese hopes of regaining control of Bougainville.” At one point, American artillery poured more than 4,000 shells upon the Japanese forward


36. Frankel, History of the 37th Infantry Division, 166; Miller does not describe this incident as such but notes that “the Americans burned, dug, and blasted the Japanese out of their ravines, trenches, foxholes, and pillboxes while the seven artillery battalions, their fire directed by General Kreber … shelled the concentrated enemy troops in front of the American lines.” Miller, Cartwheel: The Reduction of Rabaul, 376-77.
assembly area within a single fifteen-minute and a total of 14,882 rounds, altogether.

At 6:00 p.m. a counter-preparation barrage was fired and again at 8:16. Finally, at 5:30 the next morning, the last of the counter-preparation barrages were fired. The intensity of this fire was the result of information obtained from an enemy prisoner who had indicated that the Japanese had massed the last of their surviving forces in a desperate effort to break through the American lines.

Without a doubt, this tremendous volume of explosives completely frustrated the Japanese offensive and dashed their hopes for holding out on Bougainville. Frankel noted that the gigantic artillery bombardment put an end to this particular phase of the fighting on Bougainville because in the days that followed all Japanese offensive actions were weak and disorganized. Surviving enemy soldiers pulled from pillboxes exhibited signs of shock. Where the artillery concentration had fallen, the effects of carnage and destruction appeared particularly gruesome. On March 27, what was left of the Imperial Japanese 45th Infantry on Bougainville withdrew over the mountains.

Over-confident Japanese commanders had not only underestimated American troop strength, they had ignored the potential threat of destruction posed by the power of American artillery. When a military unit as large as a battalion of infantry masses along a narrow front less one hundred yards wide, like the Japanese had, by its sheer numbers it

39. Frankel, History of the 37th Infantry Division, 166.
becomes difficult to stop even with the use of automatic weapons such as rifles and machine guns, but not so hard to stop with well-directed field artillery. It mattered little whether they were extremely brave or simply over zealous because the Japanese could not hold what they had gained in March due to superior American firepower. Nearly sixty years later the Army would use even more powerful combined arms tactics on the offensive in Iraq. This massive display of firepower demonstrated on Bougainville in 1944 certainly represented an early demonstration of “Shock and Awe.” From March 8 though the end of the month, the 135th Field Artillery Battalion fired 25,464 rounds in support of the 129th and 145th Infantry Regiments and also into the Americal Division sector. All observers and gun crews served with great efficiency.

Field Artillery wire crews and linemen during the Second World War never received the credit due to them for performing a particularly dangerous job. They often accompanied the forward observation party which consisted of the designated forward observer, the radio operator, and a third man detailed to help carry and set up the two-part radio, when a radio could be used. Linemen were not involved directly with adjusting artillery fire. Instead, they had the extremely important job of keeping the forward observer’s telephone lines open by splicing breaks as they occurred or became known. Because anyone observing them could tell what they were doing, linemen also became important targets for the enemy.

On March 10, 1944, two lineman from Battery C, 135th Field Artillery, Private

40. Headquarters, 135th Field Artillery Battalion, Battalion History – 135th Field Artillery Battalion, 11.
Russell D. Wright of Sac City, Iowa, and Private Harold F. Morrow of Sebring, Ohio, were accompanying a forward observation team as it came under heavy enemy fire. The two men strung wire from a covered dugout to a new observation post on the side of a hill, all the while under Japanese fire. They had just completed their task when a Japanese mortar shell landed nearby, killing Morrow instantly and mortally wounding Wright who died three hours later. Later their comrades found two destroyed enemy mortars and numerous bodies in the same area of the artillery concentration the two had helped bring to bear. Both soldiers received the Bronze Star posthumously for their unselfish efforts.

Fortunately, not all soldiers attached to forward observer parties earned their medals on Bougainville posthumously. On March 10, while Staff Sergeant Frank Edwards, a member of Battery C from Alliance, Ohio, was helping the forward observer adjust fire from an exposed position, a Japanese mortar shell exploded in the midst of the group, wounding the officer in charge and killing four men. Although dazed by the blast, Edwards quickly recovered his senses and helped to evacuate the wounded and reorganize the remainder of the party. After re-establishing communications, he directed the artillery fire until another forward observer party relieved the survivors of the original group. Eight days later, Sergeant Edwards was again a member of a forward observer party. After Japanese shell fire severed the communication wire and caused several casualties, Edwards again took the initiative and oversaw the re-establishment of the all-important communications while contributing significantly to the re-grouping of

41. Headquarters, 37th Infantry Division, General Order #46, 1; General Order #36, 2.
American defensive positions in his sector.

General Beightler later wrote regarding the fighting on Bougainville: “Never before had more frightful or bloody fighting taken place in the Pacific,” estimating the number of Japanese killed as being more than 10,000. Beightler had a genuine concern for the welfare of his men, because he made every effort to do what he could to limit the number of casualties within his command while carrying out the Division’s assigned mission. Referring to the Division’s entire combat experience including New Georgia, Bougainville, and Luzon, he later wrote: “We refined our policy of letting machines fight for us to the maximum. For instance, we shot up more than 450,000 rounds of artillery. The dividends that helped pay is exemplified in the fact that we killed Japs at a ratio of thirty-three to every American soldier lost.”

Although the Japanese maintained a presence on Bougainville until the end of the war, by the summer of 1944, American and Japanese soldiers co-existed under an unspoken truce of sorts. Despite the intense hatred both sides had developed for each other, not all contact between them was violent. Close to Piva airstrip, the Americans

42. Headquarters, 37th Infantry Division, General Order #39, 1-2.

43. Beightler, Major General Robert S. Beightler’s Report, 5; Gailey places the number of Japanese on Bougainville prior to the American invasion at 65,000. He estimates that 21,000 survived until the surrender and that the Australians killed 18,000 of the enemy after U.S. forces departed. This would put the total number of Japanese killed by all American units at about 26,000. Gailey, Bougainville, 211; John Kenedy Ohl indicates that the Japanese lost 5,000 dead and 3,000 wounded in the March 1944 Operation TA, alone. Ohl, Minuteman, 138.

44. Ibid; The general’s quoted figure is reasonably accurate. The 37th Division Artillery Narrative for Bougainville indicates that from November 8, 1943 through May 1, 1944 the Division fired a total of 161,968 rounds. Each campaign saw the Division use more artillery fire. U.S. Army, Bougainville: Artillery Narrative, 14.
built a baseball field where they played ball on a regular basis after the fighting had died down. One day someone noticed a lone Japanese soldier, a forward observer of sorts, sitting along the edge of the jungle off right field watching the game. Although he remained cautious, he became a regular fan, rooting for the 37th Division teams and somehow indicating his approval for hits and runs for the home team. If he liked baseball, they figured he could not be all bad and no one informed any gung-ho officers of his presence, either.

Conclusion

On Bougainville, the 37th Division had the opportunity to execute combined arms tactics beyond the scope of infantry-artillery coordination. It conducted joint fires with the Navy and the Marine Corps with equally successful results. The artillery experience on Bougainville was also a model for massing firepower to break the assault of human wave attacks. As such, it provided lessons for the use of combined arms in the defense.

Bougainville gave the 37th Division extensive experience resolving the problems encountered in carrying out close coordination of infantry-artillery tactics. These included the problems of control associated with short rounds, dealing with the enemy’s deceptive imitation of American artillery barrage patterns to emulate short rounds, and the new experience of controlling fires on the defense. In the latter instance, forward observers typically had no problem seeing their targets, but had to bring fire much closer to friendly lines than the normal tolerance. Frankel described as “a threadbare Jap trick:

moving close enough to our lines to get within the umbrella of safety.” Later, during the American experience in Vietnam, the North Vietnamese and Viet Cong would attempt the same tactic which they described as “grabbing the Americans by the belt.”

Although Bougainville gave the 37th Division its most frightening experience using artillery in defense of its own positions, the weakness of Japanese tactical doctrine played into the hands of the Americans with their new-found strength in infantry-artillery coordination. Massed attacks by Japanese infantry left their infantrymen with no protection from American firepower, demonstrating the asymmetrical nature of the war in the Pacific at the doctrinal level. The Japanese faith in the courage and ability of their individual soldiers was inadequate in the face of well-orchestrated firepower.

Forward observers in the defensive posture found themselves even further integrated into the infantry combat arm. Their responsibility to perform a technical function by providing artillery support for the men around them and the exigencies of individual combat situations that often required fighting as riflemen to save their own lives blurred their original role as only artillerymen. The emphasis the Field Artillery School had placed on training newly commissioned artillery officers to be leaders demonstrated the adage that in order to lead effectively, one must be able to lead at the front.

46. Frankel, *The 37th Infantry Division in World War II*, 145.

The 37th Division artillery experience on Bougainville provided an important early example of the conduct of joint fires between different service branches in its infancy. The 3rd Marine Division Combat Report paid tribute the effectiveness of these joint fires describing this infantry-artillery coordination as “one of the highlights of the Bougainville campaign.” Army Infantry Captain John C. Guenther had similar praise observing that the American employment of artillery was essential to the successful coordination that represented “the critical point in our superiority over the Japanese.” Guenther added that on Bougainville, “the operations of the 37th Division Artillery and of the Artillery Group Headquarters established and commanded by Brigadier General Leo Kreber are an important chapter in the textbook of jungle warfare evolved by the American Army in battle.”

Finally, statements taken from individual Japanese soldiers who survived the deadly barrages provide perhaps the best evidence of the early display of shock and awe wrought by 37th Division artillery. Most testify to the accuracy and effectiveness of American counter battery fire. All speak of the extreme level of casualties their units incurred. The capacity to mass fires in coordination with maneuvering infantry enabled United States military forces to defeat the Japanese on Bougainville. Without forward observers on the ground with the infantry, and in the air over Bougainville, this deadly effective coordination of artillery fire could not have been achieved.


50. Yourada Toigoichi, 23rd Infantry: “The artillery fire of 9 March killed many men and last night’s barrage (13 March) nearly killed all. Yaewake Akiyoshi, 23rd Infantry: “Our artillery was practically..."
all knocked out.” Kawakami Kazui, 23rd Infantry: “Half of the 10th Company was wiped out by U.S. artillery before it reached the wire.” Nagatomo Milsukuni, 23rd Infantry: “The 8th Company was practically annihilated by U.S. artillery fire on Temmoku Mountain on 13 March.” Shimobukoro Yashio, 45th Infantry: “The U.S. artillery barrage of last night (24 March) virtually annihilated the Butai and remnants are scattered. The barrages hit us before the time of our proposed attack.” Sakamoto Mosao, 6th Field Artillery: The second battery numbered about sixty men. When it was at Kuji Mountain there were 130 men but this was reduced by one half by U.S. artillery fire and after yesterday’s barrage, only thirty are left. The battery’s two guns were knocked out by U.S. artillery.” Yamashita Tatsup, 6th Field Artillery: The regiment brought eighteen guns to the sector but nearly all have been knocked out by U.S. artillery fire. The strength of the 1st Battery was about 150 men but this was reduced to twenty by artillery fire and after last night’s barrage (24 March) not a single man was left. U.S. Army, Bougainville: Artillery Narrative, 15.
CHAPTER SIX

COLLATERAL DAMAGE IN THE PHILIPPINES: LUZON AND MANILA

Except during the fight for Manila and the very last weeks of the war, the 37th Division’s conduct of artillery fire on Luzon was much the same as it had been on Bougainville and New Georgia. There were exceptions to this rule, however. With far more inhabitants than either Bougainville or New Georgia, the island had more land under cultivation, providing aerial observers with increased visibility of the land and with it expanded opportunities to find and call for fire on targets. Also, with complete air superiority, tactical air support could be devoted to supplementing and even supplanting artillery fire.

On Luzon the Japanese had stockpiled artillery ammunition early in the war. When the invasion finally came, they were well supplied and able to use their artillery more extensively, enabling them to bring more frequent artillery fire to bear on the Americans. As a result, Japanese artillery inflicted heavier casualties on U.S. troops than the 37th Division had previously experienced. At the same time, the asymmetry in tactical doctrine that existed between American and Japanese artillery on New Georgia and Bougainville, was equally obvious in the Philippines. Japanese coordination of artillery with its infantry and other forces was glaringly deficient. The Imperial Army practiced poor command of artillery, weak control of artillery, and inadequate communications. Major Archibald Rogers, who fought on Luzon, attributed it to “poor liaison, lack of communication, and inability to depart from a prearranged plan.”
Throughout the Luzon campaign, Japanese artillery never matched the 37th Division Artillery’s ability to coordinate its fire support with maneuvering infantry or to engage in effective counter-battery fire.

The real anomaly on Luzon was the fight for Manila, the only sizeable city where Americans engaged in ground combat in the entire Pacific Theater of the war. The 37th Division carried the heaviest burden among U.S. forces. Yet an estimated 100,000 civilians died in the struggle to liberate the Filipino population and American prisoners from the Japanese. Most of the fighting in Manila took place in proximity to an enemy which deliberately positioned itself among the population. The 37th Division continued to rely heavily upon field artillery to support infantry assaults, in the city, it made substantial use of direct fire to destroy Japanese strongholds.

The Republic of the Philippines is an island nation located in the Malay archipelago. It consists of more than 7,000 islands covering an area in excess of 100,000 square miles. The islands are comprised of three groups: to the north, Luzon, in the center, Visayan, and to the south, Mindanao. About two-thirds of the Filipino population lives in the Luzon group.

General Douglas MacArthur knew the Philippines well. His father, General Arthur MacArthur, a veteran of the Civil War, had served as military governor of the ________________


2. Frankel, The 37th Division in World War II, 296

3 islands from May 1900 until July 1901. Following his service in Europe, during the First
World War, the younger MacArthur had served three years in the same islands where he became the youngest major general in the Army in 1925. In 1935 President Franklin D. Roosevelt assigned MacArthur to the Philippines to serve as a military adviser. In 1937, he retired from active duty. That same year, the Philippine legislature appointed him to be Military Adviser of the National Government, at a salary of $36,000 a year. The General’s task then was to mold the native population into an army capable of resisting invasion with a minimum of help from U.S. military forces. In July 1941 when it appeared likely that Japan and the United States might soon go to war, the War Department recalled MacArthur to active duty, to head the United States Army Forces in the Far East Command.

Although many regard Douglas MacArthur as a superior military strategist, the Japanese gained control of the Philippines rather quickly. Although it is unlikely that American and Filipino forces there could have held off the invaders indefinitely without reinforcements, MacArthur deserves some measure of the blame for the rapid fall of the


6. Ibid., 524.

7. Ibid., 590-91; James writes that the training and preparation the Filipinos experienced under MacArthur’s supervision never adequately prepared them to take part in repelling the Japanese but that
Islands. In fact, one might conclude that it is remarkable that the American and Filipino forces on Luzon held out as long as they did despite the General’s mistakes.

Based on the premise that the Allies might have to invade Japan to end the war in the Pacific, the Joint Chiefs of Staff had designed a plan by February 1944, designating Formosa as a necessary stepping stone to the China coast, and hence the logical place to establish a base of operations in preparation for invading Japan. Proponents of this plan saw no need to invade the Philippines. Having publicly vowed in March 1942 that he would return, MacArthur had since dreamed of the day when it would happen. Thus, MacArthur’s extreme optimism convinced Washington that the Filipinos could withstand the Japanese onslaught with a minimum of direct American aid. James noted that in August 1941, MacArthur “was confident that the Philippines would be impervious to invasion – by April 1942.” Ibid, 597; Historian Louis Morton observed that MacArthur’s optimism was so contagious that “by the fall of 1941, there was a firm conviction in Washington and in the Philippines that, given sufficient time, a Japanese attack could be successfully resisted.” Morton, United States Army in World War II: The War in the Pacific: The Fall of the Philippines (Washington, DC: Office of the Chief of Military History: Department of the Army, 1953), 64.

8. Although his air commander, General Lewis H. Brereton, deserves some of the blame for losing the large force of B-17’s and fighter planes at Clark Field, the greater portion must go to MacArthur. Historian Stanley L. Falk observed that; “for several hours, he [MacArthur] apparently hesitated, vacillated, and perhaps remained frozen with the shock of the sudden impact of war,” adding “MacArthur’s inability to face reality on December 8 illustrates the sort of self-delusion that frequently marred his career.” William L. Lear, ed., We Shall Return: MacArthur’s Commanders and the Defeat of Japan (Lexington: University of Kentucky Press, 1988), 4; Morton notes that following the disastrous Japanese air raid of December 8 that destroyed so many American planes on the ground, MacArthur radioed Washington to report that “the losses had been due to overwhelming superiority of enemy forces.” Morton, Fall of the Philippines, 87.


10. In fact, author Carol Morris Petillo claims that he was obsessed with it. Petillo, Douglas MacArthur: The Philippine Years (Bloomington: Indiana University Press, 1981), 216; James notes that at one point during the argument whether to invade Formosa or the Philippines, General George C. Marshall chided MacArthur telling him “We must be careful not to let our personal feelings and Philippine political considerations override our great objective, which is the early conclusion of the war with Japan.” James relates one incident occurring in September 1944, as MacArthur was approaching Hollandia by ship one evening, “He gazed out to the northwest, almost as though he could already see
he fervently opposed the mere suggestion of bypassing any part of the Philippines.

By the end of July, the Joint Chiefs had agreed that American forces would strike into the south or central Philippines before advancing to either Formosa or Luzon. However, if they were to choose Formosa, it would have left Luzon, the most heavily populated region of the Philippines, in Japanese hands and abrogated MacArthur’s public promise to the Filipino people that he would return. The general believed that the Navy was behind the plan to bypass Luzon and argued that if the United States did not invade Luzon, it would harm America’s honor and prestige.

Not all Navy men were in favor of the Formosa plan. Vice Admiral Robert B. Carney preferred capturing Luzon first, while Admiral Ernest J. King wanted to concentrate on Formosa because it was closer to Japan and China and it encompassed Japanese lines of communication to the south. King believed the capture of Formosa would eliminate the need to invade the Philippines, because Japanese forces there would be cutoff from re-supply, and thus rendered impotent. In a conversation between the two, King asked, “Do you want to make a London out of Manila?” Carney answered, ______________

through the mist the rugged lines of Bataan and Corregidor, ‘They are waiting there for me, ‘ he said. ‘It has been a long time.” James. The Years of MacArthur: Volume II: 1941-1945 (Boston, MA: Houghton Mifflin, 1975), 525, 489.

11. Robert Ross Smith notes that MacArthur believed that bypassing the Philippines would be the same as abandoning those islands and felt that a landing on Formosa would not be feasible until land-based air support became available in the northern Philippines. Smith, The United States Army in World War II: The War in the Pacific: The Approach to the Philippines (Washington, DC: Office of the Chief of Military History: Department of the Army, 1963), 451-52.


“No Sir, I want to make an England out of Luzon.” King’s hypothetical question had great significance because the battle for Manila virtually destroyed the entire city, and artillery played a major role in that destruction.

As it happened, in mid-August, the Japanese began overrunning the last air bases in China from which the U.S. Fourteenth Air Force could effectively support invasions of either Luzon or Formosa. This changed the situation, invalidating the main reasons for invading the latter – to use as a stepping stone to the China coast. On October 3, the Joint Chiefs authorized General MacArthur to begin the invasion of the Philippines a few days before Christmas. General Beightler received notification that the 37th Division would land at Lingayen Gulf on December 20, 1944. However, the preliminary invasion of the Philippines at Leyte took longer than expected, and the new invasion date became January 9, 1945.

The landing on Lingayen Gulf, which was unopposed, took place as scheduled. By 1300 that afternoon, the 37th Division artillery had established a command post at Lupis. The 140th and 6th Field Artillery Battalions were also ashore by then and ready to provide support. Leading elements of the 135th Field Artillery were still coming ashore. By this time spotter planes were ready to begin operations using the east end of the Lingayen Air Strip.


17. Headquarters, 37th Infantry Division, Report After Action, Operations of the 37th Infantry
During its first week on Luzon, the division encountered only light Japanese resistance. The infantry moved so fast that the artillery had great difficulty keeping up with them. This changed when, on January 16, reconnaissance patrols discovered twenty-one bridges impassable along a thirteen-mile stretch of the road from Camiling to Paniqui. Bridging material was in such short supply that the Engineers began constructing a bypass covering fifteen miles, causing a three-day delay.

After the first week of the invasion, MacArthur was so encouraged that he concluded that General Walter Krueger’s 6th Army would reach Clark Air Field within a few days, and possibly enter Manila by January 26. He failed to consider that the roads and railways of central Luzon were in poor shape following intensive pre-invasion aerial bombing combined with Japanese scorched-earth tactics. This made it difficult to supply the troops continuously as they advanced. Krueger was also concerned that as he advanced, his left flank would be exposed to Japanese attack.

On January 17, MacArthur radioed Krueger to start moving and the next day, Krueger reluctantly ordered General Griswold to begin moving his XIV Corps toward Clark Field. Griswold held the 37th Division in reserve but with MacArthur pressing him to reach Manila by February 5, he felt obliged to commit his reserves to the line.

On January 27, XIV Corps issued orders for a coordinated attack by the 37th and

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20. Ibid., 161-62, 164.
40th Divisions to secure Clark Air Field, Fort Stotsenburg, and the adjacent high ground
known as "Top of the World." The Infantry moved out at 0700 on the next day. The
145th Infantry had reached its objective by 1300, but the advance of the 129th was slowed
by heavy fire from the eastern edge of Fort Stotsenburg. The 135th and 136th Field
Artillery Battalions fired direct support missions against enemy machine guns, anti-
aircraft guns, and soldiers using aerial observers to adjust fires. During this time, the
Japanese still held the high ground, and with superior observation were able to direct
counter-battery fire against all U.S. batteries firing. This was one of the few instances
where the Japanese had much success of this kind against the 37th Division but, within a
short time, the enemy guns were eliminated, as soon as they were located.

In the early stages of the battle for Luzon, the Army relied heavily upon aerial
observation for finding targets and adjusting artillery fire. Due to the lack of ground
opposition, the planes were able to circle right over the target making artillery fire very
simple and extremely accurate. Because of the open terrain of the central plains lying
between Lingayen Gulf and Manila, aerial observation often worked well in this area.
However, the soldiers of the Imperial Army were masters of camouflage and
concealment. Target acquisition and fire control on Luzon always depended heavily on
observers on the ground. Aerial observers had difficulty seeing well-hidden targets from
plane, but an observer on the ground with a map could easily make accurate adjustments.

Although aerial observers had a better vantage point to spot enemy activity on the


ground, at times it could be quite difficult to spot targets from the air. The Japanese
constructed heavy earthen and timber pillboxes at crucial points such as river crossings
and road junctions along the American route of advance. In hilly areas, they dug their
foxholes on narrow ridge lines and used caves and tunnels on the crests or reverse slopes
to build field gun emplacements. Many of their artillery positions were in tunnels with
slope. Unless American observers could detect the flash of enemy guns, it was difficult
for them to sense the location of the Japanese. Observers on the ground, however,
entrances from the reverse slope and only a small aperture for the barrel on the forward
could occasionally hear the sound of the enemy guns.

During the battle for Clark Field on January 29, Japanese artillery fire repeatedly
cut American telephone lines. During the battle, Corporal John Wendell Josh of
Alliance, Ohio, a radio operator with a forward observer party, voluntarily crossed open
terrain under heavy fire to reach a position from which his forward observer could adjust
fire. Although his bulky equipment drew enemy fire, he reached the observation point
safely from which artillery fire could be observed. For this action, Corporal Josh earned
the Bronze Star medal.

By January 30, the 129th Infantry had captured Fort Stotsenburg and other


(September 1945): 539.

25. Frankel, The 37th Infantry Division in World War II, 234.

elements of the Division held most of Clark Air Field. The next day the bloody struggle to take the “Top of the World” began. During the day, four different artillery battalions massed their fires to neutralize and destroy well-entrenched enemy positions, allowing the attacking 129th Infantry to advance and secure the area on February 2.

On January 27, Beightler had sent the 148th Infantry advancing toward Manila. On February 1, as it was approaching Plaridel, about twenty-five miles north of Manila, it reached a point about four hundred yards from the enemy’s first line of defense. Here a Japanese garrison of five companies fought savagely in an effort to hold the critical road junction there. As the 1st Battalion moved forward, the Japanese used a heavy concentration of mortar fire to repel the attackers. The next morning the Americans fired an intense artillery barrage. The coordination with the infantry assault was near perfect. Riflemen from Company A, 148th Infantry began moving out just as it was ending and were able to push forward. Shortly before dawn on February 3, the Japanese withdrew.

The Forward observer with the 148th Infantry made very accurate adjustments for the leading platoon of infantrymen, hitting every enemy strongpoint until shell fragments began falling within his own troops. This may have been Lieutenant John S. Wallace of Tacoma, Washington. On February 2, Wallace was with the leading elements of the assault troops attacking Plaridel. From his forward observation post three hundred yards


29. Frankel, The 37th Infantry Division in World War II, 239.

from the Japanese, he remained in position despite intense enemy machine gun and mortar fire. The extreme accuracy of his adjustments neutralized the Japanese emplacements enabling the infantrymen to advance while meeting only slight resistance. Wallace earned the Bronze Star medal for this service.

Wallace’s actions exemplify one of many situations that occurred during the war where a forward observer on the ground working from the most advanced position possible might be able to provide more closely coordinated artillery support than could an observer in the air. While aerial observation was frequently more advantageous because of the observer’s broader perspective and greater mobility, the forward observer on the ground represented an element of the maneuvering infantry and therefore was not only more closely aware of what was happening, but could interact with his infantry comrades more rapidly, often anticipating their most urgent requirements.

After clearing the Japanese from Plaridel and securing the road junction, the 148th Infantry continued their advance toward Manila and two battalions of the 145th Infantry were the first to reach the Manila suburb of Polo-Malinto on February 4. Although the 37th Division had received limited training in urban fighting, most of their experience in combat had been in a largely uninhabited jungle environment. The densely populated city of Manila then posed a severe challenge to the General Beightler with his heavy reliance upon his artillery in battle, how to avoid civilian casualties while fighting an enemy who had deliberately interspersed its troops among the civilian population.

31. Headquarters, 37th Infantry Division, General Order #68, 2.

32. Ohl, Minuteman, 170.
Using artillery to support infantry maneuvers in the city while avoiding civilian casualties would be extremely difficult, if not impossible, to do.

In a deliberate effort to avoid civilian casualties and destruction to property, the 6th Army placed stringent restrictions upon artillery fire during the early phases of the battle for Manila. Artillery fire was confined to observed fire only upon specific targets, such as Japanese gun emplacements. Air strikes had similar limitations until General MacArthur suddenly decided to halt them altogether. Consequently, 37th Division artillery played a limited role in the first days of the battle for Manila.

The first significant use of 37th Division artillery came on February 7, when a well-coordinated barrage fell on enemy emplacements as the Third Battalion of the 148th Infantry began crossing the 150-yard-wide Pasig River in the vicinity of the presidential palace. This was met by uncharacteristically heavy Japanese mortar and artillery fire.

Meanwhile, the first two Battalions of the 129th Infantry had crossed the river and begun advancing toward Provisor Island. At 0800 on February 9, assault boats carried the lead company of the 129th Infantry across the Estero de Tonque. After landing and establishing a beachhead, heavy Japanese artillery, mortar, and machine gun fire held up their advance. Again, with the aid of strong artillery support, the 37th Division infantrymen broke the Japanese resistance and two days later took control of the island.


34. Frankel, *The 37th Infantry Division in World War II*, 260.

35. The *Report After Action* notes that “this was the first time the Japs had used massed fires of heavy weapons on such a heavy scale.” Headquarters, 37th Infantry Division, *Report After Action*, 261.
By February 10 the regiment had cleared most of the Pandacan District but had run into strong Japanese opposition at Paco Railroad Station and the buildings of Concordia College and Paco School. Fire of the 136th and 140th Field Artillery Battalions almost entirely destroyed the station and the school, forcing most of the defenders to withdraw and saving the 148th Infantry many casualties.

Although the Americans had used field artillery prior to February 7 in the battle for Manila, higher headquarters had imposed restrictions on its use. Because the Japanese had turned almost every large building in Manila into a defensive position, the attempt to take these buildings without artillery support became a costly undertaking. Between February 7 and 10, the 148th Infantry took more than 500 casualties and was under strength by about 600 men. The 145th Infantry had also experienced heavy casualties over the same period of time and was about 700 men under strength. As the 37th Division’s casualties began to mount, climb, General Beightler wanted the restrictions on field artillery lifted to protect his infantrymen. The attempt to avoid the destruction of buildings would have to be abandoned if Manila were to be captured without the destruction of the 37th and 1st Cavalry Divisions. General Griswold gave his consent, and the Americans could go after all Japanese strong points with artillery fire except for public buildings such as churches and hospitals which would likely contain civilians. On the other hand, lifting restrictions on artillery would cause Manila to look

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37. Smith observes that “the losses had manifestly been too heavy for the gains achieved.” Smith, *Triumph in the Philippines*, 264.

much like London did after the Blitz.

Again, during the battle for Manila, forward observers would continue to serve at the very most forward infantry positions. During the fighting along the Pasig River between February 7 and 11, Lieutenant Allen W. Hawkins of Battery F, 134th Field Artillery Battalion, performed duty as a liaison officer, accompanying the advance elements of the infantry, he crossed the river and took up a position within seventy-five yards of enemy emplacements. From there he adjusted fire to neutralize several enemy guns. During the battle, the forward observer suffered a serious wound from enemy fire. Although wounded himself, Lieutenant Hawkins voluntarily took his place and continued to direct extremely accurate artillery fire on the Japanese emplacements continuously exposed to heavy enemy machine gun fire. For his actions, Hawkins received the Silver Star.

During this phase of the fighting between February 12 and 22, the 37th Division fought a war of attrition aimed at reducing Japanese strong points east of Intramuros, including several municipal buildings. Daily casualties were never particularly high but they kept increasing. So General Beightler stepped up the use of his artillery.

Forward observers of the 37th Division found that directing artillery fire from within a city was just as dangerous as adjusting fire from the swamps and jungles of New Georgia and Bougainville. To observe and control artillery fire of their own batteries while noting where the position of their own infantry required that they place themselves

39. Headquarters, 37th Infantry Division, General Order #115, 2.

40. Ohl, Minuteman, 183.
in exposed positions on top of buildings or inside high buildings as these structures were coming under enemy fire. On February 11, Sergeant Floyd D. Campbell and Corporal Leonard C. Cooper were serving as forward observers inside a building that was under enemy shell fire. One round hit the roof of the building, wounding Corporal Cooper and blowing Sergeant Campbell out of the building. Sergeant Campbell rushed back inside and joined Corporal Cooper who refused to leave to obtain medical aid. Together, they kept up steady and effective artillery fire for the advancing infantry. Both men later received the Silver Star medal.

After rebuilding the bridges across the Pasig, General Beightler moved artillery pieces, tanks, and tank destroyers into southern Manila to clear the way for the infantrymen. On February 12, two members of MacArthur’s staff, American General Bonner Fellers and, Colonel Andres Soriano, a wealthy Filipino, visited the 37th Division’s forward headquarters where they observed the fighting. Soriano reportedly owned a number of buildings in Manila. Shortly after, Fellers reported to the Supreme Commander that Beightler was “unnecessarily destroying the city.” MacArthur then posted an order limiting the maximum size of any artillery used to 37 millimeters, a shell large enough to stop a light tank, but not large enough to effectively penetrate concrete emplacements. Beightler, however, was disturbed by the recent deaths of two officers killed in Manila, whom he knew personally, and the Division’s climbing numbers of casualties overall. Upon hearing the order, he told his superior, General Griswold, that he “would rather be relieved of command than carry out that order,” and within a few days, 

41. Headquarters, 37th Infantry Division, General Order #59, 2.
General MacArthur had reversed his order.

Beightler’s artillerymen came to realize that even 105-millimeter howitzer shells had little effect against government buildings designed to withstand earthquakes. During this second half of the Battle of Manila, the Division used a combination of direct and indirect fire to combat the Japanese. The smaller 105-millimeter howitzer batteries were used indirectly from a distance while several batteries of the 136th Field Artillery Battalion were moved within sight of the targets they were firing upon.

The last major Japanese stronghold in Manila to be taken was Intramuros on the south side of the Pasig River. Built in the sixteenth century in the manner of a European walled city, Intramuros had a circumference of two and a half miles with walls forty-feet thick at the base. Within this fortress, the Spanish had built Fort Santiago. The walled city also contained several tunnels. The side facing the Pasig River was open, the only portion of Intramuros sin Muros. To reach any of the other three sides, attackers would have to cover a wide expanse of open land.

American intelligence was aware that among the estimated 13,000 Japanese defenders within the walled city was a large civilian population. Figuring that such a large number of enemy troops would be able to offer strong resistance to any attempt to cross the river, planners of the 37th Division’s G-3 section decided to make the initial

42. Ohl, Minuteman, 184.

43. Ibid., 185; Note: a 105-millimeter shell is a little over four inches in diameter and has tremendous destructive power. The shell casing, alone, is fourteen and seven-eights inches high.

44. Ibid., 187.
initial attack overland from a beachhead east of the walled city and then, shortly after, follow up with a frontal amphibious assault. The plan was for the 129th and 145th Infantry Regiments to keep the Japanese occupied on the side to the east while the 148th Infantry would make the river crossing.

General Beightler wanted to bombard the objective as heavily as possible prior to the attack to minimize his casualties. He asked for an aerial bombardment prior to the infantry assault, but General MacArthur adamantly denied his request, citing the likelihood of inflicting heavy casualties on the civilians within Intramuros. In a series of his reports published after the war, the general indicated that he decided against air bombardment of the Intramuros because he knew that many civilians were there. After the Americans had broadcast a plea to the Japanese holding out in Intramuros to either surrender or release the civilians inside, no answer was given. MacArthur says this forced him to order an artillery and mortar barrage, followed by an infantry assault.

As early as February 17, American artillery began to bombard the outer walls for the purpose of breaching them and eliminating defensive positions along them. The artillery fire used included indirect fire from ranges as far as four and half miles away as well as direct fire from as close as 250 yards. By the morning of the scheduled infantry assault, breaches had been blasted in portions of the east and north walls, creating

45. Frankel, *The 37th Infantry Division in World War II*, 269.


openings among the fractured rock enabling the attacking troops to scramble ashore.

During the night of February 22-23, the Division brought twelve 105-millimeter and six 155-millimeter guns to within a short distance from Intramuros on the north and east. Here the Division used twentieth-century technology to fight with medieval tactics employing direct fire to expand existing gaps in the wall and to make additional openings for the infantry troops to pour through. The rest of the Division Artillery and other units providing backup fired indirect fire throughout the night before and during the infantry assault. This saturation of all points of the attack eliminated obstacles, such as minefield and barricades, in the path of the infantrymen. At 0730 on February 23, all thirty-six direct fire field pieces brought in the night before opened fire on Intramuros for one hour, supplemented by the guns of a tank battalion and cannon companies. So, while direct fire was used to a limited extent, it was used in conjunction with indirect fire. Forward observers inside of buildings adjusted indirect fire on a different set of targets.

The initial plan of attack called for the 129th Infantry make an amphibious crossing of the Pasig and attack Intramuros from the north while the 145th Infantry was to attack simultaneously from the northeast on the south bank of the Pasig River. During this time, the 148th Infantry would provide fire support from the north bank of the river. The one-hour barrage that preceded the infantry assault was probably one of the most

49. Frankel, The 37th Infantry Division in World War II, 288.
50. Captain Glenn A. Steckel indicates that the purpose of the direct fire was to expand existing gaps in the wall and to open new gaps to provide additional openings for the infantry assault that would
well-coordinated and destructive of the entire Luzon campaign. Each artillery unit received a designated target areas that overlapped the others so that the barrage covered virtually the entire fortress. Nine battalions of field artillery including 240-millimeter howitzers, one battalion of tanks, and one battalion of tank destroyers were to take part in a one-hour Time on Target.

The 37th Division Artillery poured roughly 185 tons of high explosives on the walls of the ancient city. The resulting cacophony was so loud and intense and with the gunners only sixty to a hundred yards away from their the target areas, telephones and radio at the batteries were virtually useless. Instead the artillermen employed a system of visual signals to relay commands. Here was a case where modern high explosives used at very close range performed their designated technological function of destruction while negating the technology of communications that had been developed to direct it.

The 37th Division Artillery would use indirect fire “to reduce and destroy obstacles such as mine fields and barricades in the immediate path of the assaulting troops.” Steckel, The Role of Field Artillery in the Siege on Intramuros, Manila, P.I., The Armored School, Fort Knox, KY, 7 May 1948, U.S. Army Military History Institute, Carlisle, PA, 5; The Report After Action notes that direct fire was used on the walls, entrances, and area of the building around the entrances. Headquarters, 37th Infantry Division, Report After Action, 262; Another explanation is that at Intramuros, the 37th Division used direct fire to provide destructive fire which typically requires a much greater expenditure of ammunition. They fired indirectly to achieve neutralization which has the purpose of “causing severe losses, hampering or interrupting movement or action, and in general destroying the combat efficiency of enemy personnel.” Chief of the Field Artillery, FM 6-20 Field Artillery Field Manual: Tactics and Techniques (Washington, DC: United States Government Printing Office, 1940), 97.


52. Steckel, The Role of Field Artillery in the Siege on Intramuros, 8.

53. Smith, Triumph in the Philippines, 296.

54. Steckel, The Role of Field Artillery in the Siege on Intramuros, 10.
As late as 0815, the heavily barricaded Quezon Gate continued to withstand all efforts to destroy it. At this point, the tank gunners of the 145th Infantry switched from other targets and concentrated on the gate, blasting a gaping hole in it and facilitating the attack of the 145th Infantrymen. As the last shells were still in flight, the 2nd Battalion, 145th Infantry, attacked the east wall at the same time that the 3rd Battalion, 129th Infantry, was approaching the north wall in assault boats. As a result of the bombardment, neither group met any significant enemy resistance until they were with the walls of Intramuros.

Overall, the entire operation went very well. By 10:00 a.m. on February 23, Beightler declared the attack on Intramuros a success. Although considerable fighting remained to be done, by then he was confident that, having reached the interior of the Walled City, it was unlikely his riflemen would be driven back out.

Casualties for the 37th Division included 25 and 265 wounded, while an estimated 2,500 Japanese died, half from artillery fire. At one point as the attack was losing momentum, the Japanese deliberately released nearly 3,000 civilians from San Augustin and Del Monico churches. Their sudden appearance forced the Americans to hold their fire, until the civilians were out of harm’s way.


58. Smith, *Triumph in the Philippines*, 299. Very few adult males were among those released. Smith indicates only that the Japanese had murdered them. Ibid., 299-300; Frankel indicated: “Few men were observed as the Japs had removed the males to Fort Santiago and burned them in a room twenty-five feet square where they were later found dead, five layers deep.” Frankel, *The 37th Infantry Division in*
Beightler believed that the comparatively easy victory had been achieved by the artillery bombardment. Those Japanese not killed were so dazed they were unable to continue fighting with any degree of coordination. By the evening of February 24, the 1st Battalion, 129th Infantry, had eliminated all organized resistance in Intramuros.

After that American success, the remaining Japanese in Manila held out in various government buildings, all built from heavily-reinforced concrete, and designed to withstand earthquakes. A heavy artillery bombardment of these began on March 24, with the infantry scheduled to assault them two days later. Again, as with Intramuros, the 37th Division employed their combined arms tactics well, using both direct and indirect artillery fire in conjunction with well-timed infantry attacks while unavoidably destroying much of Manila’s infrastructure in the process.

The 155-millimeter howitzers of the 136th Field Artillery Battalion, firing directly at ranges from 150 to 800 yards, yielded the most effective results, breaching holes through the concrete during the pre-attack bombardment. All gun sections of the battalion took part in the bombardment operating their weapons while under heavy fire from enemy small arms and mortars. This direct fire mode had one unanticipated consequence. The nearby 1st Cavalry Division reported that artillery was reaching its

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*World War II*, 291.


60. Frankel, *The 37th Infantry Division in World War II*, 292.

61. Ibid., 293.

area. An immediate investigation determined that 155-millimeter rounds fired directly at the Legislative Building were passing through the structure and landing in the 1st Cavalry sector. General Beightler quickly called for a cease fire until control could be re-established.

The general procedure used during the attack on the municipal buildings was to pound the Japanese held up inside with a heavy artillery bombardment and then send infantrymen forward with flamethrowers and incendiary grenades. During this phase of the battle, the 136th Field Artillery Battalion lost more battery personnel than forward observers, with one officer and four enlisted men killed and six officers and fifty-three enlisted men wounded. This was the result of their unusually close proximity to the enemy.

Major John Gordon wrote that the precision required by direct firing that took place during the fighting in the streets of Manila forced the artillery to move very close to the targets. Because these enormous, well-constructed buildings were impervious to tank or even 105-millimeter artillery fire, the heavier field guns had to be used. Despite the need to employ direct fire Gordon indicated that, “the vast majority of the ammunition expended was still for the indirect fire, accounting for more than 90 percent of all the ammunition fired.”

Beginning on February 26, the Division launched its infantry assault, and one by

63. Frankel, *The 37th Infantry Division in World War II*, 293-94.

64. Rodgers, “The 136th Field Artillery Battalion,” 733.

one these last three strongholds fell. Although the honor of being the first American army unit to enter Manila belonged to the 1st Cavalry Division, the 37th Division had the dubious distinction of the ending the last organized enemy resistance in the city, within the Finance Building. On March 3, General Griswold reported to General Krueger that all organized resistance had ended in the Manila area. The next day, Krueger relayed this information to General MacArthur; a little more than three weeks after the Supreme Commander had already announced to the press and to the world that Manila had fallen “like a ripe plum.”

The experience of 37th Division artillery in the fight for the Manila was in part, an anomaly, or a throw back to the way in which artillery had fought battles in the nineteenth century. Field guns in plain view of the enemy meant the gun crews were sure to suffer casualties. The manner in which artillery was used to reduce strongly-constructed concrete buildings and the thick walls of Intramuros was even reminiscent of medieval warfare, when armies laid siege to a walled enclosure and fired heavy cannons to knock them down. Direct artillery fire did not require forward observers to hit the target, although someone from a forward vantage point might be able to discern the initial results more extensively and direct subsequent shots more effectively. Despite the use of direct fire in Manila, forward observers remained busy directing neutralizing fire to destroy targets of opportunity and keep the enemy disorganized.

The forward observers of the 1st Cavalry Division were just as actively involved in the fight for their sector of the city. Lieutenant Charles E. Doesburg of Galesburg,

Illinois, was a forward observer with 82\textsuperscript{nd} Field Artillery Battalion. At Santo Tomas, Lieutenant Doesburg climbed a tower just as enemy artillery and mortar shells began to fall, so he could adjust counter-battery fire on Japanese guns nearby. While at his post, enemy shells hit the tower nine times, killing more than thirty and wounding nearly a hundred people nearby. As others around him sought cover, he stayed in this very exposed position, directing accurate artillery fire. The Army awarded Doesburg the Silver Star medal.

With American troops now in control of Manila, most of western Luzon and the central plains, the Japanese began to withdraw to the more mountainous areas of the north and east. With the advantage of holding the high ground, they would try to hold until such time when they could eventually drive the Americans into the sea. On March 25 the division received new orders assigning it to Baguio. Three days later the 129\textsuperscript{th} Infantry was attached to the 33\textsuperscript{rd} Division with the mission of heading east along the Naguilian Road, preceding the rest of the 37\textsuperscript{th} Division in the move toward Baguio.

By then, the remainder of the division had already departed from Manila and begun the advance toward Baguio. Along the way, the 6\textsuperscript{th} Field Artillery experienced a serious problem in command as it was providing support for the 129\textsuperscript{th} Infantry. Lieutenant Colonel Stewart L. Brown had driven forward to observe the effect of counter-battery fire. A Japanese 150-millimeter shell scored a direct hit on the observation post where Brown was watching, killing him and two others by his side.

\begin{quote}
67. B.C. Wright, The 1\textsuperscript{st} Cavalry Division in World War II (Tokyo: Toppan Printing Co., 1947), 134.

68. Frankel, The 37\textsuperscript{th} Infantry Division in World War II, 303, 307
\end{quote}
Lieutenant Colonel Chester A. Wolfe then assumed command of the 6th Field Artillery Battalion.

On the morning of April 14, the 148th Infantry passed through the 129th Infantry east of Monglo. Two days later it was approaching the Irasan River gorge about five miles west of Baguio. After destroying the bridge on Route Nine, the Japanese took up defensive positions in a series of eight ridges overlooking the gorge. The battle for Irasan began on April 17 and lasted for four days. Along the way the 148th Infantry encountered scattered Japanese forces which fought back with artillery and mortar fire. With artillery support provided by the 140th Field Artillery Battalion, forward and aerial observers adjusted counter-battery fire to quickly end the enemy fire. Finally on April 21, the First Battalion of the 148th Infantry secured the rest of area near the bridge the Japanese had destroyed. The 129th Infantry passed through the 148th on the morning of April 22 and the Division continued its advance.

On the evening of April 23 as elements of the 129th Infantry approached Baguio, they met strong resistance at the village cemetery. Overnight, the Japanese launched a counterattack led by tanks against the position held by the 129th at the cemetery. As the 6th and 136th Field Artillery Battalions laid down a heavy protective barrage, the infantry

69. Ibid., 308-9; The Report After Action indicates that on April 29th the 129th Combat Team received heavy artillery fire near Salat and that Lieutenant Colonel Brown died “while directing counter-battery fire from a forward OP.” Headquarters, 37th Infantry Division, Report After Action, 263.

70. Ohl, Minuteman, 202-3.

71. Headquarters, 37th Infantry Division, Report after Action, 263.

72. Frankel, The 37th Infantry Division in World War II, 316.

73. Ohl, Minuteman, 204.
with the support of tanks repelled the attack. The next morning, after an artillery barrage, the 129th Infantry overran the cemetery, and by the evening of April 26, the division had taken Baguio.

As he had done in previous campaigns, Beightler made extensive use of artillery during the Baguio operation. However, readily available air support and a shortage of artillery shells forced him to limit his artillery usage to well-defined targets rather than harassing and interdictory fire. As the General saw the capabilities of well-coordinated air support, he began to step up his use of them and by the end of the Baguio campaign, he readily called on his air support, at times within 400 yards of his front lines. Beightler noted that the air support spared the infantry many casualties while greatly facilitating its progress. After the war he wrote in reference to Luzon he admitted the infantry had excellent air support, but in summarizing the Division’s combat experience in all three campaigns said: “It became a comparatively primitive sort of fighting—man against man, machine gun against machine gun with only our immense superiority in artillery weighing down our side of the balance.”

Effective counter-battery fire, the destruction of Japanese artillery pieces by

74. Headquarters, 37th Infantry Division, Report after Action, 264.

75. Ohl, Minuteman, 204.

76. Ibid., 206; Frankel noted that “In New Georgia, Bougainville, and Manila, air support was either non-existent or patently ineffective. The officers and men had no confidence in the ‘up close’ technique. Yet there was no alternative.” Frankel, The 37th Infantry Division in World War II, 319.

American howitzer batteries, played an important role in the successful execution of combined arms tactics employed by the 37th Division infantry and artillery on Luzon. The Division came under more Japanese counter-battery fire than it had in the previous two campaigns, yet the obvious asymmetry between the Japanese artillery arm and its American counterpart continued in the Philippines. This was partially due to the efforts of the American forward observation teams. During the period from April 26 to May 4, Lieutenant William F. Sullivan of Lakewood, Ohio, while under heavy enemy fire, directed artillery strikes resulting in the destruction of three enemy field pieces, sparing the infantrymen many casualties, and enabling them to advance.

As the Baguio operation was winding down, Sixth Army planners decided to send the 37th Division up Route Five through the Cagayan Valley, the last Japanese stronghold on Luzon. The Cagayan River runs for 260 miles in the midst of a series of high mountain ranges. This was the last sustained combat operation the 37th Division would have to fight, and was characterized by its mobility and concentration of firepower. The 129th Infantry Regiment spearheaded the advance on May 31, and, for the next four weeks, the three infantry regiments of the Division repeatedly leapfrogged each other. Stanley Frankel described the massive firepower available to the 129th Infantry, noting that, “Overwhelming power was the keynote of the entire operation.”

Later General Beightler would refer to this chapter in the division’s history as its

78. Headquarters, 37th Infantry Division, General Order #150, 4.
80. Frankel, The 37th Infantry Division in World War II, 329, 331.
blitzkrieg. It was certainly a good example of *Bewegungskrieg*, or mobile war by German definition. By now the Japanese had become fragmented and were unable to recover. In less than four weeks after leaving Santa Fe, the 37th Division had cut a swath 225 miles to the north, ending the last phase of liberating Luzon. Along its path were large quantities of destroyed enemy material, and many dazed Japanese soldiers wandering among the hills. Noting the rapidity of the advance, a forward observer from the 6th Field Artillery observed that the artillery barely had time to fire a few rounds for registration before the infantry was on the move again. He also claimed it was even difficult for the aerial observers to keep pace with them. This posed a challenge to both ground and aerial observers for maintaining control of artillery fires.

By June 10 the Japanese had pulled back to the vicinity of a wrecked bridge at the entrance to Orioung Pass, and, as lead elements of the 145th Infantry advanced to this point, they quickly incurred heavy casualties before halting abruptly. After the 135th Field Artillery fired a heavy concentration, soldiers of the 2nd and 3rd Battalions moved forward only to stop again after running into heavy automatic weapons fire. Another envelopment to the north also came to a halt, and during mid-afternoon, all attacking units fell back while the 135th and 136th Field Artillery joined by the 251st fired a massive barrage for nearly two hours. After the firing stopped the 2nd Battalion, 145th Infantry, advanced and by nightfall successfully gained control of the high ground at the entrance

81. Ibid., 332.
82. Ibid., 334.
to the pass. Despite using heavy artillery and mortar concentrations in conjunction with air strikes, it took three days to clear the pass. Although the 37th Division had moved quickly, nearly two weeks of the campaign had passed before the Buckeye Division actually entered the Cagayan Valley, reaching Cordon on June 13.

To compensate for their weakness in field artillery, the Imperial Army relied heavily on mortars. These weapons are comparatively much more mobile than field guns but can deliver a devastating amount of firepower and destruction. Also, when a mortar fires its projectile, there is no flash, only a dull thumping sound. Artillery officer Major Archibald M. Rogers described Japanese mortar fire on Luzon as their most consistently effective weapon adding that counter-mortar fire was problematic. “Destruction of these mortars has been principally due to alert forward observers and aggressive infantry action. Location by sound, flash, or air observation is extremely difficult.” Although aerial observers gained a much wider, expansive view of the land before them than did forward observers on the ground, the Japanese were so good at the art of concealment that ground observers on Luzon were often able to spot targets unseen to aerial observers. Yet it could work either way.

An incident illustrative of this occurred at Orioung Pass when an American tank column was supporting elements of the 145th Infantry. The column consisted of light and

83. Ibid., 339-40.
84. Headquarters, 37th Infantry Division, Report after Action, 266.
medium tanks, as well as radio cars from the Signal Corps. Riding along were an Air Corps liaison officer and a field artillery forward observer. The forward observer on the ground maintained radio contact with an observer in the air. Thus when the artilleryman on the ground noted something the aerial observer did not, he could relay the target information to the flyer who would then tip off the tank crew nearest to the enemy location. This artillery-airplane-tank team worked very well together. It also demonstrated that forward observers could acquire targets and control fires, even if their commands were relayed through multiple channels, and even if armor not artillery ultimately provided the supporting fire.

Within a few days, the 148th Infantry passed through the 145th and, on June 23, the 129th in turn took the lead from the 148th. By noon on June 26, the men of the Second Battalion, 129th Infantry spotted a long column of dust to the north. In less than an hour the men of Company F were shaking hands with the paratroopers of the 511th Parachute Regiment, 11th Airborne Division, as the two groups converged. The next day, the 129th Infantry entered the coastal city of Aparri, ending the Cagayan operation and with it, the Luzon Campaign.

Frankel attributed much of the Division’s success in Cagayan Valley to its ability to maintain its momentum, keeping the Japanese off balance, and forcing them to fight small, but strong delaying actions. Well-hidden Japanese positions meant small-unit

86. Frankel, *The 37th Infantry Division in World War II*, 342-43.

87. Ibid., 351.

actions rather than the standard two-battalion frontal assault were the norm during the entire campaign. As a result, it was extremely important to keep the supply lines open at all times.

The rapid displacement to Cagayan Valley had created a strong challenge for the artillery batteries to keep up and stay within range of the leading elements of the infantry. The advance could only be made on narrow and winding roads, that left the Division severely extended. Service batteries had to haul ammunition as far as 230 miles over dirt and gravel roads which crossed mountains and bypassed bridges that had been destroyed. In the valley, artillery had flat, open areas to deploy to along the roads, while the enemy held the high ground on its flanks.

Major Rogers noted that by maintaining its rapid pace, the artillery had been in position to make the advantageous use of its fire as the locations of various enemy emplacements became known. In a count of enemy equipment known to have been destroyed by artillery fire, Rogers listed “524 vehicles of all types. Most of these were destroyed when artillery observers caught hundreds of enemy vehicles jammed on Highway Four between Bagabag and Kiangan in the Jap’s mad flight.”

89. Frankel, The 37th Infantry Division in World War II, 345; After the war, historian Robert Ross Smith wrote a letter to Beightler noting that the Cagayan Valley operation “was a prime example of how much chaos and confusion a relatively light force can achieve when it keeps going as fast and as hard as it can.” Ohl, Minuteman, 217.

90. In his postwar report, General Beightler mentioned that at times, the front and rear elements of the division were separated by as much as fifty miles. Beightler, Beightler’s Report on the Activities of the 37th Division, 14; One newspaper correspondent noted that: “The 37th Division, racing up the Cagayan Valley, has a front line two hundred miles long and twenty yards wide.” Frankel, The 37th Infantry Division in World War II, 345.

91. Ibid., 348, 340.

The successful drive through Cagayan Valley virtually assured American victory on Luzon, but not total Japanese defeat. There were still in excess of 50,000 Japanese troops on the island by the end of June. During July and the first half of August more American soldiers were yet to die, but never at the same rate as before. The final assignment of the war for the 37th Division was to keep the 13,000 Japanese troops scattered in the mountains east of the Cagayan Valley in check. Although the fighting in this area consisted of isolated skirmishes, the Division lost another 50 killed and 125 wounded in the last six weeks of the war. On August 10 after listening to a radio broadcast telling of Japan’s intentions to surrender, Beightler immediately ordered his troops to cease aggressive action, and to avoid further casualties within his division.

Conclusion

Luzon represented the 37th Division’s first experience operating in populous region, much land under cultivation, and a population center in a major urban area. These conditions presented new challenges for the effective operation of infantry and artillery using combined arms tactics. For the most part, they met these challenges well.

For the first time, the 37th Division could maximize its capacity for aerial observation, sometimes in conjunction with ground observation. This was because much of the topography of Luzon included open plains and because the natives had taken much of the land under cultivation. The Division’s experience was that aerial

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93. Ohl, Minuteman, 220-2
observation was superior for targets in open terrain or moving targets. The destruction wrought by artillery on the Japanese in the Cagayan Valley underscores this point.

Ground observation, however, was essential for revealing concealed positions and the Japanese were masters of concealment. Observation on the ground also enabled the observer to use his sense of sound, while the aerial observer could not.

The great lesson of Orioung Pass was that the job of the forward observer could be split. He could find, detect, or acquire targets, and he could conduct and adjust fires onto targets. The fire support given did not have to come from the field artillery, alone; air or armor could provide the fire. This was today’s joint fires concept in its infancy. At Orioung Pass, ground observers acquired targets and aerial observers conducted and adjusted fires.

The 37th Division’s most challenging use of artillery on Luzon was in Manila, during the assault on Intramuros and the subsequent attacks on the concrete government buildings. The effort to launch an infantry assault on a sixteenth-century city with walls twenty-feet high and from twenty-to forty-feet thick relegated modern field artillery indirect fire almost to the level of medieval siege tactics. It demonstrated that there are still some situations in modern combat that require direct artillery fire. It also negated the advantages of modern communications technology. Gun crews and Fire Direction Centers had to communicate with hand signals because they were unable to hear each other over the roar of the guns and explosions.

An estimated 100,000 civilians died during the battle for Manila. While the

purpose of this study is not to explain how that happened, it is interesting to note that some hold General Beightler’s extensive use of artillery responsible for the extent of civilian casualties and the degree of physical damage wrought on the city. While no one knows how many civilians American gunfire killed unintentionally what seems apparent is that the Japanese deliberately massacred thousands of Filipinos and made no effort to provide for the safety of others in the ensuing combat, actually using them as hostages at times.

The story of collateral damage in Manila demonstrates that what is required to defeat an enemy in war often results in high number of civilian casualties and the destruction of property, regardless of the sophistication of weaponry and available firepower to assist manpower, means that the great levels of mass destruction achieved may not necessarily be confined to the enemy, alone. The objective of war, however, is to destroy that enemy’s ability to resist, and the 37th Division certainly realized that goal in the battle for Manila.

95. British authors Richard Connaughton, John Pimlott, and Duncan Anderson conclude that “the fault lies with commanders who … once presented with the need to take the city by force, preferred to solve the problem with firepower,” noting that: “Throughout American accounts of Manila, the fate of ordinary Filipinos does not figure large.” Connaughton, Pimlott, and Anderson, The Battle for Manila (London: Bloomsbury, 1995), 200; Filipino author, Alfonso J. Aluit holds an even stronger opinion observing that: “Douglas MacArthur bears as much responsibility as Sanji Iwabuchi does for the cruel fate that was inflicted on Manila.” Aluit, By Sword and Fire: The Destruction of Manila in World War II, 3 February – 3 March 1945 (Manila: National Commission for Culture and the Arts, 1994), 395.

96. Robert Ross Smith submitted that although neither the United States or Japan had signed the Geneva Convention both nations had agreed to abide by its rules. Japan forsook this agreement in Manila by fortifying hospital buildings, “all clearly marked by large red crosses on their roofs and they contained many Filipinos, who were in effect, held hostage by the Japanese.” Smith, Triumph in the Philippines, 286.
PART III

Symmetry in Europe
CHAPTER SEVEN

INITIATION TO COMBAT: THE SAAR BASIN, DECEMBER 1944

The 87th Division’s initial experiences in Europe demonstrated how much more parity existed between the Americans and the Germans at the tactical level than existed between combatants in the Pacific war. Hitler had spread the Wehrmacht too thin by forcing it to fight a two-front war and, by the end of 1944, Germany was also experiencing a decline in crucial resources. However, the Wehrmacht had well-rounded experience using combined arms tactics in mobile warfare that the Imperial Army never had. The German Army was also extremely good on the defensive, where it utilized combined arms warfare to its fullest advantage, as the 87th Division began its attack.

There were great similarities between the Germans and Americans and their artillery usage in general. Standard field pieces were fairly evenly matched and both sides employed forward observers at or near the front to great advantage. There were also similarities in communications with the use of radios and telephone lines.

After a short stay at Metz, the 87th Division went into the line with orders to cross the German border. Unknown to them at the time, this meant breaching portions of the Siegfried line, a series of inter-connected defensive fortifications running along the western border of Germany, from Switzerland to the Netherlands. Because the German Army was fighting to keep an enemy from invading its homeland, this would be a difficult struggle pitting the Golden Acorn Division against an experienced, sophisticated foe, capable of fighting a complex and ferocious form of war.
One point often overlooked is that at the onset of America’s entry in World War II, many National Guardsmen were better trained and prepared for entering combat than were the members of the regular army. Young men of the Depression era frequently entered National Guard service after leaving school. It entailed less of a commitment than the regular army and represented a way to earn an income in a time when jobs were scarce. After Pearl Harbor, a number of regular army divisions had to build their infantry regiments and field artillery battalions around a tiny cadre of career soldiers. As a result, many draftees and new enlistees were thrown together as individual infantry divisions were activated. Because many of the guardsmen had joined right out of high school during the last years of the 1930s, a large number of them had trained and worked together with their comrades for years, not months, before they entered combat.

On December 15, 1943, the 87th Infantry Division re-entered active duty. By that time the 37th Division had already fought on New Georgia and had begun the Bougainville campaign. The 87th Infantry Division was a typical triangular division, composed of the 345th, 346th, and 347th Infantry regiments. The 334th, 336th, and 912th

1. Few historians would argue that the National Guard units were particularly well-equipped or trained in December 1941, but the point, here, is that many field artillerymen who served in the Guard had comparatively more hands-on training than their regular army counterparts who joined their units after the declaration of war. Peter Mansoor noted: “too often companies and battalions were forced to adept on the battlefield to achieve the level of combat effectiveness that ideally should have come from progression through the Mobilization Training Program. Mansoor, The GI Offensive in Europe, 48. Weigley underscores this point indirectly observing that: “Artillerymen largely do the same thing in combat that they have done through all their training—laying down fire on targets they do not see,” Weigley, Eisenhower’s Lieutenants, 28; Some pre-war Guard artillery batteries maintained much of their unit members’ identity through the entire war. “Join the Guard and go with the boys you know,” was, for a time,
Field Artillery Battalions were the division’s three 105-millimeter howitzer units, while the 335th Field Artillery Battalion had the larger 155-millimeter guns. The division was also typical of those American units that joined the war in Europe after D-Day, and during five months on the continent of Europe, it experienced combat a majority of that time, some of it quite intense. The 87th also used its artillery well and a study of its forward observers provides a good basis for comparing their collective experience in Europe with that of the forward observers in other Army outfits in the Pacific.

The division trained at Fort Jackson, South Carolina, in 1944 prior to its deployment to the European Theater. After training briefly in England, the 87th disembarked at Le Havre, France, shortly after Thanksgiving in November 1944. By then, the United States Army had two years of combat experience and American forward observers had gained even more practice applying their new techniques in battle. Despite this, most units new to the European Theater were generally assigned to less intense areas of fighting, until they had gained some exposure to combat. This explains why the Golden Acorn Division began the war at the old fortress complex in Metz, still occupied by the Germans at that time. Although the German commander of the city had surrendered on November 21, by the end of the month four of the forts, Driant, Plappeville, St. Quentin, and Jeanne d’Arc, of the old fortress complex, continued to hold

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2. History of the 87th Division, 12.

3. Ibid., 13, 17, 21-22.
The 5th and 95th Infantry Divisions had suffered heavy casualties in the battle for Metz. In early December, the 87th arrived in the outlying region. On December 6, at 10:55 a.m., PFC Donald McCabe of Philadelphia, Pennsylvania, of A Battery, 334th Field Artillery Battalion, pulled the lanyard on a 105-millimeter howitzer in a fire mission on Fort San Quentin, one of the remaining holdouts. This was the first shot fired by the 87th Division in World War II.

However, the Golden Acorn’s stay in Metz was only for about a week and the artillery experience gained there was not much more than target practice. However, its real initiation to combat now lay close at hand. On December 11, the 346th Infantry relieved the 104th Infantry of the 26th Division near Achen, France, where it went into battle that same day. The forward observer sections of the 336th Field Artillery Battalion accompanied the infantrymen. By December 13, the Regiment was near its objective of Rimling. Meanwhile the 347th Infantry had moved into the line and began its initial assault the same day, advancing toward the French village of Obergailbach. After meeting bitter opposition, the 347th took Obergailbach and the heights overlooking the

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5. For further reading on the Battle of Metz, see either of the previous two citations or: Robert E. Gajdusek, Resurrection: A War Journey: A Chronicle of the Events During and following the Attack on Fort Jeanne D’Arc at Metz, France, by F Company of the 379th Regiment of the 95th Infantry Division, November 14-21, 1944 (Notre Dame, IN: University of Notre Dame Press), 1997.

6. History of the 87th Infantry Division, History of the 334th FA Bn, 70.


8. History of the 336th Field Artillery Battalion, 131.
Blies on December 15. This brought the Division to within a few hundred yards of the German border to the north.

Raymond Jemc, A Battery, 336th Field Artillery, was an enlisted artilleryman who served as part of a forward observer party. Forty years later, Jemc compiled a written account of his experiences as a forward observer from December 1944 through April 1945. Jemc described his first night in December 1944 in the forward zone near the village of Gros Rederching: “Just before midnight we received our first artillery shelling. Fortunately no one was hurt . . . . After the shelling I caught cat naps all night while sitting on a five gallon can in a cold drizzling rain, listening to our battalion radio network. It was quiet the rest of the night.”

On December 13 Jemc saw his first German soldier, lying on the side of the road, wounded, and under sedation. That night, his party slept in a barn at Moronville farm. Although the roof was full of shell holes, to Jemc it felt “like a hotel.” Here, the Battalion incurred one of its earliest casualties when fragments from an exploding German mortar shell wounded William Indianos. “He was at an observation post and the Germans must have spotted the activity there and started to shell the position. A mortar shell landed among the men, and my friend received leg wounds and a fragment in the abdomen. Quick work by the medics saved his life.”

On December 13, the 912th Field Artillery also carried out its first combat


11. Ibid., 6-7.
mission, firing on German troops in the vicinity of Obergailbach. The Battalion’s first casualty was a forward observer. Late in the afternoon of December 15, an 88-millimeter shell fragment hit Captain Leonard Harding, wounding and killing him as he was returning from a forward observation assignment. The next day, enemy artillery killed Captain William F. Botkin and his radio operator in their foxhole. Also on December 15, the 1st and 3rd Battalions of the 345th Infantry relieved the 1st and 2nd Battalions the 346th Infantry near Rimling, a few miles southeast of Obergailbach. From here, the 345th prepared to cross the border and invade Germany near the beautiful village of Medelsheim where the regiment would engage in its first large-scale combat.

The battle that took place there on December 16 illustrates some of the problems yet to be worked out in the successful execution of combined arms tactics, particularly with regard to command and communications functions. The Golden Acorn Division was part of the American 3rd Army and as it went into the line in northern France, it represented the extreme right flank of General George S. Patton’s field army. To the right of the 87th Division lie elements of the U. S. 7th Army. After the Germans opened up with heavy artillery, tank, and machine gun fire on the 3rd Battalion, 345th Infantry, forward observers immediately found targets, but were unable to obtain permission to conduct artillery fire until the request went up the chain of command and the boundaries of the two American armies could be more precisely ascertained. This took several hours. In the meantime the infantrymen of Company L would pay the price.

12. Historical Record of the 912th FA Bn, 155.

Starting from a position near Rimling, France, the 3rd Battalion, preceded by two artillery barrages, jumped off at 0500. It headed toward the Mertzenwald-Baumbusch forests which straddle the German-French border. The men advanced about one kilometer and by daybreak Company L occupied both the Merzenwald in Alsace and the Baumbusch in Germany.

At this point, Colonel Douglas Sugg, the commanding officer of the 345th Infantry Regiment, ordered Captain Howard Wall, commanding officer of Company L to continue the advance. Wall objected strongly telling his superior officer that the right flank remained totally unprotected and that the company should not move forward without contact from the 87th Reconnaissance Troops purportedly now on L Company’s flank. Sugg replied that the 87th Recon troops were there and to move out. “To which Captain Wall boldly but accurately replied: ‘The hell they are,’ [and] hung up his field phone.” Then Wall ordered his men to move out.

Captain Wall undoubtedly wanted confirmation of the 87th Recon’s location at that time, so he could request an artillery barrage to precede the 3rd Battalion’s advance, without endangering friendly troops. But Colonel Sugg’s false affirmation that friendly troops remained in the targeted area ruled it out. Captain Wall, who was later killed near Olzheim, Germany, then reluctantly carried out his superior officer’s order.


16. Ironically, the National Archives holds Unit Histories of the 87th Reconnaissance Troop for January through May, 1945, but the December 1944 record is gone. *Unit History and After Action Reports*,
Just as PFCs Louis F. Stein and Raymond Kline, the two leading scouts of Company L, were nearing the top of a ridge overlooking Medelsheim, a German tank hidden in the woods opened fire, killing them both. The burst of tank fire signaled the German artillery to commence firing, catching the men of L Company in the open on a hillside.

Accompanying them to provide forward observation for the 3rd Battalion were three members of A Battery, 334th Field Artillery Battalion; Lieutenant James R. McGhee of Mount Vernon, Illinois, PFC Gayle Bricker from Sarver, Pennsylvania, and T/4 Donald L. Walker of Alliance, Ohio. McGhee remembered: “They began shelling us from our right rear as we were attacking across an open field with a few ancient apple trees scattered here and there. Joining the hostile artillery were machine guns in the little village of Medelsheim to our right front placing grazing fire across the ridge while hostile artillery had a field day.”

At this time, Lieutenant McGhee told Bricker and Walker to take shelter in a large

87th Cavalry Recon Troop, The National Archives and Records Administration, Suitland, MD, Record Group 407, Box 12921.

17. Ehret to Walker, Battle for Medelsheim, E-mail March 25, 1999; Another lesson of Medelsheim is that even in this late stage of the war, American infantry-armor coordination had not developed as fully as infantry-artillery had. Sam Jones of Company L, who wrote a graphic account of witnessing the death of his comrade, Louis Stein observed that: “As we sit around waiting for daylight, I was shocked to see 4 medium sized tanks sitting below the crest of the hill behind us with fire shooting out of their exhaust. We never had tank support before and didn’t know what to think about it. We moved out at daybreak and never saw or heard about the tanks again.” Jones, ‘Sam Jones Papers,” [1990] United States Military History Institute, Carlisle, PA., 13; House notes that “the radios issued to infantry, tank, and fighter aircraft units had incompatible frequencies, making communications among the arms impossible.” House, Toward Combined Arms Warfare, 129; Gayle Bricker, Jr. recalled that the Americans tank remained with them until the Germans began shelling their positions. Then the tanks took off. Bricker to John R. Walker, Re: Battle for Medelsheim, December 16, 1944. Telephone conversation, September 2, 2008.

pile of rocks that had been placed in the gully. At that same moment, a shell exploded very close to McGhee and, although he was unscathed, a shell fragment clipped the leather attachment holding the holster for his .45 caliber pistol to his belt. McGhee quickly reattached the holster with a piece of telephone wire. “Then I accompanied Capt. Wall and Sergeant Cutler [Paul Cutler was Captain Wall’s radio operator] in a mad dash to a building atop the ridge. He [Cutler] carried a back pack radio SCR 300 and a BAR. His job was to stay with Wall at all times with that radio.” Because his artillery radio was not working at the time, McGhee went up the hill with Wall to maintain radio contact with the 334th Field Artillery Battalion.

After the German tank opened fire, killing the two lead scouts, the Americans returned fire with a bazooka chasing it off just as “all hell broke loose.” As Wall, Cutler and McGhee reached the top of the hill, they approached a small brick shed from the rear. Using the bazooka as a door-opener, the punched a hole in the wall and crawled inside where they had a good view of the village of Medelsheim. From here, they could see inside the steeple in the village’s lone church. With binoculars, they saw the motion of observers or snipers within the steeple. “There was enough traffic entering and leaving Medelsheim, especially along the east-west roads north of the church . . . to suggest that here was a vital ‘motor pool’ or certainly part of the larger network for the Germans attacking in the Ardennes on that very day.” This is a logical conclusion. Today, the

19. Ibid.


driving time from Medelsheim to the Schnee Eifel, where the Ardennes Offensive began that morning, is a little over two hours. Jim McGhee was able to bring American artillery fire quickly on Medelsheim, but this did not stop the enemy shelling. “We could see several German tanks maneuvering slowly in a wooded area across the valley, a half-mile or so to our front. They were firing at and into our building and appeared about to mount a counterattack. However, Medelsheim, with its withering machine gun fire was of first importance to us in our immediate situation.”

At this point, McGhee directed a Time-on-Target on Medelsheim which successfully eliminated the German machine guns but not the artillery fire. Paul Cutler witnessed the demolition of the tiny village: “For a nineteen year-old to see a town one minute, and the next minute see it obliterated as if a giant foot had stepped on it and crushed it was very exciting, but in retrospect, it caused me to hate war with a vengeance.”

Meanwhile, on the reverse slope of the same hill, German 88-millimeter fire continued to kill and wound the riflemen of Company L. One of the wounded, Donald F. Hoehle of Columbia, Missouri, remembered that the Germans were hitting them with a heavy concentration of artillery and machine gun fire. “As a result, we were pinned down. It was apparent that we couldn’t advance without relief from the artillery shelling, so the call went back for counter-battery fire. The initial rounds fell short, with the result that we had incoming rounds from both enemy and friendly fire. Eventually the range


23. Cutler to Walker, Re: *Battle for Medelsheim*. 
was corrected, but the enemy shells kept coming in.”

The continuing enemy artillery originated from Utweiler, to the southeast of Medelsheim, and from other areas to the east. The entry made at 1250 hours in the 87th Division Artillery’s S-2 Record of Enemy Activity on December 16 made by “Highwater” reported mortars and 88s in Utweiler, plus ninety infantry and one tank at map coordinate 688577. “Highwater” was the radio codename for one of the artillery officers of the 912th Field Artillery Battalion under the command of Lieutenant Colonel Joseph A Monn. After the TOT, Captain Wall asked McGhee to try to break up the tank activity to their front and ordered Lieutenant Ehret to move the rest of Company L, still under the barrage, off the hill.

Another observer, A Battery Reconnaissance officer Lieutenant Guy Allee of Burlington, Iowa, could actually see the muzzle flashes of the German guns, but was unable to obtain timely permission to fire into the American 7th Army’s zone and silence the enemy guns. Meanwhile, L Company continued to suffer numerous casualties despite the fact that Lieutenant McGhee had been able to force the tanks to his front to withdraw. McGhee wrote that it took Allee “almost fours hours to get clearance to fire into the Seventh Army zone and silence the enemy guns! That incredible blunder resulted in ‘L’ Company being reduced from fresh, full-strength Infantry Company all the way down to


25. Command Post, 87th Division Artillery, S-2 Record of Enemy Activity, 16 December 1944. The National Archives and Records Administration, College Park, MD, Record Group 407.

some thirty effectives.”

Guy Allee’s recent letter explained that a large part of the delay in receiving permission to fire was because of the 87th Division’s location. The Golden Acorn was on the extreme right flank of the 3rd Army of which it was a part. To its right was the 7th Army. When the Germans opened fire with their self-propelled artillery, Allee could see the muzzle flashes and reported their locations. He received word that this spot was within the 7th Army’s sector and that he was prohibited from directing fire on that location. Calling for fire again, he assured the Fire Direction Center that he could plainly see the target. This request went from the Battalion Fire Direction Center to the 87th Division Artillery FDC. Lacking the authority to approve his request, Division Artillery relayed his request to 87th Division headquarters which, in turn, forwarded it to 3rd Army Headquarters, which then sent it to 7th Army Headquarters for approval. Not knowing the exact positions of all their units, the 7th Army sent it to the headquarters of the division they believed to be in the target location. Then the request went down through that division’s channels until it reached one of its Artillery Battalion Fire Direction Centers.

After the people there determined that none of their division’s troops were in the designated target area, the approval had to be re-routed back to the 334th Battalion’s Fire Direction Center through the same great circular route that it had previously taken.

“After this was received, they did respond and with artillery fire I was able to put an end

27. McGhee, Golden Acorn Memories, 19. With much respect to the late Jim McGhee, the L Company Morning Reports for December 1944 do not seem to bear this out.
to their [the Germans] firing on our troops.”

The 7th Army units in the line on December 16 included the 45th, 103rd, and 79th Infantry Divisions and the 14th Armored Divisions. But the Alsatian towns where they occupied lay considerably east and much closer to Karlsruhe. The 44th Division’s 44th Cavalry Reconnaissance Troop may have been the 7th Army unit adjacent to the 345th Infantry’s position that day. That division’s history indicates that “the latter part of December found the troop billeted in Mayerhof, [sic] France maintaining contact between our division and the 87th Division on the left flank, and the 100th Division on the right flank.” By December 23, a troop of the 44th Cavalry contacted part of the 87th Division at Obergailbach.

Other friendly troops in that area in mid-December included the “Hellcats” of the Twelfth Armored Division. That division’s History places the 87th Division on the left and the 44th on the right to the fore of the 12th Armored Division where they converged to take over the line from the “Hellcats.” At this point, the Corps boundary changed and the 80th Infantry Division then relieved the 12th Armored. Medelsheim, Germany, is located almost six miles due north of the French village of Erching. Thus if the 12th


31. Ibid.

Armored Division was positioned to the rear of the 87th on December 16, and if the 44th Division had reached Meyerhof on that day, this would have placed 7th Army units within ten kilometers of the 345th Infantry during the battle. However, on December 16, an 87th Division S-2 Record of Enemy Activity report was circulated, indicating that the 12th Armored Division may also have been somewhere in the vicinity of Medelsheim and that the Germans had set a trap there.

The valley cited was the floor of the Bickenalb, no more than a small creek there with a rather north-south course where it passes between Medelsheim and Peppenkum. As it continues north to the east of Seyweiler it takes a more northeasterly course. The path the 3rd Battalion of the 345th Infantry followed toward Medelsheim was roughly 1,500 meters east of the Bickenalb and somewhat parallel to it. This form was signed and dated at 11:45 a.m. on December 16. The 87th Division Artillery received a copy, but by then, the trap had already been sprung. L Company’s initiation to combat took a toll, but perhaps not as high as believed at the time.

During World War II, the U.S. Army used a form called a Morning Report to indicate the number of soldiers present in a particular unit each day, and to record changes in the individual status of its members. L Company’s Morning Report for the early part of December 1944 show approximately 180 members with no significant changes in total strength until December 20. But the record for that date lists the names

33. “Liaison officer from the 12th Armored Division reports that their G-2 has civilian info [sic] that valley E of the town of Medelsheim and Seyweiler is a trap. Reports also state that two towns mentioned above have heavy artillery positions located within and near them. Claim that advance up the valley would be disastrous in that both ridges flanking valley have well located positions.” 87th Division Artillery, “Message to C,S, G-3 Ln, 16 Dec 44.” S-2 Record of Enemy Activity.
of twenty-nine members of the Company who left the unit on December 16 and another seven the next day. Possibly the last ones were not even discovered until the following morning. The reports give no indication whose wounds were fatal and whose were not. “SFW” for shell fragment wounds appears as the most frequent type of injury.

The 345th Infantry Regimental History lists by name and company, but not date, all members of the unit who were killed in combat. This source includes two of the same names appearing on the December 20 L Company Morning Report. Yet another source, Casualties: Saar Valley – 16 December 1944 lists by name and unit all members of the 345th Infantry killed or wounded on December 16. This record indicates that twenty-one men of the 345th Infantry died in action that day, including four men of Company L not listed on the Company’s Morning Reports. The regimental listing corroborates the deaths of these four, but without reference to any date. The Casualties: Saar Valley records also indicates lists sixty-four men of the regiment wounded in action on December 16 including twenty-three members of L Company whose names appear on the Morning Report. The only names absent from the Saar Valley Listing of the wounded are the six listed on the Morning Report as “NBC” or non-battle casualties.

Although the accuracy of the records themselves could be disputed, taken together, they seem to corroborate that L Company incurred the majority of the


35. 87th Infantry Division, Invictus on the March, 171-72.

battalion’s wounded on December 16, but not those killed. The assertion that L Company was reduced to thirty effectives may or may not be entirely accurate. What is significant, however, is that the 3rd Army communications and command structure somehow impeded the forward observer’s ability to bring fire to bear on observed targets on a timely basis. Someone, along the chain of command, did not acknowledge or pass along on a timely basis the forward observer’s request to bring fire on observed German targets. As a result enemy fire killed and wounded more American soldiers than it should have. McGhee and Allee both deserve praise for maintaining visual contact with their targets for so long. McGhee deserves additional credit for his willingness to maintain contact with the battalion despite the loss of his radio, and for voluntarily moving to a position already under enemy fire to direct fire on Medelsheim.

On December 17, the 2nd Battalion, 345th Infantry, passed through the 3rd and attacked in the direction of Seyweiler. On this day, F Company experienced a disastrous incident apparently involving friendly fire that resulted in significant casualties for both E and F Companies. The battalion jumped off around 9:30 a.m. heading towards Medelsheim. Anticipating tank support, the battalion approached the German positions about 11:30 a.m. the promised American tanks failed to appear, but two German tanks did. They immediately put machine gun and 88-millimeter fire on the advancing Americans. In the ensuing battle, enemy fire killed Captain Cecil Butler, commanding officer of F Company. At the time he was hit, he stood next to the artillery forward observer. The forward observer reportedly called for a fire mission and the first rounds to land fell on them. Before he could lift the friendly fire, E and F Companies began
experiencing heavy casualties. Arthur Ridings, a member of F Company, later observed:

“There is no way to determine the number of men killed or wounded by our artillery however, it did play a major part in the disaster that day.”

John Long from Lancaster, Pennsylvania, was with H Company that day, and remembered that the forward observer realized the rounds were falling short, but was unable to lift the friendly fire. The Fire Direction Center apparently thought that the Germans were making the request. When the Germans initially opened fire, the forward observer made an immediate request for a fire mission, but when the first rounds arrived, they fell short. He then asked for the fire to be lifted. Long noted next that: “the Battalion Commander, thinking this was a request by the enemy, asked him to authenticate, and because he didn’t know how (I’m not sure a seasoned officer would know how) the Battalion Commanding Officer would not lift the artillery. I’m sure the Germans heard this transmission, so they continued the bombardment all night.” Long indicated that the forward observer was severely wounded in this action and probably did not survive. Later, during the fighting through the Siegfried Line, Long would win the Silver Star for directing mortar fire on a nearby German emplacement.

Although Long did not appear to think so, the inability to provide the necessary code may have been due to the forward observer’s lack of experience. This incident happened in the early stages of the 87th Division’s combat experience. Infantrymen were


39. HQ 87th Division, GO#75, 1.
quick to blame forward observers, when they believed friendly fire was falling upon them. Like the Japanese, the German artillerymen took every opportunity to try to convince American soldiers that their own artillery was falling on them.

This incident illustrates the tremendous burden of responsibility forward observers had for bringing their training into proper use. If one accepts as fact that this was a friendly fire incident, the forward observer was doubly damned: first for using the wrong coordinates, and second, for not being able to prove the authenticity of his broadcast. Even if one accepts the premise that all the time enemy fire was falling upon the men, then the forward observer is still to blame, again, for his inability to “authenticate” his broadcast. Granting his request to stop all friendly fire would have made it obvious that any subsequent fire falling on them was German artillery fire. The 345th Infantry Regiment Unit History for December 1944 describes the friendly fire incident on December 17, listing E Company’s casualties at forty-nine percent.

The German Army, like its Japanese allies, found ways to convince American troops that their own artillery fire was falling on them. The 11th Armored Division in Europe experienced such an incident. When a patrol from this division came under intense German small arms fire, it quickly radioed for artillery support. Because the enemy monitored the radio transmission, as soon as the artillery battalion reported that help was “on the way,” German artillery promptly opened fire on the patrol. Mistaking the enemy artillery fire for American shells falling short, the patrol immediately called for a “cease _______________________

40. 87th Infantry Division, 345th Unit History – December, 1944, The National Archives and Records Administration, College Park, MD. Record Group 407.
fire,” saving the Germans from a heavy artillery barrage.

The parity that existed between American and German artillery did not mean that the artillerists of the latter were exempt from making mistakes. One would think that after five years of experience, 1944 German infantry-artillery coordination would be nearly flawless. Yet, even at that date, the Wehrmacht still experienced problems with coordination, communications, and even friendly fire. The same morning the 3rd Battalion, 345th, Infantry was crossing the German border, German 48th Grenadier Regiment commanded by Lieutenant Colonel Wilhelm Osterhold was approaching Belgium through the Schnee Eifel.

Osterhold had two battalions of Volksartillerie for support. His forward observer was linked to a radioman who then relayed all requests for fire missions to the batteries. They were connected by a single strand of telephone wire. As soldiers of his first battalion advanced, they encountered a series of American mines and trip flares. Soon everyone was cutting every wire they could find. At the same time, the explosions from falling German artillery shells seemed to be coming noticeably closer. In their zeal to avoid setting off any explosions, the Landsers inadvertently cut the telephone wire representing their sole means of communicating with their supporting artillery. Almost immediately, German artillery shells began landing all around the Colonel and his men. With no way to lift the barrage, their only hope was to keep advancing. Friendly fire

41. Shrader, Amicicide, 9.
killed and wounded 60 percent of the 48th Grenadier Regiment that morning.

The four-hour delay that Lieutenant Allee encountered when he requested a fire mission on observed targets may have been resulted from corps command’s inability to immediately account for the location of sectional boundaries due to the recent realignment of American forces in that sector. The 87th Division was fighting a sophisticated enemy who understood how to fight a modern war. The German Army became adept at locating and using these crossover points to their advantage. In a post-war interview with Field Artillery Journal, German General Thoholtes claimed that “almost invariably German observers could plot the divisional sector lines upon the terrain merely by making notes of gaps between zones of fire of division artilleries. At times, German tanks and infantry made use of this information and aimed their attack at a sector line, knowing that the zone would not be covered by either division.” This gave them the ability to penetrate and exploit small unprotected openings in the American line of defenses. Perhaps this was the tactic they used at Medelsheim.

Conclusion

The 87th Division’s initial experience revealed how sophisticated the German Army was in their practice of combined arms doctrine, especially on the defensive. The Wehrmacht used snipers and forward observers effectively to hinder the Allied advance.

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The Golden Acorn Division’s initiation to combat put them up against an army that already had five years of combat experience while trying to breach the outer defensives of Germany’s vaunted Westwall.

The division’s entry into combat also demonstrated how critical the forward observer’s role was to the safety of infantrymen and their tactical success. They were the eyes of the division moving forward and its vital link—the controlling link—between infantry and artillery. The events of December 16 made it clear that no matter how good the controllers of supporting fires were, command could still pose a problem, as witnessed by the slow granting of authorization to fire. Lieutenant McGhee was able to stop the grazing machine gun fire and drive away the tanks to their front by directing a timely Time on Target on Medelsheim. But the long frustrating delay that Lieutenant Allee experienced obtaining permission to fire on targets when he could plainly see German artillery pieces resulted in numerous American casualties.

Some might point to Medelsheim as an example of the criticism Michael C.C. Addams and others have made that “Americans employed too much top-down management, meddled in issues best left to subordinates, and demanded obedience to orthodox rules and doctrine that robbed the front-line soldiers of initiative. Too often, he had to ask permission to call in fire or exploit a situation in his immediate sector.”

Martin van Creveld, who made a comparative study of U.S. and German fighting power in the Second World War concluded that the Germans operated under much less rigid

regulations, which gave them an overall advantage over the Americans in fighting efficiency.

With regard to communications, there was a much closer technological parity between the Germans and the Americans than existed in the Pacific Theater. The Wehrmacht, like the American Armed Force, had good, reliable telephones and they experienced the same problems with severed lines that the Americans did. Using their radios, the Germans could listen to Allied transmissions and contact them to try to countermand firing orders and create confusion. Because of the extreme humidity on the islands of the Pacific, the American experience with radios there was less satisfactory than it was in Europe. Yet, field radios of the early 1940s were never entirely reliable, anywhere. The malfunction of Lieutenant McGhee’s radio on the December 16 might have led to even heavier casualties for L Company had he not on his own initiative gone forward to the top of the ridge under heavy enemy fire to use the Infantry company commander’s radio to stay in contact with his field artillery battalion. From there, he was able to put his artillery training to good use in directing fire. For whatever reason, two days after the Battle of Medelsheim, the 87th Division Artillery Communications Officer found himself relieved of his duties and replaced by Captain Robert Magee of the 336th Field Artillery Battalion.

General Patton pulled his 3rd Army out of the Saar Valley shortly before


Christmas and moved it to Belgium to help counter the invasion of the Ardennes. The soldiers of the 87th took a freezing ride north in open trucks. Shortly afterwards, the German Army quickly regained control of all the border villages and locations in northern Alsace that the 3rd Army had taken. Another six to eight weeks would pass before the 7th Army would expel the Wehrmacht from that area permanently.
CHAPTER EIGHT

FORWARD OBSERVERS IN THE ARDENNES: THE BULGE

American forward observers on the ground played a critical role in the German Ardennes Offensive commonly known as the Battle of the Bulge. For the first ten days of a campaign which lasted for about six weeks, Americans used their combined arms tactics primarily on the defensive. After Patton’s 3rd Army entered the fray, the U. S. military forces gradually went on the offensive. As this chapter will demonstrate, the forward observer’s role was principally to control the application of artillery fire in support of maneuvering infantry fighting both ways. Thus, the study of the 87th Division in the Ardennes is primarily a lesson in the practice of combined arms doctrine carried out in the truest sense of open warfare.

The Nazis purposely selected a target date when bad weather was imminent. As a result, the grasshopper pilots would not take an active part in the initial stages of countering the offensive. Nonetheless, American artillery was so intense early on that experienced German artillery officers were convinced their enemy counterpart had a ten-to-one advantage in guns and ammunition. Although too high, that ratio gives some

1. Military historian, Hugh M. Cole observed: “There is no doubt that German artillery helped the assault waves forward during the rupture of the American forward defensive positions. It is equally clear that German artillery failed to keep pace with the subsequent advance.” Hugh M. Cole, United States Army in World War II: The European Theater of Operations: The Ardennes: The Battle of the Bulge (Washington, DC: Center of Military History, 1994), 657. Cole noted that by December 23, the Americans had brought a total of 4,155 artillery pieces into action. This would have been before all units of Patton’s Third Army had entered the battle. Ibid., 659.
indication of how much artillery the Americans appeared to be firing. Ground observers were very active, since the majority of fire was observed.

Public perception of the Battle of the Bulge, molded by Hollywood, holds that the campaign which began on December 16 was over within a week to ten days. Although the Wehrmacht had reached its western-most point of penetration into Belgium in about a week, the final restoration of both Armies’ lines as they were prior to the German offensive took about six weeks, or until the end of January. Over that period of time, the enemy bitterly contested every kilometer of the way, demonstrating repeatedly their exceptional skill in mobile defense, defense in depth, and counterattack. At least one of the German armored units that took part in the Bulge had long experience on the Eastern Front. The 87th Division’s role then was to push them gradually back to the German border. The heavily-wooded terrain of the Ardennes Forest rendered artillery fire impractical in some instances. Nevertheless, forward observers played a very active part, in a variety of circumstances that often blurred the distinctions between combat arms, and resulted in many casualties among their numbers.

After General George S. Patton assured General Dwight D. Eisenhower that his 3rd Army could help stop the German advance into Belgium, Eisenhower pulled Patton’s Army out of the line in the Saar Valley and, by Christmas, the 87th Division was on its way to Belgium. The plan called for the 345th Infantry, upon its arrival, to attack the

2. Author Peter Elstob noted that General Hasso von Manteuffel’s Fifth Panzer Army that fought in the Ardennes Offensive had already been in continual action since it had left the Eastern Front. Elstob, *Hitler’s Last Offensive* (London: Secker and Warburg, 1971), 31; Cole observed that at the opening of the offensive, “it is probable that the over-all ratio of Germany infantry to American was three-to-one with a ratio of six-to-one at points of concentration.” Cole, *The Ardennes: The Battle of the Bulge*, 650.
south flank of the German salient while the British mounted a similar drive in the north. Hopefully the two would join, trapping the Germans in a pincers movement. Early on the morning of December 31, Lieutenant Jim McGhee, A Battery, 334th Field Artillery and the two enlisted men in his forward observer party joined Company I to provide artillery support for the 3rd Battalion, 345th Infantry. Starting shortly before daybreak, the company advanced eleven miles and, by nightfall, they had reached the village of Freux Menil. Here Lieutenant Colonel Robert Moran, commanding officer of the 3rd Battalion, received word of a enemy counterattack on Moircy. If the Germans were successful, they would likely continue their advance toward Freux Menil. So Colonel Moran quickly deployed his battalion along the highway by which the enemy would approach them. Lieutenant McGhee and his men were assigned to I Company commanded by Captain Franklin H. Nichoson.

After positioning his men along the northwest side of the road, Captain Nichoson called a meeting of his platoon leaders and the forward observer to give them instructions. Suddenly there was a tremendous explosion. McGhee was momentarily stunned but, after regaining his senses, recalled seeing the men to whom the captain had been speaking all flat on the ground “spread out radially like petals of a daisy.” One man died instantly and two others suffered wounds. Captain Nichoson’s body apparently disintegrated in the blast because his men never recovered his body, only the muzzle of a carbine bearing the serial number of the gun issued to him. McGhee later concluded that the deadly explosion was caused by a Bouncing Betty.

3. McGhee described a Bouncing Betty as “a can full of metal ‘junk’ (anything from ball bearings
At this point, McGhee assumed the responsibilities of an infantry officer, repeating the captain’s instructions to each of the platoon leaders and sending them back to their men. McGhee later wrote that God was watching out for him that New Year’s Eve because Captain Nichoson had been between himself and the explosion. Soon after, an infantry officer arrived, assumed command, and the enemy was stopped. The emphasis that the Field Artillery School placed upon teaching leadership skills to its officer candidates was not wasted on McGhee and the particular circumstances of this incident once again led to a blurring of the distinction between combat arms.

In the fluid battlefield conditions of the Ardennes, forward observers often made initial and unintended contact with the enemy. Also on January 4, Ray Jemc was on his third forward observer mission, led by Captain Thomas H. Choate and accompanied by Sergeant Joseph M. Benicky, Jr., who later received a battlefield commission. They were providing artillery support for the 2nd Battalion, 346th Infantry operating in the vicinity of Vesqueville. After moving through a woods, they came to a road where they spotted an armored car heading toward them. It was an American vehicle the Germans had captured during the early stages of the Ardennes Offensive. An exchange of fire between the Americans in the field and the Germans soon broke out. The car came to a quick halt about seventy yards away. Jemc recalled that, “They realized they were driving into a

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4. Ibid., 28-33.
My captain called for artillery fire, and we were almost hit by our own shells as they hit the treetops near us. The armored car was knocked out, but the three Germans jumped out and escaped into the woods.” Had the three artillerymen not quickly realized that the vehicle contained enemy soldiers, they may have perished or been captured.

The area near Vesqueville was a hotbed of enemy activity on January 4. Lieutenant McGhee felt certain that the Germans had an observer in the church steeple in the little town. If the Americans had held the village, he probably would have used the same vantage point himself. Not long after, Lieutenant Colonel Donald C. Cubbison, the 334th Field Artillery Battalion commander, and Lieutenant Colonel Robert Moran, commanding officer of the 3rd Battalion, 345th Infantry, visited McGhee at his observation post to see, first hand, what was happening. The two officers arrived none too soon. McGhee later wrote: “Walker and I had just got our telephone hooked up again after an enemy shell had hit the edge of our two-man foxhole cutting the wire [when they arrived]. . . . There we were with those two lieutenant colonels occupying our foxhole while Walker and I got behind trees.” That experience of the two artillerymen was not unique to forward observers, but could happen to all men serving in the front lines. When high-ranking officers visited these areas, their presence typically drew enemy fire.

Robert C. Reed of Durham, New Hampshire, was a Private First Class in an anti-tank platoon in Headquarters Company, 3rd Battalion, 345th Infantry. His squad had just left the town of Bras Haut and had repositioned its 57-millimeter gun on the edge of a

5. Jemc, Forty Years Ago, 9-10.

woods overlooking Vesqueville on January 4. Reed remembered that his crew received the order to fire at a church steeple supposedly holding a German observation party. “Artillery fire was being directed at one of the rifle companies preventing its further advance. We may or may not have hit our target, but disclosed our position. Consequently, we ourselves were shelled and two men died.” American artillery fire was much more likely to draw counter-battery fire in Europe than on the islands of the Pacific. Normally, the Germans had more artillery available than the Japanese, and even when they did not, they coordinated its use with their infantry much better than their Eastern allies did.

In support of the 87th Division, VIII Corps artillery fired a heavy concentration upon the German positions held by the Panzer Lehr. However, the Germans had carefully concealed their tanks from view on the road by placing them behind piles of lumber surrounding the local sawmill. Not only did the German unit refuse to budge, it stopped a strong infantry-tank assault following an artillery bombardment and actually drove the Americans back.

After the Germans counterattacked elements of the 347th Infantry near Bonnerue on the morning of January 6, the 1st Battalion, 345th Infantry, relieved it. Everett “Bob” Criss of C Company remembered it as a cold, dark day with lots of snow on the ground. Casualties had reduced his company to roughly sixty men and the second platoon to

about the size of a rifle squad. His squad took up a defensive position inside a two-story house with an attic and heavy stone walls, somewhere near the middle of the village. Criss later recalled: “My sergeant assigned me to guard duty in the attic to observe the hillside. When three German tanks appeared side by side, perhaps 1,000 to 1,500 feet away, coming over the brow of the hill, I ran downstairs to sound the alarm and then went back to my post in the attic.”

Two of the German tanks entered the village. After an American bazooka team disabled the first tank with a bazooka round, the crew bailed out. Then the second tank opened fire on the house with the second platoon inside. Criss was severely injured, his right leg nearly blown off below the knee and he passed out. When he awakened in total darkness, lying on his back in the cellar. He remembered, “I could hear an artillery FO calling on his radio to direct fire on top of us to drive away the tanks. I was in and out of consciousness most of the night. I was awakened when someone stepped or tripped over my right leg. The pain was excruciating. Someone else told me to be quiet because the Germans were all over the place.”

Criss heard Lieutenant Robert T. Booth of Plattsburgh, New York, the forward observer from Battery B, 912th Field Artillery on the radio, directing artillery fire that night as he lay wounded. After the 345th relieved the 347th on January 6, Booth and his FO party stayed to support C Company and the remainder of the First Battalion. Booth


11. Ibid., 167-68.
used the same house that Criss and his squad occupied because its attic provided a good observation post.

The Germans were determined to recapture Bonnerue because it sat along an improved highway running from St. Hubert to the west to Magerotte and Bastogne, ten kilometers to the east. The German Seventh Army was ordered to hold the Americans south of that road in order to keep their supply lines open to their units attacking eighteen to twenty kilometers further west. The terrain surrounding the village gave the advantage to its defenders. The history of the 345th Infantry describes Bonnerue as a “vital road junction” for the German supply lines to St. Hubert.”

Heavy fighting continued around the village for the next seven or eight days. Artillery played a key role for both sides in the battle. The symmetrical application of its power resulted in a temporary deadlock. American artillery helped the defenders hold on, while German artillery drove back repeated attempts by the 345th Infantry to advance through the woods to the north of the village. Booth later observed: “Artillery in those days helped each side to gain-and to lose-the village several times. The net result was a fierce and bloody stalemate. Neither side could ‘win’ in the face of artillery fire of the

12. Ibid, 185.

13. Booth observed that any attack on the village had to originate across a vast, open area, thus placing attacking infantrymen in an extremely vulnerable position. There were stone buildings along both sides of the street in the village, giving defending troops excellent protection. The ground rising behind Bonnerue gave German tanks optimal placement for lending their support. Robert T. Booth to John R. Walker, Re: Battle for Bonnerue, Belgium. Letter, March 7, 2000.

14. 87th Infantry Division History, History of the 345th Infantry, 71.

other. But use of the highway was denied to the Germans: our objective.”

Unfortunately, this denial was only temporary. Late on the afternoon of January 7, after an artillery preparation, German infantrymen, accompanied by two tanks, attacked again. A round from a bazooka got one tank and an antitank gun, the other. Booth recalled, “I directed artillery fire on them and on us all thru that. We were in a solid building and partly below ground so I drew a ‘box’ of fire around our position. My people supported me with heartwarming vigor. The 912th fired 614 rounds on the fracas—about 50+ rounds per gun.”

Overnight, the Germans encircled the town and cut all the phone lines, before removing the body of a dead tanker. Early the next morning they attacked again, preceded by another artillery barrage. Lieutenant Booth drew down the “box” of surrounding artillery fire so tightly that he set the house that he and the other Americans were in on fire. At that point, his radio batteries went dead, and with them, all hope of receiving any additional artillery support. With the building they occupied on fire, no communications with their own lines, and completely out of ammunition, surrender appeared to be their only rational choice. As a group, they decided to capitulate. Describing the momentary fear they all felt that the Germans would open fire when they appeared before them, Booth later said: “Yet there was a strange feeling like that between two teams who have battled to a 14-13 score. Although emotions remained high, the

16. Ibid.

17. Ibid.
game was over.”

The Germans took Lieutenant Booth and his comrades as prisoners. Fortunately, the Americans survived their captivity. For his gallantry in action in Bonnerue, Lieutenant Robert Booth received the Silver Star medal. Two enlisted men from the 912th Field Artillery Battalion also received medals for their service at Bonnerue. Staff Sergeant Stephen C. Zieslak from Illinois and Technician Fourth Grade John M. Watson from Pennsylvania aided Lieutenant Booth in maintaining radio contact with the battalion and in adjusting accurate fire upon the enemy. Both artillerymen remained in Bonnerue until captured and were later awarded Bronze Stars.

By January 1945, it was not unusual for non-commissioned officers to call and direct artillery fire in place of the commissioned officer designated as the forward observer because so many artillery officers had already become casualties. The first ten days of the Battle of the Bulge took a unusually high toll of forward observers, as the Americans found themselves fighting on the defensive almost continually, with little or no relief. The 87th Division was still relatively new to combat when it arrived in Belgium. Yet, as its Field Artillery Battalion histories and other sources indicate, the


21. Cole indicates that the 2nd Infantry Division suffered unusually high losses of forward observers and that thirty-two out of forty-eight working within a single Field Artillery Battalion required evacuation for wounds or exposure within the first week of the battle. Cole, *The Ardennes: The Battle of the Bulge*, 125.
division had already lost a number of forward observer personnel killed or wounded in the Saar Valley phase of the Lorraine Campaign.

On January 4, Technician Fifth Class Calvin H. Buchanan, Battery A, 912th Field Artillery, was serving as a forward observer near Pironpre. At dawn, Buchanan was at a post in front of the infantry lines and about two hundred yards from a German position in the woods, when he spotted two enemy tanks. Despite enemy fire that concentrated on his position, he adjusted fire on the German position so accurately that the enemy tanks withdrew. For his quick and decisive actions which averted a likely German counterattack, Buchanan received the Bronze Star medal.

That same day, another member of the same battalion, Staff Sergeant Elliott S. Greenberg of Battery B, was in charge of an observation detail with a rifle company. As they began initial assaults upon German positions, the Americans ran into heavy small arms and direct fire from self-propelled howitzers. Despite being wounded in the face by a shell fragment, Staff Sergeant Greenberg remained with the detail and continued to perform his duties as forward observer. Three hours later after he had had received a second serious wound, he agreed to be evacuated. Sergeant Greenberg also later

22. Official Army records from the Second World War only occasionally identify individuals as forward observers in any capacity and even less so as casualties. As indicated previously, the History of the 912th Field Artillery Battalion indicates that a forward observer was its first casualty killed in action in the battalion, and another forward observer and his radio operator were killed the next day. Historical Record of the 912th FA Bn, 155; The personal papers of men like Ray Jemc, who served on forward observation teams, provide some of the fullest details of the casualties incurred among forward observers. Over the years, Division Association newsletters, like the 87th Division Association’s Golden Acorn News, also provide many facts that would not be available otherwise.

23. Headquarters, 87th Infantry Division, General Order #244, 1-2.
received the Bronze Star medal.

Historians generally credit the ability of American enlisted men and non-commissioned officers to seize the initiative and fight small unit actions in the absence of their superior officers as the deciding factor in the Battle of the Bulge. As Brigadier General Hal C. Pattison noted: “The story of the Ardennes then is the story of the American fighting man and the manner in which he fought a myriad of small defensive battles… . It is the story of squads, platoons, companies and even conglomerate scratch groups that fought with courage, with fortitude, and with sheer obstinacy, often without information or communications or the knowledge of the whereabouts of friends.”

Although Pattison’s remarks are certainly true, the initiative displayed during World War II by American fighting men of all ranks and combat arms was not limited to the Battle of the Bulge. Perhaps the most outstanding example of initiative is America’s most decorated veteran. Backed only by artillery support, Lieutenant Audie Murphy single-handedly turned back a company of German infantrymen supported by tanks attacking near Holtzwirh, France, January 26, 1945. Murphy ordered his forward

24. Headquarters, 87th Infantry Division, General Order #4, 2.

25. Pattison as cited in Hugh M. Cole, United States Army in World War II: The European Theater of Operations: The Ardennes: The Battle of the Bulge (Washington, DC: Center of Military History, United States Army, 1994), vii; Lieutenant Colonel George Ruhlen who commanded an American field artillery battalion during the Ardennes Offensive observed that “the German attack timetable was fatally disrupted in the first four days of the Bulge, in numerous cases by squads, platoons, companies—and sometimes individual soldiers—who held onto key terrain until killed, captured, or forced to withdraw.” Astor, A Blood-Dimmed Tide; x; Author John Toland describes the Battle of the Bulge as “unorthodox; divisions, regiments, battalions, companies, at times, even one or two men fought lonely battles that determined great issues. In this kind of fight, the American soldier excelled… [Many Germans] still firmly believe that what beat them was an overwhelming number of bombs and shells… . But the GI never cared about the chivalry of war. He wanted only to win and go home.” Toland, Battle, The Story of the Bulge (New York: Random House, 1959), 379-80.
observer, Lieutenant Weisspfennig, to fall to the rear with the rest of his company, because his radio was not working. Murphy then directed a deadly artillery strike before climbing on top of a burning tank destroyer to operate the machine gun and halt the advance. For his display of courage and leadership Murphy was awarded the Medal of Honor. This incident also demonstrated that the blurring of the distinction between combat arms could go either way. Many infantrymen directed artillery fire skillfully.

Although the Germans made frequent counterattacks, the 87th Division was generally fighting an offensive action in the Ardennes. Throughout the battles, its field grade officers, noncommissioned officers and enlisted men also displayed the same individual initiative. The quick actions of Corporal Richard G. Hildebrand from Ohio and PFC Clyde L. Jackson from North Carolina, both members of A Battery, 336th Field Artillery provide one such example. On January 8, a German tank suddenly appeared, threatening the infantry that the two enlisted artillerymen accompanied as forward observers. Working together in the absence of their superior officer, they directed artillery fire against the enemy tank, forcing it to withdraw, even though their training had not included control of artillery fire. Both men were awarded Bronze Stars. The narrative citations for their awards stress “the initiative and outstanding leadership that both men displayed. That same day, Hitler ordered General Sepp Dietrich’s 6th Panzer

26. Later, when asked why he stayed on top of a burning tank destroyer about to explode. Murphy quipped in good Irish humor that it was the first time in three days his feet had been warm. Harold B. Simpson, Audie Murphy, American Soldier (Hillsboro, TX: The Hill Junior College Press, 1975), 159.

27. Headquarters, 87th Infantry Division, General Order # 9, 9 & 12.
Army to begin withdrawing to areas northeast of St. Vith and east of Wilz.

On January 10, the 2nd Battalion of the 347th Infantry, captured Bonnerue and Pironpre, and established contact with the 345th Infantry on the right flank. But German resistance tenaciously held the entire time. On January 9 and 10, Captain Thomas H. Choate from New York, a member of A Battery, 336th Field Artillery, was serving as a forward observer with a rifle company when it came under attack by six German tanks. Captain Choate repeatedly adjusted artillery fire within two hundred yards of his own position, and successfully repelled the tanks. Consequently, the infantrymen were able to hold an otherwise untenable position. For his courage and fortitude, Captain Choate was awarded the Bronze Star medal.

Staff Sergeant Joe Benicky served in the same forward observation party with Ray Jemc and Captain Choate. He also displayed the same manner of initiative and leadership in a brief battle that took place six days later. Benicky was instrumental in re-organizing and leading two platoons of riflemen near Haies-de-Tillet. After both units had lost their leaders, Sergeant Benicky acted quickly to restore order by reassuring the men. By his quick actions, he instilled confidence in the infantrymen, enabling the company to ward off a counterattack. For his courage, initiative, and resourcefulness,


29. 87th Infantry Division History, *347th Infantry*, 63.

Staff Sergeant Benicky received the Bronze Star medal.

As Patton’s 3rd Army gained control of the area around Bastogne, and the 87th Division sealed off of the roads west of the city, the remnants of the German army in Belgium began shifting further east towards St. Vith. By January 14, the 346th Infantry began moving to the vicinity of Aspelt, Luxembourg, followed by the 347th on January 15. By January 17, the 345th Infantry had shifted south to Echternacht, a small Belgian town in the southwest corner of the Bulge.

Although fighting did not entirely cease during the division’s stay in Luxembourg, its only contact with the enemy came by patrolling. On January 24, the 76th Division relieved the 87th in Luxembourg. By January 26, all units of the 87th Division were in the general vicinity of Limerle and Hautbellain, Belgium, with the exception of the 335th Field Artillery. Even at this date, German lines continued to lie west of where they had been prior to December 16 and the battle to eliminate the remainder of the bulge continued. The ordinary German soldier now had a new motive to fight, to keep the enemy from re-invading the border of his country. So he bitterly contested every mile relinquished.

One of the first units of the division to return to Belgium by January 27, the 346th Infantry, was already operating in the area north of St. Vith and that same day captured

31. Headquarters, 87th Infantry Division, General Order #10, 1.
Durler, Thommen and Gruflange before noon. Ray Jemc remembered that two of his A Battery comrades were setting up an Observation Post near Gruflange on the second floor of a building, when a mortar shell came crashing through a window in the next room wounding Sergeant James H. Carren and Corporal Edward J. Felix, Carren more seriously. Soon, medics came and evacuated both men.

In the early hours of January 28, the 3rd Battalion, 345th Infantry, moved to positions east of St. Vith to relieve the 7th Armored Division. By January 29, regimental headquarters had also moved to St. Vith, Belgium and the 345th was again in position to attack. The regiment had more fighting to do before leaving Belgium for good.

On January 30, the battalion attacked and captured Hodgen, and the last day of January resumed the attack and captured the border villages of Amelscheid, Heuem, and Atzerath, in waist-deep snow. Heuem did not fall easily and the attack required close coordination of artillery fire with infantry to achieve success. During the day, A Company entered the village twice, but both times, a stubborn enemy drove it out. Finally, by mid-evening, 2015 both A and C Companies were firmly established in the village. After capturing Setz, Lieutenant Colonel Moran’s 3rd Battalion moved toward Heuem to assist the First Battalion. Enemy assault guns and artillery positioned on nearby hills hindered the advance of Moran’s men but an artillery barrage by the 334th

35. Jemc, *Forty Years Ago*, 16.
37. Ibid.
Field Artillery Battalion’s 105-millimeter howitzers silenced the German emplacements and the battalion continued its advance.

The battle for Heuem might have resulted in another deadly friendly-fire incident if an experienced forward observer had not been on the scene. At this time, Lieutenant McGhee and his forward observation crew were accompanying the 1st Battalion, 345th Infantry. McGhee was needed to replace the liaison officer, Captain Joseph G. Mobley, who had wrenched his knee. To replace McGhee, the 334th Battalion Commander ordered a new lieutenant to temporarily take over McGhee’s position as forward observer. After the 345th Infantry had conducted a series of fire and maneuver exercises, the new officer adjusted fire and then called for the massed fire of the entire battalion. At this time, the 345th Infantry jumped off near the edge of Heuem, about 200 yards ahead of McGhee and the inexperienced lieutenant.

When the first volley of rounds came down, however, they began falling almost on the American infantrymen. The new lieutenant had already broken down the two-part SCR 610 radio and was moving ahead with the riflemen. Quickly, McGhee ran forward and re-assembled the radio set to direct the 334th Battalion Fire Direction Center to lift the fire two hundred yards “instantly.” During this entire time, McGhee and the others were under heavy enemy fire and the battalion incurred about twenty casualties from a shelling by German tanks. Tree bursts were detonating all around.


39. History of the 87th Infantry Division, History of the 345th Infantry, 76; McGhee, Golden Acorn Memories, 41.
As McGhee was contacting the FDC to tell them to lift the fire, an infantryman approached him and asked if he could help in any way. Later McGhee wrote, “I told him that I could manage – and told him to get down and take cover. At that moment, a shell burst in a tree almost right over us. Without a break in the action I lifted the artillery to the edge of Heuem and the infantry surged forward. After quite a battle, they took the town with some assistance from the 3rd Battalion in mop-up.” Lieutenant McGhee had enough experience to realize he needed to keep the radio operational long enough to see where the initial rounds might land, and, fortunately, he was there to lift the friendly fire and avoid a disaster.

Immediately following this incident, McGhee took shelter in a building where he discovered that his boots had become frozen to his feet. So he rushed to an aid station and obtained medical treatment. Here, McGhee became aware that he had suffered a small cut across his right knee. He then returned to the place of the previous night’s battle to see if he could reconstruct what had happened. Here he found the frozen body of the infantryman who had offered to help him. McGhee observed, “A straight line from the shattered tree where the shell had exploded down to the wound in his head exactly sliced across . . . where his knee had been.” Life on the front line presented the same hazards to the rifleman and forward observer, alike.

Also on the morning of January 30, the 3rd Battalion, 346th, Infantry, in the attack, jumped off toward Andler to the north of St. Vith, but was unable to cross the Our River

40. McGhee, Golden Acorn Memories, 41.

41. Ibid., 42.
to take the town. On January 31, the 1st Battalion passed through the 3rd Battalion and occupied Andler, Belgium, by 0530, February 1. That same day, the 2nd Battalion captured Schonberg. The 87th Division was now about to re-enter Germany.

After the Battle of the Bulge had ended 1st Army Commanding General Courtney Hodges indicated that although the defeat of Germany in the Ardennes was the result of all 1st Army arms and services, bad weather and the rugged terrain put the fighting capabilities of the infantry, armor, and air at a serious disadvantage. Hodges later observed: “Through all however—day and night, good weather and bad—the flexibility and power of our modern artillery was applied unceasingly. A lesson then from the Battle of the Bulge—Artillery constitutes a most formidable striking power continuously available to any commander of combined arms for application wide and deep over the battle area.”

Field artillery contributed heavily to the American victory in the Ardennes; although the Americans had a huge advantage in mobility, the symmetry that existed between German and American artillery was evident throughout the entire campaign. In the first day of its attack, German artillery played a key role in helping the assault waves advance through the gaps in American front line defensive positions. Because the Germans launched their attack during poor flying weather, the American grasshopper planes which proved so valuable in quickly spotting targets and providing rapid counter-

42. 87th Infantry Division History, History of the 346th Infantry, 65.


battery fire were kept out of action. American artillery then depended upon forward observers on the ground to direct fire to help stall the German offensive. After the skies cleared, the Allies had the dual advantage of both ground and aerial observation again.

Not only did bad weather ground the planes, but the initial German shellfire severely disrupted the American communications net. In some cases, American batteries fired directly on attacking German forces before being overrun. But, despite these setbacks, American gunners were able to delay the German advance to some extent. The experience of the 2<sup>nd</sup> Infantry Division in the early stages of the campaign clearly demonstrated that.

In the 99<sup>th</sup> Division sector, a road ran south through the twin villages of Krinkelt-Rocherath intersecting a main east-west road at Bullingen. That paved highway headed west to Malmedy by way of Bulligen and Butgenbach, providing suitable access for German armor to reach Antwerp. A stubborn American defense of the twin villages and road junctions in surrounding area by elements of the 99<sup>th</sup> and 2<sup>nd</sup> Infantry Divisions gave the Americans enough time to regroup near Elsenborn. On December 17, Lieutenant Charles Stockell, a forward observer from the 37<sup>th</sup> Field Artillery Battalion was with elements of the 2<sup>nd</sup> Division at Hunningen when the Germans launched an attack toward the village following a massive artillery preparation. Stockell dashed forward and on reaching the church, quickly climbed a series of fragile ladders to reach the steeple. From there he brought down a deadly artillery fire upon the advancing

45. Ibid., 658.
46. Ibid., 78.
German troops. The enemy eventually withdrew, but made six consecutive attempts to dislodge the Americans during the afternoon and early evening. Stockell, however, stayed in the church tower most of the day while the German artillery and tanks used direct fire to hit the steeple at least ten times. Finally, he and his radio operator raced down the steps. By the time they reached the ground, enemy shell fire had completely destroyed their observation post.

All the combat arms contributed, to varying degrees, to the success of the delaying action that took place before Christmas 1944, allowing U.S. forces to regroup. After the Germans captured the twin villages of Krinkelt-Rocherath, American infantry first took the ground, then called for armor and tank destroyers, and artillery support. American artillery, controlled by observation teams working in close coordination with infantry, was essential in applying fires on the enemy. Lieutenant Colonel William D. McKinley of the 38th Infantry made heavy use of artillery in his battalion’s defense of the Lausdell Crossroad near the twin villages, halting a number of German panzers in their tracks. Emphasizing the degree of leverage in combat that effective artillery support could provide, McKinley later wrote: “It was the artillery that did the job. On three different occasions artillery support when and where it was vitally needed saved my battalion from decimation and the last time from complete destruction.”

Describing in summary the same series of battles, the Combat History of the


48. Ibid., 134-35.
Second Infantry Division testifies that “massed artillery fire from the four organic battalions [of the Second Division] was used to greatest advantage attested by staggering losses to the enemy. In large measure, it helped to turn the tide of the German thrust [into the Ardennes].”

The ability then to provide continuous, close artillery support through the use of forward observers was a key factor in the successful use of American artillery in the Ardennes. From their elevated vantage point, aerial observers covered more ground, generally saw more and spotted some targets that forward observers on the ground would never see. But this was contingent upon the ability of the planes to take to the air and the conditions of visibility that existed at any given time. The poor visibility and bad weather conditions that prevailed throughout various phases of the Ardennes Campaign negated this advantage, making the work done by forward observers on the ground even more critical to slowing the German advance and eventual American success.

The Battle of the Bulge was the largest and single most costly campaign in U.S. military history. Hugh Cole noted: “the attack of twenty-nine German divisions and brigades destroyed one American infantry division as a unit [the 106th], badly crippled two infantry divisions, and cut one armored combat command to pieces.”


50. While a comparison of flying conditions necessary for high altitude bombing and those required for aerial artillery observation may not be exactly the same, a report prepared after the war indicated that: “the first limitation on the use of air power in the European Theater is that on 25 percent of all days its was not possible for the [U.S.] Eighth Air Force to complete bombardment operations. In winter, as many as 10 to 15 days a month were non-operational.” “Weather Factors in Combat Bombardment Operations in the European Theater,” The United States Strategic Bombing Survey, Military Analysis Division. Second Edition January 1947, 20.

51. Ibid., 674.
account of American casualties in the Ardennes only covers through January 2 which he acknowledges were probably incomplete. Through that date, 4,138 Americans reportedly died in battle, 20,231 suffered wounds in action, and 16,946 were listed as missing. The Army’s Final Report of Battle Deaths’ lists casualties incurred in the Ardennes and Alsatian Campaigns together for the period December 16, 1944 through January 25, 1945. This source lists 12,359 killed in battle among all Combat Divisions. Another 53,333 were wounded in action, and, of these, 1,958 subsequently died from their wounds. Another 23,554 were captured. Of these, 482 died while interned and 2,529 were still listed as missing in action.

On February 2, the 87th Reconnaissance Troop was ordered to capture the German town of Roth and the next day, the 87th Division began entering Germany for a second time since mid-December. Two days later the 345th Infantry occupied the area west of Kobscheid. In this tiny, rural village in the Schnee Eifel region of western Germany the Landsers of the 295th Regiment, 18th Volks-Grenadier Division had overrun Troop A of the 14th Cavalry attached to the 106th Division seven weeks earlier. Now the bulge

52. Adjutant General’s Office, *Battle Deaths*, 92. Despite the higher-than-normal rate of casualties among forward observers in the Ardennes Campaign, infantrymen in the European Theater incurred casualties at an even faster rate. The Adjutant General’s Office Report indicates that during the entire war, the ratio of American infantrymen to artillerymen who died in battle was about thirteen to one, while in the European Theater alone, the ratio was about seventeen to one. Ibid., 48-54; Mansoor noted this disparity in casualties between the two combat arms indicating: “one of the reasons American artillery units were so effective was that they took very few casualties (except for their forward observers).” Mansoor, *The GI Offensive in Europe*, 251.


in the lines had been completely eliminated. With little or no rest, the 87\textsuperscript{th} Division’s next mission would be to penetrate the Siegfried Line—for the second time. While the heavily wooded terrain would, at times, hinder the ability of forward observers to conduct fire, they would continue to contribute in a variety of ways to the American victory that was coming.

**Conclusion**

The ferocious struggle in the Ardennes Forest revealed that the Germans were still very capable of mounting an effective offense, utilizing their brand of combined arms tactics against a thinly-held American line. Fortunately, the United States reacted very quickly and committed its reserves much more rapidly than the Germans had anticipated. Overwhelming air superiority also contributed heavily to the Allies’ ability to bring up reserves quickly.

The actions of forward observers in this epic struggle demonstrate the effectiveness of American combined arms doctrine, first defending the “Bulge,” then reducing it. Forward observers on the defense not only had to contend with attacking infantry, but German armor, often assisted by deadly artillery fire. Although fighting the Japanese had its own set of unique dangers, forward observers in the Pacific Theater there did not routinely face such a well-coordinated, three-pronged offensive punch.

The experience of the 87\textsuperscript{th} Division demonstrated that FOs responsible for controlling artillery fire could only do so when situated at the infantry’s most forward and

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55. Ibid., 670-71.
vulnerable positions. In such defensive positions, they became so fully integrated with defending infantrymen that their “combat arms” designation as artillerymen became meaningless and distinctions between infantry and artillery became blurred as officers of either combat arm simply became leaders during battle and did what needed to be done.

The lesson repeated in the individual stories of battle in the winter of 1944-45 was that now the effective practice of combined arms warfare necessitated the complete integration of fighting men regardless of training or rank. Again and again, enlisted men and officers alike, in the absence of their superiors, stepped in to fill that role to get a job done. These stories also proved that part of what General Pershing had seen years before as necessary for the successful execution of open warfare—“individual and group initiative, resourcefulness, and tactical judgment”—was true, even though the General’s concept of how that could be achieved was with the rifle and bayonet, not through effective combined arms tactics.

CHAPTER NINE

THROUGH THE WALL AND OVER THE RHINE

Punching through the Siegfried Line and crossing the Rhine River forced the 87th Division to utilize its capacity for executing combined arms warfare to the fullest. After breaching the Westwall, capturing the ancient city of Koblenz, and crossing the last natural barrier to Germany’s interior, the division’s daily progress accelerated beyond the limits of anything it had previously known. Calling on its earlier experience against the German Army, the Golden Acorn employed its doctrine and assets more effectively than ever before.

The effort to crack the Siegfried Line meant not only using forward observers at the front to direct artillery in support of infantry, but also infantrymen calling on mortars and armor to apply the firepower necessary to break through the line. The individual accounts of heroic service by forward observer teams provide two important lessons. The first is that in the final months of the war in Europe the distinction between infantry and artillery became blurred as officers shouldered responsibility, when necessary, to save the men around them and complete their mission. Also, the distinction between officers and enlisted men broke down as the final drive to victory necessitated using artillerymen of all ranks to direct and adjust fire on enemy targets.

On February 2, the 345th Infantry established its regimental headquarters between the German towns of Wischeid and Auw, just east of the Belgian border. On February 4, General Culin ordered the 3rd Battalion to Kobscheid and the 2nd to Auw in preparation
for the regiment’s upcoming assault on the Siegfried Line. Portions of the Westwall were not much more than a mile east of Kobscheid. On the morning of February 5, the regiment received orders to attack the line in two places. Less than two miles due east of Kobscheid was an important crossroad the Germans used to move troops and artillery. The second objective was another intersection about three kilometers south of the first one. Colonel Sugg assigned the first crossroad to the 3rd Battalion and the one to the south to the 2nd Battalion. Both intersections were linked by the Schneifel Hohenweg, an improved road running northeast and southwest and protected on both sides by a series of fortified bunkers running parallel to the highway—the first fortifications of the Westwall in this sector. The 2nd Battalion jumped of about 8:00 that evening and by 11:00 had passed through Kobscheid heading southeast.

Lieutenant McGhee and his two enlisted men accompanied F Company to provide forward observation for the 2nd Battalion. The battalion’s advance was made on a very dark night under blackout conditions along a dirt road not much wider than a trail. A bulldozer followed the riflemen to clear a wider path so that vehicles could re-supply the front-line troops. McGhee was with F Company commander, Captain Richard McCann of Columbus, Ohio, but the bulldozer driver became disoriented. Lieutenant McGhee, with Captain McCann’s permission, then got on the bulldozer to guide the driver, and after reaching the village, jumped down and ran ahead to catch up to McCann.

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The plan called for F Company to follow this narrow road southeast from Kobscheid to a fork where it was to take the left branch. But by the time McGhee had rejoined the company he discovered that Captain McCann had followed the wrong branch of the fork. Immediately Lieutenant McGhee told McCann that he was on the wrong road and heading into an area where a massive artillery preparation was scheduled to fall very shortly. McCann disagreed, but said he would have the company remain in place while he went back to check it out. Recalling the incident, McGhee wrote: “I told him we did not have that much time before our artillery would start coming in on us. He then walked back . . . and after he had gone a short distance our shells started whistling in just in front of and almost on top of us. I took the responsibility of grabbing the platoon leaders and moving them back as quickly as possible toward the fork in the road.”

As this drama in miniature was unfolding, McGhee ran into another problem. One of the platoon leaders, a young lieutenant, was cowering in a ditch and weeping. When McGhee told him to gather his men and get moving, the lieutenant said: “I can’t! I can’t!” At this point McGhee slapped the man across the face and told him: “You have more to fear from me than you do from the enemy.” Thus energized, the young lieutenant got on his feet and began to move his men back to safety. The training forward observers received included map reading and orienteering exercises, just as it did for infantry officers. It is understandable that anyone could become lost in an unfamiliar setting in

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2. McGhee, Golden Acorn Memories, 43-44.

total darkness, but it was also fortunate that F Company had a forward observer with them who was able to follow the plan. It was also lucky that Lieutenant McGhee took the initiative to order the men back to safety. While his treatment of the young lieutenant leader may appear to have been harsh, none of the men were wounded from friendly fire.

The distance from Kobscheid to the cross road objective was not much more than a mile, but it took all night to reach the outer portions of the Siegfried Line guarding the road. The late-night artillery feint helped because the enemy did not see them coming in the early hours of the morning. The first German soldier McGhee saw was a lone sentry. The point man shot him; after the company moved on, a fire fight developed in a heavily wooded area. As this was taking place, Lieutenant McGhee and his two enlisted men, Sergeant Walker and Private Bricker had been keeping pace with infantry while crawling in a ditch. Just as the sun was rising on that morning of February 6, Sergeant Walker tapped McGhee on the heel of his boot and pointed to a German pillbox they had passed in the pre-dawn light. The two decided they would try to capture it. McGhee remembered: “We sneaked around the blind side of the pill-box and together jumped sideways right in front of the door much to the surprise of the German standing there. He quickly put his hands on his head yelling ‘Kamerad!’” McGhee then took a white phosphorus grenade out of his pack, pulled the pin and in good Illini *deutsch* declared to the occupants inside the emplacement that the grenade was coming in if they did not come out in ten seconds. Ten men came out and Captain McCann dispatched a rifleman to take the prisoners back to Kobscheid.

That same morning Lieutenant Lester T. Price, forward observer accompanying L Company, was wounded; McGhee and his crew were ordered to take over his assignment, in the vicinity of the 3rd Battalion’s objective to the north. McGhee and his group reached the command post of L Company just before dark where they spent the night. The 87th Division’s S-2 Record of Enemy Activity for February 6 records that “FO and Sgt [sic] captured pillbox and ten Germans.”

On the morning of February 7, the 3rd Battalion, 345th Infantry, continued its advance toward the crossroad objective when a heavy fire fight quickly erupted. After the crossroad was secured, a German prisoner disclosed that to proceed further would require crossing an extensive minefield and the reduction of several more pillboxes. Lieutenant McGhee volunteered to cross the minefield, using a high-ranking German noncommissioned officer to lead the way and take out the bunkers. Later McGhee wrote:

“Sgt. Walker volunteered to go with me, as did my new radio man, Cpl. John M. Gazvoda of Detroit, Michigan, and a young infantryman, Hallis C. Workman of ‘I’ Company and of North Canton, Ohio. (PFC. Workman, later killed while servicing a field telephone line, had been given jobs considered safest because he was so young).”

The German Feld Webel was reluctant to lead the way, but with McGhee’s pistol stuck in his back, he agreed to cooperate. McGhee and the German went first with

5. 87th Infantry Division, History of the 334th Field Artillery Battalion, 76.

6. Headquarters, 87th Infantry Division, S-2 Record of Enemy Activity, 6 Feb 45, National Archives and Records Administration, College Park, MD, Record Group 407.

7. Ibid., 4
Walker trailing about ten yards behind and Gazvoda and Workman following their footsteps still further back. The occupants of the first bunker were Volksturm, past the age for combat by anyone but Hitler’s standards. With a little oral persuasion, they readily surrendered. Likewise the troops in the second pillbox wanted to surrender. When they saw the Americans coming, they rolled up their bedrolls and set them outside the bunker. When McGhee and company arrived the German soldiers were sitting on their bedrolls ready to be led back to the Prisoner of War compound. The third bunker was large, but fortunately it was flooded and undefended.

The last bunker was the largest of the four. Somehow, they had approached it, undetected. Suddenly McGhee noticed the muzzle of a gun pointing directly at him from a revolving turret which had swung around to cover them as they had approached. McGhee took his white phosphorus grenade, pulled the pin and announced that he would throw it in unless they all gave up, as all the while the German NCO pleaded earnestly for his countrymen to surrender. Fortunately for the four Americans and their reluctant German companion, someone inside the fortification stuck a white rag through the gun aperture and twenty-two German soldiers including three officers came filing out. McGhee concluded his description of this nearly inimitable episode writing: “We had closed the gap to end two busy days.”

The integration of combat arms demonstrated by the actions of McGhee and the members of his forward observer party was not unusual for artillerymen in their position. Their boldness and willingness to take the initiative demonstrated once again the blurring

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8. Ibid., 48-49.
of distinctions between infantrymen and the forward observer personnel accompanying them in combat. Both and McGhee and Walker were awarded the Silver Star for their actions on February 6 and 7.

The Schnee Eifel is an extension into Germany of the Belgian Ardennes. Walker’s citation indicates specifically that during the capture of the first pillbox, artillery fire in such a heavily wooded area was impractical. So the forward observer party was assisting the aid men with the wounded men from the 2nd platoon, F Company, and were seeking shelter for those men when they bypassed the first German bunker. The 334th Field Artillery Battalion Unit History mentions that by their actions, they saved “the Infantry many casualties.”

The bravery and initiative displayed by these 87th Division artillery forward observers did not mean that the any of the infantry officers they were accompanying lacked these same qualities. At mid-morning on February 7, Company L under command of Captain Howard J. Wall of Troy, New York, also assisted in the assault upon the 3rd Battalion’s objective. Private First Class Augustus “Gus” Epple of Cape May Court

9. The narrative description for Lieutenant McGhee’s award describes what happened over those two days while Walker’s citation offers more of an explanation of why. The General Order for McGhee’s medal mentions his role in capturing the first pillbox on February 6, the succeeding smaller ones on February 7, and the last and largest, noting that thirty-two not twenty-two prisoners were captured at the final bunker. Headquarters, 87th Infantry Division, General Order #219, 1.

10. Headquarters, 87th Infantry Division, General Order #247, 1.


House, New Jersey, was an ammunition bearer in a mortar squad in Company M and later wrote a description of what he witnessed that day. Gus had volunteered to be the walkie-talkie radio operator as part of a forward observation team. This was not a field artillery unit, but an infantry heavy weapons company. The battalion began its advance early in the morning. At that time PFC Epple and his section sergeant Frank Kolub were still with their mortar squad. The rifle companies preceded them along an uphill course beside a woodland hiding them from the pillboxes. Suddenly they stopped, and, shortly after, a heavy concentration of enemy artillery and mortars began falling on them. Epple wrote later that he was not hurt, but was “mad as hell” that they dared shoot at him, adding, “We worked our way back, regrouped and changed plans. Frank and I were then assigned to L Company and were instructed by the company commander, Capt. Wall, to stick with him and he would call for mortar fire. L Company was the lead rifle company and we went into the woods (instead of parallel to them) facing the pillboxes.”

Loren Morrison, 345th Infantry Regimental historian, wrote that after the 3rd Battalion started marching east along the highway, a German machine gun opened fire on it. Captain Wall ordered the two tank destroyers supporting his company to advance. As they moved up, he fell in beside the vehicles, directed fire on the fortification, and put it out of action. Company L continued to advance until stopped again by a second pillbox.

Epple, who was near Wall at the time, decided that he would open fire with his carbine to try to assist the riflemen. Raising his head to get a better view, German

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machine gun fire splintered the tree trunks behind him. Miraculously, the riflemen were able to filter through the woods to the edge of a meadow facing the pillbox. By this time, Lieutenant Colonel Moran, 3rd battalion commander had joined Captain Wall, and the leading platoon of rifleman and called for fire. Epple wrote: “The gunner made the shot of his life, hit the gun slot and momentarily stunned the German squad inside. Moran grabbed the bazooka, ran around to the back entrance and fired at the door. Capt. Wall followed close behind, tossed in a grenade and 3 Germans came out coughing and bleeding. We had captured our first pillbox very late in the afternoon.”

Captain Howard Wall displayed his exemplary leadership abilities that afternoon. Soon after the first bunker had been taken, Wall, by himself, took a second. Morrison explained: “Directing two men to cover him, Captain Wall worked his way forward alone until he reached the entrance of the bunker. Throwing in a hand grenade, he awaited the explosion, dashed inside a second later, and emptied his submachine gun at the occupants. His score—two killed, six prisoners taken, and another pillbox destroyed.”

Wall was still not finished for the day. Later, after a concentration of enemy artillery fire left several men of the company wounded and lying in exposed positions, Captain Howard Wall, acting alone, moved across open ground to reach two of the men and bring them back to a sheltered area where their wounds could be treated and they could be evacuated. A little later, enemy machine gun fire stopped L Company for the third time that day. While under fire, Wall ran to a building where he was able to spot

15. Epple, Breaching the Siegfried Line.

the position of the enemy emplacements. Then, he ran back to his men and again brought up the tank destroyers. They destroyed one bunker with a direct hit and compelled the occupants of the other to surrender. Lieutenant Colonel Moran, for his part in capturing a bunker earlier in the day using a bazooka, was later awarded the Silver Star. Tragically, courageous Captain Wall was killed two days later.

These acts of courage displayed by Wall and Moran were inspirational to the men under their command as well as those medics, engineers, forward observers, and other non-riflemen serving with the combatants in the front lines. Perhaps the brave deeds of both riflemen and non-riflemen served to reinforce each other, exemplifying combined arms tactics at their best. In any case, Lieutenant Colonel Moran recognized the contributions made by his accompanying forward observers in combat during the breaching of the Siegfried Line. A few weeks later when things had temporarily quieted down, he awarded the Combat Infantryman’s Badge to Lieutenant McGhee and Sergeant Walker. Years later Walker wrote: “Div. Hdqtrs said that only bona fide infantry and engineer troops could wear them, (the Combat Infantryman’s Badge) so we only got a pleasant memory that of the fact one Infantry officer was aware that artillery FOs were in the war too.” The men who served under Wall and Moran respected both officers very highly.

Meanwhile the Division’s other forward observers were also directly involved “in

17. Ibid.

18. Headquarters, 87th Infantry Division, General Order #9, 1.

the war” at this same time. On February 6, two battalions of the 346th Infantry left Krewinkle, Belgium, on a line of attack toward Kehr, Germany. The 1st Battalion made good progress and, despite heavy fighting and many casualties, succeeded in driving the enemy from the bunkers in their sector’s objective area. Although Company C temporarily seized the main road beyond Roth, a strong German counter attack forced them to withdraw to Krewinkle.

Ray Jemc was there as part of the forward observer party providing support from the 336th Field Artillery for the First Battalion. At 0530 on February 6, the leading elements of Company C entered Kehr following an extensive fusillade of small arms and automatic weapons fire upon the German outposts defending the village. Jemc and Sergeant Benicky had just set up their radio inside a building when they came under not so friendly fire from the American tanks accompanying the infantry. Because the tankers used a different radio frequency than the artillery net, it took some time for the message to reach the armor unit to stop firing. Meanwhile armor-piercing shells were whistling through the room where Jemc and Benicky lay, sweating it out.

After the shelling stopped, the two artillerymen moved to a second, taller building. From this vantage point overlooking the Siegfried Line, no sooner had they begun setting up their radio when German infantry attacked their position supported by artillery and mortar fire. From the top floor Benicky observed and adjusted fire while Jemc relayed his commands to the battalion. Due to the combination of incoming artillery and small arms fire from the infantry, the Germans were unable to penetrate the

1st Battalion’s defenses. As the Germans fell back, the American held their fire. The Germans had suffered heavy casualties, so many, in fact, that soon German medics began waving Red Cross flags and came out to retrieve their wounded. Jemc later observed: “One would think this would have discouraged them from trying such a tactic again. Nevertheless, with the same shelling and firepower, they attacked us two more times.”

Later that evening the Company was ordered withdraw to Krewinkle. Jemc added that it had taken them five and half hours to reach Kehr from Krewinkle, but the return trip required only two hours. “We had been a mile or two out in front of our lines for one day, but it seemed miles and was our ‘longest day.’ . . .” Sgt. Benicky’s superior artillery fire direction prevented the encirclement and complete annihilation or capture of the company at Kehr, Germany, and earned him the Silver Star for his gallantry and heroic efforts, and later a battlefield commission.”

The narrative citation for Sergeant Benicky’s Silver Star includes one other detail that Ray Jemc may have taken for granted. At times during this action, Sergeant Benicky took part in the fighting as a combat infantryman, and also helped move two wounded men out from enemy fire and later assisted in removing the wounded to safety. The two wounded soldiers were 300 yards from his position. During this action, Benicky personally accounted for several Germans with his rifle. Finally, when the company received orders to withdraw from this position, he was the last man in the column,


22. Ibid., 22.
Two other enlisted artillerymen from the 336th Field Artillery Battalion also earned Bronze Stars on February 6 for their actions that went beyond the role of providing artillery support. Technician Fifth Grade Paul E. Stephens, a member of Battery C from California was operating a radio in the field when he spotted a German soldier in a nearby woods. Leaving his radio set in the custody of another soldier, Stephens surprised and captured the enemy, maneuvered his prisoner around a mine field, and then reported the location of the mined area.

Corporal William E. Van Laak of Battery B, also from California, was with an infantry company near Roth when the Americans came under intense enemy artillery and mortar fire. After the forward observers took cover in a house, Van Laak noticed that the radio operator was not with them. Running back outside in the face of enemy fire, he found the wounded radio operator, and, after administering first aid, dragged him into the house. When the enemy shelling diminished slightly, Van Laak, while still under fire, carried the wounded comrade back to an aid station.

After punching a hole in the outer defenses of the Siegfried Line, the 345th Infantry received orders to capture Olzheim, about two and a half kilometers to the south. By 1400 on February 8, F Company was about two thousand yards southwest of Olzheim while Company G was about seventeen hundred yards to the south, while the 1st Battalion

23. Headquarters, 87th Infantry Division, General Order #111, 1.
24. Headquarters, 87th Infantry Division, General Order #40, 2
25. Headquarters, 87th Infantry Division, General Order #162, 1.
was sweeping around behind the 2nd to reach the high ground overlooking the town.

Edwin C. Pancoast, then a platoon sergeant with Company G, wrote that “what made the seizing of Olzheim so important was the telephone cable linking the German high command with the West Wall ran through the center of town. Without telephone connections, the Germans would be forced to use radio communications, all of which traffic the US could readily decode.”

Lane Barton of Vancouver, Washington, was also an enlisted man who served with Company G during its attack on Olzheim. Barton later described the extreme accuracy of the artillery support provided for his battalion that day, after his squad had dug into the side of a steep hill overlooking the valley. From their vantage point, they spotted a column of German tanks speeding along a road far below. The forward observer gave his first order for fire and a short while later the rounds went rustling by overhead. Barton recalled: “The FO’s initial fire order put his ranging fire close to the middle of the column. He called; ‘Fire for effect,’ and three salvos of three rounds each burst in the middle of the tanks. One tank was hit directly. We could not believe our eyes. The FO acted as if the barrage was nothing out of the ordinary. I did not need further proof that our gunners were remarkably accurate. Yet, while the mechanical tolerances of the howitzers and munitions were very precise and the gunners who fired

26. History of the 87th Infantry Division, History of the 345th Infantry, 83.


them were well trained, it required the visual sensing and judgment of the forward observer to be able to direct and adjust artillery fire with such accurate results.

The FO who destroyed the tanks with his accurate adjustments may have been either Lieutenant William T. Haun of A Battery or Lieutenant Joseph G. Turley of B Battery. The Unit History of the 334th Field Artillery Battalion for February, 1945, reports that these two men were both involved with massing fires on the towns of Olzheim and Neundorf on February 8, indicating: “In one instance, Lt. Turley and Captain [James M.] Pollock, Liaison Officer, allowed enemy to reinforce garrison in Olzheim with several personnel-carrier loads of troops, then fired a TOT on the town. Enemy troops were disorganized & driven onto slopes east of town in scattered groups which were effectively fired upon by Lts. Haun & Turley.”

G Company, meanwhile, had met heavy enemy resistance. The company commander, Lieutenant Knusman, and the only other infantry officer present became casualties. Forward observer, Lieutenant Turley, was the sole remaining commissioned officer with Company G. Turley supervised the successful reorganization of the company until he was relieved.

The 334th Field Artillery Battalion’s forward observers were particularly busy that day. Late that afternoon, Lieutenant Claude G. Wilson, Battery C executive officer, acting as forward observer, very accurately adjusted a bracket of fire on a German

29. Headquarters, 334th Field Artillery Battalion, Unit History, 28 February 1945, 1.

30. Headquarters, 345th Infantry, History of the 345th Infantry, February, 1945, 6

31. Headquarters, 334th Field Artillery Battalion, Unit History, 28 February 1945, 1.
machine gun nest. Soon a white flag quickly appeared and twenty-two Germans walked out and surrendered.

It was in Olzheim on the morning of February 9, that the 3rd Battalion, 345th Infantry, lost one of its bravest officers. A German sniper shot and killed Captain Wall, commanding officer of L Company, as he was directing the movement of his men in cleaning out the town. Howard Wall was known to all the men in the battalion as a courageous and fearless leader.

Wall’s death was not in vain. What Ed Pancoast wrote about the German communications cable running through Olzheim was accurate. Despite that, it appears unlikely that the 2nd Battalion’s original objective was to capture Olzheim for the purpose of cutting the cable to disrupt German telephone communications, simply because its presence was not known at that time. Loren Morrison, 345th Infantry Regimental historian indicates that, by February 9, “all three Battalions were in the twin villages of Olzheim and Neuendorf, with the enemy watching every move from the high ground to the north and the west.

On the morning of the February 10, Lieutenant Colonel James B. Evans, 87th Division signal officer, made a surprise discovery as he studied the maps at Division Headquarters. Evans noted that the foremost elements of the regiment had already overrun what was suspected to be the route of an underground cable connecting two key sites in the Siegfried defenses, Cologne and Bitburg. He and his men, accompanied by

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32. Ibid., 1-2.


34. Morrison, Morrison Papers, 58.
four members of the anti-tank company set out for Olzheim and, after reaching an area south of the village, successfully located the cable. Using mine detectors to locate the wires, the men dug several deep trenches before “pay dirt” was struck. In spite of a steady rain and harassing mortar, artillery, and small arms fire, they cut the cable in two places and removed a large section of it.

This seriously impaired the already weakened German communications system in that sector. German General Richard Metz, Senior Artillery Commander of the 5th Panzer Army, described the disadvantage this created for his forces fighting in the Schnee Eifel, because, by that stage of the war, it was nearly impossible for the Germany Army to maintain central command of its infantry and artillery. Metz explained: “The reason for this was the fact that all telephone communications were not only interrupted for hours at a time by superior enemy artillery, mortar fire and aircraft bombing, but they had also been cut to pieces for long distances and could be repaired only by constructing anew, in lengths of kilometers, mostly at night.” Without telephone service, the German Army in this area had to rely almost solely upon radio communications.

By the February 13, the 346th Infantry had relieved the 345th which went into reserve. Although the 347th Infantry also went into the line at this time, for the next two

35. Ibid., 60-61.


37. General Metz noted that not only could the Americans monitor their radio transmissions and decode them via Ultra, the radios the Germans were using in the Schnee Eifel did not perform with a high degree of dependability. General Metz added, “The German portable radio set often did not function because of their technical insufficiency for just such (heavily forested and mountainous) terrain.” Ibid., 42.
weeks the 87th Division maintained a defensive posture. On February 26, the 3rd Battalion, 346th Infantry, received orders to breach the Siegfried Line near Ormont, Germany, a town along the Schneifel Hohenweg perhaps ten kilometers north of Olzheim. The key to defending Ormont was Gold Brick Hill, a summit from which the enemy could effectively adjust artillery, mortar, and rocket fire on American positions. Gold Brick also dominated the road leading east from Ormont to the Kyll River and contained fifteen well-manned pillboxes. However, to take Gold Brick Hill required first taking Hill 648. From that vantage point, the 3rd Battalion could launch its attack on Gold Brick Hill. Not until March 3, after six days of heavy fighting, did the battalion take control of Hill 648.

Ray Jemc was with a forward observer party involved in that action. Jemc remembered that he, Lieutenant Holloman, and a new sergeant he referred to as Fifth, were on their way to relieve Captain Choate’s crew when they were attacked. The captain called for artillery fire and along with the infantry fire they stopped the attack. Captain Choate’s forward observer party had just cleared the area when German artillery started to fall. During the ensuing barrage, a shell fragment struck Lieutenant Holloman in the leg. Jemc later wrote: “I pulled it out and gave it to the lieutenant and told him it did not look too bad. However, I did not tell him that it went in the back of his leg and came out the front of his leg. . . . Before he was evacuated, he gave me the maps of our area and told me what artillery fire to call for in case we were attacked again.”

38. History of the 87th Infantry Division, History of the 346th Infantry, 66.

By the last day of the month, the 345th Infantry was back in the line, too, with the 3rd Battalion seizing the high ground east of Neuendorf. Technician Fifth Grade Don Welever of Wadsworth, Ohio, of B Battery, 334th Field Artillery, was serving as part of a forward observer party that day. As the infantrymen his group was accompanying began assaulting an enemy position, a German machine gun opened fire. Welever and his comrades took refuge in a series of vacant wooden bunkers. From here, he quickly detected the origin of the enemy fire, but soon became aware of the presence of an American tank which had pulled up some distance behind his position of cover. Seeing that the tank commander was taking aim and apparently about to fire upon the wooden bunkers that Welever and the other Americans were occupying, he quickly raced across one hundred yards of open terrain while under heavy enemy fire and jumped up on the tank, where he then pounded on the hatch with his carbine to get the tank crew’s attention. After he had pointed out the location of the enemy machine gun, the tank was able to destroy it quickly, saving the infantry many casualties. For his courageous act, Welever was awarded the Bronze Star medal.

As more forward observers became casualties, a number of enlisted men who had served in forward observer parties were assigned their own forward observation teams. By the end of February, the men in the 334th Field Artillery Battalion included Staff Sergeant Rufus Greening of Battery A, Staff Sergeant Bennie Morycz of Battery C and T/4 Don Walker of Battery A.

40. Headquarters, 87th Infantry Division, General Order #123, 1.

41. History of the 87th Infantry Division, History of the 334th Field Artillery, 76-77
On February 28, the 1st and 2nd Battalions of the 345th Infantry set out to capture Neuenstein. Lieutenant McGhee was serving as the forward observer with E Company and had a new crew by this time. McGhee recalled that when Sergeant Morycz became a forward observer, one of his crew members on his first mission became a casualty.

Later, McGhee recalled that the Germans repulsed an attack up a wooded hill before the Germans counterattacked. After both sides temporarily held the high ground, they soon moved apart, so that the Germans held the east slope, and the 345th Infantry, the west. McGhee later recalled: “After things had been very quiet for a while, I attempted to make my way back to check on Morycz and his new crew (including Cpl Gehrt) only to be chased back by massive German machine gun fire. Before I could get to them I learned that Cpl. Gehrt had been hit by what was believed to be a 150 mm enemy shell.”

Gehrt normally served with C Battery as a truck driver, but on this occasion volunteered to go forward to serve as a radio operator with a forward observer party. Shortly after the battle began, he began operating the radio from a foxhole. He had just moved to a church tower when an enemy artillery shell made a direct hit on his location, killing him instantly. Also wounded that day while serving with another forward observer party was Corporal John Gazvoda, who only weeks earlier had voluntarily accompanied McGhee across a minefield to the last of the bunkers captured by the


battalion’s forward observers that day. Gazvoda should have, but never received, any awards for taking part in that incident on February 7.

Meanwhile, the fight for Ormont continued. For their courageous actions on March 1, two members of Battery C, 912th Field Artillery, serving with forward observer parties, were awarded Bronze Stars. Technician Fourth Grade Donagh O’Hara from New York and Private First Class Peter Hernandez from Texas aided in the destruction of a road block held by the enemy which had brought the American advance in that sector to a complete halt. Both men worked to a position within 150 yards of the enemy strong point. From there, O’Hara operated the radio while Hernandez helped spot the bursts of American fire as it came over. Both men continued this work, sheltered only by a log while under intense mortar and small arms fire, until the roadblock was destroyed.

O’Hara later recalled that Pete Hernandez had saved his life on more than one occasion. He also remembered that the artillerymen serving with forward observer parties generally had a good rapport with the infantrymen with one exception. More than once while O’Hara was carrying a field radio, as he came under enemy fire, he quickly jumped into a foxhole occupied by a rifleman only to be told to “get the hell out!” This was because the long antenna attached to the radio tipped off the enemy that here was an important target linking the carrier to either the artillery batteries or the higher echelons.

45. History of the 87th Infantry Division, History of the 334th Field Artillery, 78.

46. Headquarters, 87th Infantry Division, General Order #244, 1-2.

47. Donagh O’Hara to John R. Walker, Re: Details of March 1, 1945, Action Leading to Award of Bronze Star, Telephone Conversation, November 11, 2006, 9:00 P.M.
of command. Inevitably, the sight of an antenna almost always drew a heavy concentration of enemy fire. So, radio operators, whether they were artillerymen or infantrymen, were prime targets while in combat.

At 1110 hours on March 1, three battalions of Division Artillery, plus the 687th Field Artillery fired a Time-on-Target on Gold Brick hill. By 3:00 p.m. Company K of the 347th Infantry had captured Ormont. But the enemy still held the high ground on the hill. With an extremely steep slope that reached a height of 649 meters, its observation posts commanded the territory for miles in all directions. After days of heavy fighting, the 346th Infantry attacked on March 5, following a twenty-minute artillery preparation that dropped 1,200 rounds of high explosives on the top and sides of Gold Brick Hill. The 3rd Battalion knocked out seven machine gun emplacements in the process of taking the hill and capturing 150 prisoners while inflicting numerous casualties. The loss of the hill put an end to German artillery fire on the battalion’s rear areas because, without it, there was no comparable elevation available to German forward observers to enable them to observe and adjust their fires. It also disrupted all enemy defenses in that area of the Siegfried Line. At 0800 the next morning, the battalion continued its attack over a distance of 5,000 meters, and captured Kerschenbach, after meeting stiff resistance and suffering heavy casualties.

48. Headquarters, 87th Division Artillery, S-2 Record of Enemy Activity, 1 March 1945.
49. History of the 87th Infantry Division, History of the 347th Infantry Regiment, 76.
50. According to the 336th Field Artillery Battalion history, the enemy was quite confident that it could successfully defend the hill, indicating that: “the Germans said it could not be taken by storm.” History of the 87th Infantry Division, History of the 336th Field Artillery, 139.
51. History of the 87th Infantry Division, History of the 346th Infantry Regiment, 67
The battle for Kerschenbach demonstrated once more the blurred distinction of
the two combat arms, as the infantry and artillery arms became thoroughly integrated in
combat. It also revealed the degree of symmetry that still existed, at that late stage of the
war, between the Germans and Americans in their practice of combined arms tactics and
their remarkably similar doctrinal ways. Finally, it exhibited the willingness of American
soldiers of all rank to step up and take the initiative to lead, and with that, the resulting, if
only temporary, insignificance of rank.

By the first week in March, all three infantry regiments of the 87th Division had
penetrated the last series of fortifications in the West Wall and were preparing to move
east for their push to the Rhine. Before crossing that last natural barrier to the interior of
Germany, the Golden Acorn Division captured one of the oldest cities in Germany.
Situated at the confluence of the Rhine and Moselle Rivers, Koblenz had been the
headquarters of the American Army of Occupation following World War I and remained

52. The General Orders of the 87th Infantry division include many examples of officers and
enlisted men alike, serving as forward observers, who took responsibility beyond their duties as
artillerymen. The following are two that demonstrate this exemplary kind of battlefield conduct that took
place during the action around Kerschenbach. Carl D. Strain from Tennessee was a Technical Sergeant
with Battery A, 336th Field Artillery and a member of a forward observer party accompanying a rifle
company in its attack on Kerschenbach. When the infantry company commander became injured, Strain
helped him make his way back to an aid man, then returned to take command of the infantry platoon. He
then “advised, directed, and encouraged” the men of the platoon while continuing to direct artillery fire. As
the fighting progressed, the men of his platoon became pinned down by small arms fire while the enemy
rained mortar shells on them. Strain rallied the men and led them forward to capture four houses in the
town, then organized their defensive lines and established a command post in the town. For his gallantry in
action, Sergeant Strain was awarded the Silver Star and later received a battlefield commission.

Headquarters, 87th Infantry Division, General Order #175, 1; Also near Kerschenbach was Corporal
William T. Foerschler from Kansas, a member of Headquarters Battery, 336th Field Artillery, serving as
part of a forward observer party on March 4. When the radio operator became wounded, Foerschler first
carried him to cover, then returned to operate the radio and direct fire against an enemy self-propelled gun.
Despite being struck by a shell fragment, he continued operating the radio and successfully eliminated
the enemy gun. Then, he helped move wounded men to a safer location before returning to continue
transmitting a fire mission which succeeded in silencing an enemy machine gun. For his heroic
achievement despite his own wounds, Foerschler was awarded the Purple Heart and the Bronze Star.
Headquarters, 87th Infantry Division, General Order # 42, 2; General Order #245, 1.
under American control until February 7, 1923, when France took over administration of the Rhineland. The 345th Infantry entered the city on March 17. Two days later, at 0830, the ninety-five-man German garrison at Fort Konstantin surrendered and after twenty-two years, the American flag once again flew over the ancient German city.

Over the next few days, the 87th Division pushed south towards Boppard to clear out the triangle between the Moselle and Rhine while the British and Americans consolidated their units along the west bank of the Rhine to coordinate their efforts at crossing the river. The 7th Armored Division had captured the famous Ludendorff Bridge at Remagen on March 7, allowing a number of 1st and 3rd Army units to cross the Rhine immediately. However, in accordance with General Eisenhower’s broad-front strategy, the main American crossing took place around March 25.

At 2230 on March 24, a patrol from the 2nd Battalion, 345th Infantry, crossed the river at Boppard to scout out Filsen, directly opposite the battalion’s designated crossing site. After crossing successfully while under enemy fire the patrol came under heavy enemy fire when they tried to return to Boppard. Because it was less than a half hour until the first assault wave was scheduled to cross, they simply stayed where they were. At the appointed hour, elements of the 2nd and 3rd Third Battalions of the 345th Infantry made the crossing unopposed and, by the early hours of March 25, Filsen was firmly in American hands. Further north, the 1st and 3rd Battalions of the 347th Infantry, began

54. Ibid., 78-81.
55. Ibid., 84-85
their assault crossing from the area near Rhens, at the same time the 345th began theirs at Boppard. The 1st Battalion’s objective was Ober Lahnstein while the 3rd Battalion’s goal was Braubach, not far to the south.

After the 347th Infantry successfully crossed, only the determined efforts of a forward observer radio operator saved one company from a vicious German counterattack. Corporal William T. Tucker from Virginia, a radio operator from A Battery, 912th Field Artillery, was a member of a forward observer party accompanying a rifle company of the 347th Infantry. Upon reaching the opposite shore, the company halted, then ran into a strong German counterattack. With their backs against the river, the company desperately fought off the enemy attack. As German hand grenades exploded around him, Tucker operated the radio within talking distance and throwing distance of the enemy. As the result of his transmissions, the 912th Field Artillery effectively broke the back of the German counterattack permitting the infantry to advance a safe distance away from the river. For his heroic actions Tucker was awarded the Bronze Star.

During the river crossing of the 347th Infantry, the accompanying forward observers had to call for artillery fire from the boats in mid-stream. As both battalions of the 347th made their crossing, they were caught under illumination flares and received heavy fire. Every time a boat would attempt to reach the opposite shore, the German


57. Headquarters, 87th Infantry Division, *General Order #152*, 2.

machine guns would fire tracers to follow the boat’s course. After the smoke had begun to lift, the enemy artillery would again start pounding the men as they tried to pull in the boats. Being subjected to hostile fire under any circumstances can be terrifying, but to be under fire while on land and on foot generally allows for some freedom of movement. Whether it is an amphibious landing, a river crossing, or an airborne assault, there is an added degree of vulnerability attached for the attackers because, for the duration of the ride or jump, those under fire are confined to the space of the watercraft, or, if jumping, to the near vertical and virtually predictable trajectory of a parachute. Any attack is dangerous, but during these particular forms of assault, there is no practical way to elude enemy fire and little, if any, cover to be found.

The two men who teamed up to call for and direct artillery fire from mid-stream were T/4 John Ferrell from New York, and Corporal Thomas H. Raynor, Jr., from Pennsylvania, both members of Battery C, 912th Field Artillery. As they were crossing, one man was killed and another wounded in their boat. With T/4 Ferrell operating the radio, Corporal Raynor successfully directed artillery fire upon the enemy positions. For their heroic actions, both were awarded the Bronze Star medal.

Prior to crossing the Rhine, the American advance per day could often have been measured in yards, but afterwards it could be measured in miles. With the Russian Army threatening Germany from the East and the Americans and British now east of the Rhine, German resistance rapidly deteriorated. On March 27 the 2nd Battalion, 347th Infantry,

59. History of the 87th Infantry Division, History of the 347th Infantry, 87.

60. Headquarters, 87th Infantry Division, General Order #95, 1-2.
captured Ober Lahnstein.

T/5 Lyle J. Babineau from California was a radio operator with A Battery, 912th Field Artillery. During the fighting on March 27, the enemy completely surrounded the rifle company he was with as part of a forward observer team. Despite being the target of direct fire from German 20-millimeter cannons, Babineau calmly continued to transmit fire missions placing effective artillery fire upon the enemy, and forcing them to withdraw. For his heroic achievement, Babineau was awarded the Bronze Star medal.

By the end of March, the use of enlisted men as forward observers among the field artillery battalions of the 87th Division had become much more common. On March 27, Staff Sergeant George B. Berteaux from West Virginia of B Battery, 912th Field Artillery, was serving as a forward observer with Company L of the 347th Infantry near Bad Ems, Germany. Staff Sergeant Berteaux noticed the enemy attempting to withdraw from the town as the 3rd Battalion attacked. By directing immediate artillery fire on the group, he closed off all escape routes, causing the enemy to disperse. Despite the danger from flying fragments from enemy bursts, he continued to adjust fire so accurately that consequently, little effective resistance was met by the attacking force. For his actions, he was awarded the Bronze Star.

By the end of March, the Western Allies’ advance into the interior of Germany had accelerated, with American Army units sometimes progressing as much as twenty to

62. Headquarters, 87th Infantry Division, General Order #161, 1
63. Headquarters, 87th Infantry Division, General Order #142, 2.
forty miles a day. By the last day of the month, elements of the 345th Infantry were in the vicinity of Bodenrod, approximately sixty miles east of Boppard. The pace was beginning to pick up.

The successful execution of combined arms tactics required forward observers to move out ahead to find enemy targets. By positioning themselves ahead of maneuvering infantry they incurred greater risks. Exactly where they placed themselves depended largely upon the features of the terrain. On April 10, First Lieutenant Ross H. Rasmussen from Nebraska, was a forward observer from A Battery, 912th Field Artillery, serving with a rifle company on the attack near Geschwende, Germany. After the riflemen became pinned down by intense machine gun, small arms, and panzerfaust fire, Lieutenant Rasmussen strapped on the heavy, bulky radio and moved out ahead of the friendly troops to a position offering better observation of the enemy. From there he successfully adjusted artillery fire on the enemy while exposed to withering German fire. As a result of his bold actions four hostile machine guns were destroyed and heavy casualties incurred by the enemy personnel. For his courage and complete disregard for his own safety, Lieutenant Rasmussen was awarded the Bronze Star medal.

The closing days of the war in Europe saw more examples of how the “combat arms” designation of officers became blurred as artillery officers under fire assumed responsibility for their infantry counterparts. Also on April 10, Second Lieutenant Irwin R. Evens from Indiana, forward observer from B Battery, 334th Field Artillery, was with


an infantry company near Stutzenhausen, Germany, when the leading elements of the unit were stopped by an abatis. Immediately the company came under enemy automatic and small arms fire. As the remainder of the company took cover, the lead platoon was cut off from the rest by two halftracks carrying more than two dozen SS troops.

Lieutenant Evens crawled through a woods and after finding ten of the men in the platoon, he attempted to return them to the rest of the company. But they did not get very far before the Germans spotted them and opened fire. After they found cover, Lieutenant Evens repeated his effort, and after finding an additional twelve men, brought all twenty-two back through the enemy’s lines to the company, including two casualties. For his gallantry in action and superior leadership, Lieutenant Evens was awarded the Silver Star.

Another example of the same conduct on the battlefield took place the next day. On April 11, First Lieutenant John Connolly, from Pennsylvania, with Battery C of the 336th Field Artillery, was the forward observer supporting Company I of the 346th Infantry. When enemy cannon fire stopped the company in its tracks, Lieutenant Connolly courageously moved forward and helped the platoon leader maneuver his men from the danger area without suffering heavy casualties. Later, when heavy enemy machine gun fire delayed the company’s advance, he courageously moved to a spot only fifty yards away from the enemy and calmly adjusted deadly fire on the German position.

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66. An abatis is a wall or barricade made from branches with the ends sharpened and pointed outward. *Webster’s New Universal Unabridged Dictionary*, 2nd ed., 2.

destroying it. Lieutenant Connolly received the Silver Star.

April was a strange month for the soldiers of the 87\textsuperscript{th} Division. Although it was apparent that the war in Europe was ending rapidly, no one knew how soon it would actually be over. After months of combat involving very slow progress, suddenly they were advancing rapidly. After the Western Allies had crossed the Rhine River, German resistance crumbled so rapidly that it became necessary to form hard-hitting, highly mobile units able to reach into the German rear areas, disrupt their communications, and disable German administrative units and installations.

In most places German resistance was very light, but in a few others, heavy. By this time, the Third Reich was using high school boys and adult women to operate anti-aircraft batteries. A communiqué addressed to the 87\textsuperscript{th} Division Artillery in April indicates how depleted the ranks of manpower available to defend Germany’s interior had become, indicating that of “seven prisoners taken from 119 Panzer Grenadier; all had joined recently. Three were boys under eighteen years of age with less than five weeks in the Army. None of them knew what their mission was nor who their higher headquarters might be. All of them were unarmed. One prisoner was from the Luftwaffe. He was a mechanic in ECHTERNACHT.” The same report also indicated that the Americans observed from a distance, fourteen German fighter planes on an

68. Headquarters, 87\textsuperscript{th} Infantry Division, General Order #119, 1

69. U.S. Army, Tank Busters: The History of the 607\textsuperscript{th} Tank Destroyer Battalion in Combat on the Western Front (Munich, Germany: Knorr and Hirth, 1945), 44.

70. Headquarters, 549\textsuperscript{th} AAA Automatic Weapons Battalion, S-2 Periodic Report to S-2, 87\textsuperscript{th} Division Artillery, 1900 7 April 1945 to 8 April 1945.
airfield, but all of these quickly took off when they realized the Americans were approaching. In addition, the report listed “One Captain was captured who was an officer in rear echelon. He was sent forward into combat with no combat training. He had a group of men given to him and was told to go forward and stop the enemy. He did not know what became of his troops. His outfit did not have a number.”

Despite the apparent disintegration of the Wehrmacht, some German units were still willing to fight to the death. By April 7, the 2nd and 3rd Battalions of the 345th Infantry converged on Tambach, where a number of important highways intersected. In the pre-dawn darkness of the morning of April 8, a group of Hitler Jugend attacked the 2nd Battalion in force. F Company bore the brunt of the attack, but, when it was over, forty-four young Germans lay dead and many others wounded. Years later, Don Welever who served with B Battery, 334th Field Artillery, observed that perhaps the most dangerous thing in Germany in April, 1945, was a fourteen-year-old with a Panzerfaust. It certainly appeared to be so. Although the end of the war in Europe was now only a month away, at Tambach, Company L lost eight killed and twenty-two wounded. Among the dead was company commander, Lieutenant Ralph E. Hall.

71. Ibid.

72. Morrison, Morrison Papers, 95-97.

73. Donald E. Welever, interview by John R. Walker, Re: Experiences with the 334th Field Artillery during World War II, Wadsworth, OH, February 9, 2000, videotape in interviewer’s possession. A panzerfaust is the German equivalent of the American bazooka, a hand-held rocket launcher used as an anti-tank device.

74. History of the 87th Infantry Division, History of the 345th Infantry, 107; Although this incident has no known connection to forward observers, at Tambach, members of the 345th Infantry allegedly shot sixteen enemy prisoners in cold blood because the young German soldiers had reportedly feigned
The next day, 334th Field Artillery lost an entire forward observer crew. Four men from B Battery became casualties as they were moving forward to relieve Lieutenant Gordon Howard, the forward observer with the Third Battalion. From machine gun positions hidden along overhanging cliffs, the Germans ambushed Lieutenant Frederic Tower’s forward observer party when the jeep driver, PFC Eddie Smith, took a wrong turn. T/4 Raphael Schoenberg, and Pvt. Francis Fogle were instantly killed by machine gun fire. Lieutenant Towers was hit in the chest but still managed to escape; he died two days later. Smith was captured but survived.

On April 17, the 347th Infantry captured what remained of the bombed-out city of Plauen; that afternoon, the 345th Infantry moved in. Now it was clear that the war would end soon, but even then, no one could predict how soon. One thing was obvious, though, even if the Nazis continued to resist, Germany would soon be entirely under allied control. Plauen is less than thirty miles from the Czech border. Also on April 21, the 334th Field Artillery Battalion was notified to expect contact with the Russians to its front. This left the German Army with little Kampfensraum, or space remaining to fight within the Reich.

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surrender, then opened fire as the Americans approached them. In his novel Private, a fictional account of his experiences with the 345th Infantry, author Lester Atwell describes the incident in detail. Various veterans of the 345th have also written to corroborate details of the incident in more recent editions of the 87th Division Association’s quarterly newsletter, Golden Acorn News. Atwell, Private (Landsdowne, PA: A & A Publishing, 1997).

75. Headquarters, 334th Field Artillery Battalion, Unit History, April, 1945, 3.


77. Headquarters, 334th Field Artillery Battalion, Unit History, April, 1945, 5.
Another indication that the war in Europe was near its end was Captain Henry Franey’s last entry in the 334th Field Artillery’s Battalion Unit History for the month of April: “This has been the least active month of the Bn’s combat experience, in [sic] respect to firing. However, the rapid displacements necessary to maintain effective artillery support during the pursuit phase of operations following the Rhine crossing kept the Bn busy until April 17. The latter half of the month has seen practically no activity.”

While the batteries were not completely inactive, the number of fire missions tapered off significantly. Between April 18 and 30 the 334th Field Artillery fired one short TOT on April 19, another on the next day, harassing and interdictory fire on the night of April 27-28 and another short TOT on Arnoldsgrun on the last day of the month. During the first week of May, the number of fire missions decreased even further. Throughout this period the battalion expended only fifty-three rounds. Even at this time, there was no clear indication that the war in Europe would be over by the end of the week. On May 5, a message was sent to the 334th Field Artillery regarding an impending limited objective attack to take place the next day. On May 6, the battalion moved three times, first to the vicinity of Arnoldsgrun, then near Schoneck, and finally close to the tiny pastoral village of Kottenheide. From here, the battalion had gun positions which could reach targets across the Czech border. Even on the morning of May 7, the battalion

78. Ibid.
79. Headquarters, 334th Field Artillery Battalion, S-3 Annex to Unit Report No. 5, April, 1945, The National Archives and Records Administration, College Park, MD, Record Group 407, 3.
80. Headquarters, 334th Field Artillery Battalion, S-3 Annex to Unit Report No. 6, May, 1945, The National Archives and Records Administration, College Park, MD, Record Group 407, 10.
dispatched three forward observer parties to accompany the 3rd Battalion of the 345th Infantry, but at 0545 that morning the message was received; “Cease firing on all missions by order of the Division Commander.” The war in Europe was over.

Conclusions

In contrast to the German Army’s last-ditch counter-offensive in the Ardennes, the final months of the war saw the American 87th Division attack into Germany proper. The Golden Acorn Division had to confront a tenacious and still very effective enemy in early 1945, struggling to repel an invasion of its homeland. A large part of the German Army’s remaining effectiveness was its capacity to wage combined arms warfare as it fell back, first to the German border, and then ever deeper into the Fatherland. As demonstrated for more than a year in Italy, German effectiveness in defense was due, in large part, to their capacity to make the best use of terrain, especially to take advantage of high ground, in their command over, control of, and communications with their own defending troops. As we have seen in this chapter, by mid-February, major problems had developed with the German Army’s ability to maintain effective communications in the American 3rd Army sector.

As the war in Europe drew to a close, and the Allies achieved victory, it was clear that the 87th Division had achieved a more effective coordination of infantry and artillery than ever before. As many incidents in this chapter reveal, forward observer personnel of all ranks went beyond the performance of their technical artillery functions as

circumstances dictated. In the process, these men became fully integrated as fighting men on the front, revealing just how risky it was for these controllers of artillery to be involved in the fight, itself.

The artillerymen of the 87th Division learned two critical lessons: first, forward observers often had to drop their designation as artillerymen and transcend their training to become leaders at the front line of combat. In crisis situations they accepted responsibility for the men around them and the completion of their “combined” mission, not just their task as observers of enemies and directors of artillery fires. The second conclusion relates to the enormous cost in manpower brought by combined arms warfare. As officer observers became fewer and fewer on the front lines, observation teams came under the direction of NCOs and lower-ranking enlisted men who shouldered the responsibility for observing and detecting the enemy and adjusting artillery fire without causing friendly fire casualties. In the European Theater, just as it had in the Pacific, waging effective combined arms infantry-artillery warfare meant not only a blurring of responsibilities between combat arms, but a blurring of the ranks of artillerymen.
PART IV

Conclusion and Epilogue: Through Three Wars and Beyond
CHAPTER TEN

CONCLUSIONS

I. Combined Arms Execution: the Big Picture

The evolution of the “Forward Observer” and the establishment of FO teams was the outbreak of World War II the key piece in the development of effective combined arms warfare. Forward Observation was the vital link between artillery and infantry. No other combination of combat arms developed the same degree of coordination either as quickly or as effectively as artillery and infantry did during the entire war.

For example, American air power on New Georgia did a wonderful job of turning Japanese rear areas into a “shambles,” but did little to give friendly ground forces close support. Even when they tried, they sometimes hit Allied ground forces without inflicting much damage on the Japanese, making close air support a “negligible factor” in the battle for New Georgia. Air-ground coordination on Bougainville was somewhat better, and proved that bombs could be dropped closer to friendly troops than previously thought possible. But even the most accurate bombing could not destroy well dug-in

1. Benjamin Franklin Cooling, editor, Case Studies in the Development of Close Air Support (Washington DC: Center of Air Force History, United States Air Force, 1990), 304; House describes air support of ground operations during the Second World War as “Air-Ground (Non)Cooperation.” House, Toward Combined Arms Warfare, 130; Regarding air support during the invasion of Sicily, General Omar N. Bradley commented: “In vain, we searched the skies for close air support from our airmen.” Bradley and Clay Blair, A General’s Life: An Autobiography by the General of the Army (NY: Simon & Schuster, 1983), 183; Richard Overy observed: The cumbersome command structure that evolved in 1941 had
Japanese infantry. Even radio equipment on the aircraft was not entirely reliable. This, and the large number of calls for aircraft resulted in an long delay between the ground force request and the air arm’s delivery of the strike. However, by the time of the Luzon invasion, when a sufficient supply of tactical aircraft was available, the gap in time between the request for help and its delivery was often reduced to a few minutes.

In Europe, the weather and the difficulty in identifying targets on the ground hampered close air support during the Normandy campaign. Target identification was easier only when the enemy was moving in daylight. Some German officers considered Allied artillery fire to be more dangerous than air support. In sum, air-ground coordination improved as the war progressed, but never reached the same degree of coordination as artillery with infantry did.

The development of American infantry-armor coordination seems to be somewhere between that of artillery and air support. Tactical mobility improved as infantrymen were able to assist tanks in eliminating increasingly sophisticated anti-tank devices while tanks were able to protect infantrymen from enemy armor. Yet, even in predictable results; army units found that air support took so long to arrive that there was little point in requesting it." Overy, Why the Allies Won, 226.


3. Ibid., 333.

4. Ibid., 264.

5. Ibid., 282-83.

June 1944, many of the American infantry divisions that fought in Normandy were new to combat and had never trained extensively with their supporting tank battalions. To further complicate matters, the radios issued to infantry, armor, and tactical aircraft had different frequencies, making communications among the arms impossible. Even though Don Welever was a member of a forward observer party with a radio, Welever had to pound on the hull of an American tank in February 1945 to prevent it from firing on friendly troops.

II. Asymmetry in the Pacific; Symmetry in Europe

This is a study of the theory and practice of tactical doctrine. At the tactical level, the experiences of the 37th and 87th Divisions were, on balance, dissimilar. Although there were many similarities in the problems of command, control, and communications, the two divisions were fighting enemies that were quite different in their tactical approach to warfare. Yet, both divisions were able to execute a high degree of coordination between infantry and artillery and mass artillery fires with great effect.

Both divisions carried out their primary artillery mission very effectively.

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and Murray observed: “although artillery-infantry and artillery-armor coordination received high marks from friend and foe alike, tank and infantry cooperation in infantry divisions showed chronic defects in the European theater of operations.” Millett and Murray, Military Effectiveness, 69.


8. Peter Mansoor observed that: “In World War II, the most important aspect of [American ] tactical maneuver often was that it brought friendly units into a position where they could use fire support assets to destroy the enemy.” Mansoor, The GI Offensive in Europe, 3.

9. Scott R. McMeen, an officer in the U.S. Army, identified field artillery’s primary mission during World War I as direct support which “included all fires delivered in proximity to and support of front line infantry.” McMeen indicated this had changed little by the time of the Second World War, when artillery commanders then defined the primary mission as a “direct support mission” to provide “immediate
At the tactical level in the Pacific, the 37th Division was fighting a much less sophisticated enemy. Japanese doctrine emphasized manpower and aggressiveness on the offensive, a perspective rooted in that nation’s faith in the superiority of its own infantrymen. Thus, Japanese infantry doctrine was stuck in antiquated nineteenth-century thinking and the Japanese never developed combined arms doctrine to the degree that the Western industrial powers did during the Interwar era (1919-1939). However, whether one calls it fanaticism or an unquestioned obedience to duty, the highly aggressive style of Japanese fighting created its own unique set of difficulties for Americans fighting them in the Pacific, while, at the same time lending itself to distinct tactical advantages for the United States.

In contrast, Germany had developed its tactical doctrine to a very sophisticated level by the time the United States entered the Second World War. German faith and expertise in technology and their developments in Bewegungskrieg or Mobile or Open Warfare allowed them to build a formidable war machine; their understanding of and experience on the battlefield (a product of an earlier war and two decades of interwar study) led them to create their own version of combined arms doctrine. Thus, the Wehrmacht, with generally more combat experience than its American counterpart, did not typically pit its tactical weaknesses against American strengths and the ordinary German soldier had no overwhelming desire to kill as many Americans as he could before dying.

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Soldiers of the 87th Division routinely confronted infantry and armor, assisted by artillery in support and directed by skilled forward observation teams of Artillerie Beobachttern. The 87th Division’s struggle—often with mixed results—demonstrated the general parity existing at the level of tactical doctrine in that slice of European war. Until the very last months of the war on the continent, the German Army was able to apply firepower to support its infantry and armor, both in retreat, defense, and counterattack, complicating the 87th Division’s mission.

The Vital Role of the Forward Observer

British Military historian Jonathan B. A. Bailey sees the First World War as “the birth of modern warfare. With it came a shift in military doctrine ushering in the standard use of indirect fire. Bailey describes it as “the foundation of planning at the tactical, tactical, operational, and strategic levels of war. . . [and] “the key innovation [to] a new approach too combat.”

The use of indirect artillery requires an observer to conduct and adjust fire. The Forward Observer represented the “eyes” of the combined arms approach to warfare. He shouldered responsibility for control over the application of firepower on the battlefield. What the record of the FOs with both the 37th and 87th Divisions conclusively demonstrates is that these soldiers—designated artillerymen by the U.S. Army—were the crucial or vital link between the infantry and artillery combat arms on the battlefield.

Tactical doctrine for forward observers changed after World War I to the extent

that instead of computing firing data, they sensed the location of bursts in relation to the
target. During the First World War, this was virtually not impossible once advancing
infantry passed over the last crest on the horizon and out of sight from an observation
post. However, equipping forward observers with field radios and positioning them with
maneuvering infantry enabled them to make what McMeen called “a quantum leap in the
forward in its [field artillery’s] ability to participate in mobile warfare.”

During the Second World War, the FO team had two distinct tasks; first, to detect
the enemy and identify targets; and second, to control the artillery fires, whether, as in
most cases, by adjusting indirect fire over great distances, or, in the case of the 37th
Division in Manila, by controlling direct fire on walled fortresses looming in front of
them, and to adjust those fires to achieve maximum effectiveness. Terrain, vegetation,
climate and other factors on the specific battlefield, such as the nature of the target,
shaped the FO team’s ability to accomplish its mission. These factors came into play,
whether ground or aerial observation methods were best suited for the targets at hand.

The experience of the 37th Division showed that aerial observation was best for

11. McMeen argues that, with few exceptions, U.S. Army field artillery doctrine used during
World War II differed little from that of World War I. He attributes the “quantum leap” described above to
portable field radios and new fire direction techniques. “The artillery school did not invent new procedures
for ground observers, but simply adapted procedures developed in World War I for aerial observation and
correction of fire to ground observation.” This argument is sound but fails to account for the improvement
in the ability to provide spontaneous fire support that forward observers accompanying maneuvering
infantry were able to provide. Indirectly, McMeen admits the importance of forward observers to the
success of artillery during World War II writing: “prewar doctrine failed to recognize the greatly increase
demand for ground observers that emerged during World War II.” This demand he attributes to the fact that
infantry required more observers to sufficiently cover the wider frontages, and secondly, to the increased
demands for fire requests resulting from much improved communications technology and fire direction
procedures. This is a sound rationale but fails to explain that mobile, rather than stationary observers, were
covering much more ground than they had in World War I and as a result saw many more targets of
opportunity or any other kind than before. McMeen, “Field Artillery Doctrine Development,” 37, 59.
targets in the open or moving targets; ground observation was essential for detecting and adjusting fire on enemy in concealed positions. The terrain and vegetation of the Pacific islands forced the FOs to become adept at controlling artillery firepower by sound when control by sight proved impossible.

Aerial observation used for target acquisition and artillery adjustment during World War II ordinarily had many advantages over ground observation due to the speed and mobility of an observer in an airplane as well as the more expansive view afforded from that height. Barring poor visibility and flying conditions, the advantages accruing to the use of aerial observation, finding targets, and adjusting fire typically outweighed those from ground observation. Both airborne observers and forward observers on the ground performed a dangerous duty. As agents of destruction, both played a vital role in providing effective artillery support. However, directing artillery strikes from the air had one limitation that ground sensing did not--weather conditions. Although the conditions necessary to conduct effective strategic bombing and to adjust artillery fire from the air are not identical, a study completed after the war indicated that the weather conditions reduced the effectiveness of strategic bombing operations in Europe as much as twenty-five percent of the time. In addition, the study found that during the winter months, as many as ten to fifteen days a month were non-operational. The weather during the

12. The study indicates: “Because of the weather, 25 per cent of all days were non-operational for the Eighth and 37 per cent of all days were non-operational for the Fifteenth Air Force. In addition, due to weaknesses in weather forecasting and necessary conservatism in dangerous weather conditions, only about 95 per cent of operational days were exploited.” Military Analysis Division. “Weather Factors in Combat Bombardment Operations in the European Theater,” The United States Strategic Bombing Survey, 2.

13. Ibid.
German buildup just prior to and during the initial phases of the Ardennes Offensive certainly hindered aerial reconnaissance and other tactical operation of aircraft. Thus, during this particularly crucial time of the war in Europe, observation by air was largely unavailable.

IV. Integrated Forces of Combat Arms and Blurred Distinctions of Responsibility: The Evolving Responsibilities of the FO Team

The record of both divisions demonstrates that combining combat arms on the modern battlefield necessitates the integration of artillerymen with other combat arms at the front lines on the battlefield—whether for indirect or direct application of artillery fire. In that integration on the battle line designations of specific combat arms become meaningless. To practice combined arms effectively required modern armies to blur the distinctions between infantry commanders and artillery observers—and train men to be officers in command of troops and controllers of firepower—simultaneously, and this is exactly what the Officer Candidate School for Field Artillery officers at Fort Sill emphasized during World War II—leadership skills. The numerous examples of heroic action by artillery FOs, acting in crisis situations and shouldering responsibility for leading infantrymen at the front provides evidence for this necessary integration of “command” and “control.”

Perhaps no better example of this during the entire war may be found then in the case of Lieutenant James E. Robinson, Jr. of Toledo, Ohio, a forward observer with Battery A, 861st Field Artillery Battalion, 63rd Infantry Division. The “Blood and Fire” Division landed at Marseille, France, on December 8, 1944. By the end of the month,
two regiments of the 63rd Division were in the line north and east of Strasbourg, not far from the same area the 87th Division had just days earlier departed, while the 254th Infantry was near Colmar. By March, the 63rd Division had crossed the German border east of Saarbruecken, and, by the Ides of March, had breached the Siegfried Line east of Fechingen by Ensheim. On March 28, the division crossed the Rhine in the general vicinity north of Worms by Hamm. By the end of the March, the “Hotshots” had passed by Heidelberg, crossed the Neckar River, and were in the heart of southern Germany.

On April 6, Company A, 253rd Infantry, had moved across some open fields and taken the high ground before the village of Kressbach. Here, the company suffered many casualties and lost all of its infantry officers to enemy fire. Because Lieutenant Robinson, the forward observer attached to A Company had lost both of his crew members to wounds, A Battery sent two additional enlisted men to replace them. Enroute, they were both hit by small arms fire and evacuated. Hence, the lieutenant carried the seventy-eight pound radio by himself while taking charge of the rifle company.

Moving beyond his duties as a forward observer, Lieutenant Robinson gathered the nearly two dozen uninjured men remaining plus a few walking wounded and rallied them to resume the attack. While carrying the heavy field radio, Robinson led the American advance, killing ten German soldiers in foxholes with rifle and pistol fire. His men then swept the immediate area of further resistance. Soon after he was ordered to


15. Ibid., 160-61.

16. Ibid., 168.
assault the town of Kressbach. During the advance that followed, a shell fragment struck him in the throat. Although he was in great pain and had lost a great deal of blood, he ignored medical attention and pressed on with the attack, adjusting supporting artillery fire despite his mortal wounds. When the town had been taken and he was unable to speak, he left the group he had inspired, and walked nearly two miles to reach an aid station where he died from of his wounds.

Staff Sergeant Paul W. Vermillion of Port Lavaca, Texas, was a member of A Company who took part in the battle that day. Years later he remembered that he had been very close to Lieutenant Robinson at the time he was wounded, perhaps ten to twelve feet away and recalled: “It was like someone had poured about a gallon of blood down his neck and chest. He was walking toward Kressbach. I have it from a reliable source, the reason he died at the aid station was that they had a tube in his throat to clear the blood drainage & Lt. Robinson pulled the tubing out & the result was that he probably drowned from his own blood.”

None of the forward observer personnel with A Company came away unharmed that day. Vermillion added: “Lt. Robinson had two men with him from A Battery, 861st Field Artillery. One was T/5 Charles T. Moody who was K.I.A. The other was PFC Lacy Tackett who lost his testicles and penis to a wound. The A Battery, 861st Field Artillery Commander – Captain (later B/General) Charles “Pop” Young said he sent two


18. Paul W. Vermillion to John R. Walker, *Re: Battle 6 April 1945 near Kressbach, Germany*, Letter, February 24, 2004. Tragically, it sounds as if the lieutenant might have survived his wounds. Apparently the medics at the field hospital gave Lieutenant Robinson a tracheotomy and when he pulled the tube out, he suffocated as a result.
men as replacements & they were also wounded.” Lieutenant Robinson was posthumously awarded the Congressional Medal of Honor.

Not only a blurring of the distinction between combat arms but also the distinction among the ranks broke down as the war slowly drew to a close. The lack of commissioned officers forced NCOs and other enlisted men to assume responsibility for leading FO teams and even leading infantry troops on the increasingly integrated battlefield. The experience of the 87th Division in the costly struggle to breach the Siegfried Line and cross the Rhine River demonstrated the degree to which young enlisted men took the initiative and bore the responsibilities usually assumed by commissioned artillery officers.

V. Communications: the Process linking Control to Command

In both the Pacific and European Theaters, climate and terrain were the principal or determining factors shaping communications between FOs and their artillery

19. Ibid.

20. While not part of the Siegfried Line campaign, but certainly a prime example of an enlisted man assuming responsibility is the case of Tech-5 Forrest E. Peden, a native of St. Joseph, Missouri, a field artillery forward observer serving with Battery C of the 10th Field Artillery Battalion, 3rd Infantry Division. At 0230 on the morning of February 3 the 2nd and 3rd Battalions of the 7th Infantry Regiment launched an attack from the north toward the Alsatian village of Biesheim. Outnumbering the Americans four-to-one, the Germans sprung an ambush, unleashing a hail of artillery, mortar, machine gun and small arms fire on the Americans. The first thing Peden did was to administer first aid to two wounded soldiers while under heavy enemy fire. Realizing that his unit’s radio was inoperative and that without it, the Germans would quickly overrun them, he then raced back 800 yards through heavy enemy fire to reach the battalion command post. By the time he got there, his jacket had a number of bullet holes. Next, he found two tanks to join the battle in progress. To expedite their arrival he climbed on the lead tank and directed it back to the action. Just as the lead tank was ready to fire, enemy fire scored a direct hit, turning it into a blazing inferno, and instantly killing Technician Peden. Yet, aided by the light of the burning tank, reinforcements became sufficiently oriented to be able to drive off the enemy. Forrest Peden was also awarded the Congressional Medal of Honor, posthumously. Donald G. Taggart, editor, History of the Third Infantry Division in World War II (Washington, DC: Infantry Journal Press, 1947), 319; Committee on Veterans’ Affairs, Medal of Honor Recipients, 651.
battalions. In the Pacific Theater, moisture and humidity severely hindered reliance on radios, but as trails were cleared to enable supplies to go up front, and later widened to make roads, the road crews frequently severed the telephone lines. Yet, telephones offered the more consistently reliable means of communication between forward observers and battalions.

Despite problems with radios in Europe, the climate there was much more conducive to their use than in the Pacific. In this more symmetrical war, however, the 87th Division had to contend with different aspects of German radio technology; the ability of the enemy to monitor U.S. radio traffic, and not only to listen in, but also to determine the approximate location of the origin of broadcasts. Correspondingly, Allied technology could intercept German radio transmissions and determine their intentions at key moments during the European War’s last years. An additional hazard associated with the forward observer’s use of radios was the antenna. It was particularly conspicuous, and certain to give away the location of the radio operator, and everyone with him, if not carefully hidden.

Like all other soldiers performing their jobs in various combat arms during the Second World War, not all forward observer personnel did their jobs particularly well, or risked their lives more than necessary, more than any other group of American servicemen who routinely came under fire. They were, however, part of that very small, select group of the entire Army that routinely engaged in combat. They lived, bled, and died with the infantrymen. Some have argued that because forward observer personnel were relieved more frequently than the combat infantrymen, their experience does not
compare. It is true, perhaps, that some were able to return to their batteries for rest and hot food more frequently than the riflemen could get relief from the front lines. However, forward observers in World War II were in short supply, limiting their opportunities to return to their batteries for rest. Forward observation duty also entailed an additional liability. They were high on the enemy’s list of human priority targets. The long radio antenna and binoculars marked them as priority targets.

Forward Observers were not “heroes all.” Most were ordinary men—soldiers doing their assigned jobs as best they could. But members of the 96th Infantry Division had high praise for their forward observer personnel, asserting that they “received shamefully little recognition for their heroic and dangerous deeds in combat…. These same sections worked shoulder to shoulder with front line companies, many times with the farthest advanced elements of the infantry. They suffered everything endured by the doughboys and with them brushed with death morning, noon, and night.”

According to Infantry Captain Owen R. O’Neill of the 383rd Regiment, who served on Okinawa, the forward observation teams “were the greatest single morale factor we had at the front,” regardless of whether they were led by an artillery officer or an enlisted man. “The rate of casualties among the officers in charge was so great that replacement many times were impossible. It was then that the NCOs took over. In a great many cases they continued to command sections throughout the remainder of the campaign.” This was a testimony to the fact that on the front lines, artillerymen and


22. Ibid.
infantrymen had become fully integrated.

Emblazoned on the walls of the main corridor in Snow Hall, the home of the Field Artillery School at Fort Sill, Oklahoma, are these words of General George S. Patton coming after the war had ended and shortly before his death: “I don’t need to tell you who won the war. You know our artillery did.” While Patton’s comment tells less than the whole truth, what it reveals is the important early contribution field artillery made to effective combined arms tactics working in tandem with infantry.

Japanese survivors on Bougainville attested repeatedly to American field artillery’s deadly effectiveness. The German infantryman had this to say about American artillery: “We could see American planes in time to dive into a ditch. We had a chance to hit American tanks with our 88s. But when our positions were smothered without warning by an American artillery concentration—then not even the birds or rabbits could escape. Artillery caused most of our casualties and shell fragment wounds were twice as deadly as bullet wounds.”

The success of every American field artillery battalion in World War II was a team effort dependent upon every man in the unit doing his job from the private in a Service Battery hauling ammunition to the battalion commander. The effectiveness of American field artillery in combat was also a team effort calling for the successful coordination of efforts between the supporting artillery unit and the infantry maneuver

23. Russell Weigley may not have agreed with General Patton’s assessment wholeheartedly, but he was sufficiently impressed with its performance in the Second World War to write: “The artillery was the American army’s special strong suit.” Weigley, Eisenhower’s Lieutenants, 28.

unit it was supporting. The ability to make this system work hinged on the efforts of a small team of artillerymen on the front lines with the infantrymen; artillerymen doing their jobs while fighting the war in a variety of ways. These forward observer teams—the officers and enlisted men who comprised the forward observer sections—typically fought the war in a dual capacity; as technicians providing artillery support and as active participants in battle.

As for General Patton’s claim that field artillery won the war, no one branch of service, or combat arm, nor a single military occupational specialty wins a war alone, no General Patton or Eisenhower, nor even a MacArthur, not the infantry or the artillery, not the combat rifleman or the forward observer. Gerald Astor have expressed this idea well writing that no individual soldier from the highest ranking general to the lowest ranking private determines the outcome of a war “any more than a single person builds a cathedral. War is a group enterprise…[consisting] of millions of acts by hundreds of thousands of people. A solitary human was submerged in the multitudes and buried under the machines and technology. The man with the gun, even the artillery piece, was but a tiny spark in a long night rent by thunderous lightning.”

Yet those who have experienced ground combat in wars past realize that by performing a technical role in the execution of combined arms tactics, forward observers in combat have saved countless American lives. One retired Marine Corps general expressed this idea very succinctly when he wrote: “Having had combat commands in two wars I have high regard for FOs and owe my life to them on more than one

25. Astor, Crisis in the Philippines, xi-xii.
occasion.”

Combined arms is defined as two or more combat arms mutually supporting one another. This multiplies the power of the two to increase their individual effectiveness. Although combined arms warfare has existed for centuries, the development of new weapons and weapons capabilities in the nineteenth century upset the old order of battle forcing artillery to remove itself from the fore of battle and eventually rendering cavalry mounted on horses obsolete.

The argument put forth in this paper is that positioning field artillery forward observers in the front lines with maneuvering infantry enabled the U.S. Army to achieve true combined arms effectiveness between infantry and artillery during World War II, something not attainable during World War I. There are those who will point out that aerial observers adjusted the majority of fire missions during the war. Others will argue that without the development of field radios and the establishment of the fire direction center, no artillery observers, airborne or otherwise, would have had the ability to effectively mass fires and that the forward observer on the ground would not have played any significant role during the Second World War.

These are valid points but they all ignore one important fact. During World War I, British artillery officer, Neil Fraser-Tytler was able to conduct and adjust very effective fire missions, simply by stationing himself at the foremost infantry lines where he could


clearly observe his targets. Fraser-Tytler may not have been able to mass fires then as effectively as the U.S. Army would be able to later, but he certainly demonstrated in a very convincing way what an impact the placement of the observer had on his ability to see the target, naturally, and consequently, his ability to destroy enemy targets effectively. It is also true that shell fire frequently did cut telephone lines during the Great War. Still, his example demonstrated the degree of effectiveness that could be achieved with closely observed fire. Fortunately, the gunnery instructors at Fort Sill took notice of his book, and used his example to develop an even more effective system, using new methods and the technology then available.

During the war, the Field Artillery School at Fort Sill opened an Officer Candidate School to train and commission field artillery officers. While its curriculum specifically included methods of forward observation, the emphasis of its training was on leadership skills. Some 22,000 students successfully completed this course. No one knows how many of them performed duty as forward observers in combat, but it is probably safe to say that the majority did. Two things are apparent though. First, the officers who performed forward observer duty put their training in leadership skills to good use. Second, positioning these officers and the enlisted artillerymen accompanying them with frontline infantry made them an integral part of the combat team. The service they performed went beyond performing their technical duties as artillerymen. The result was the first successful pairing of two combat arms in the twentieth century.

THE FORWARD OBSERVER SINCE WORLD WAR II

By the end of World War II the victorious Allied armies had developed combined arms warfare to a new level of sophistication and one that was equipment-intensive in form. Since that time, two new developments have come into being that required a rethinking of combined arms doctrine and theory. One was the development of the atomic bomb which made grouping large concentrations of forces on a narrow front extremely risky. The second was the emergence of numerous “wars of national liberation” that made use of unconventional tactics of warfare. In response, western armies have looked toward increased mobility for light infantry troops.

Fortunately for the world, the nuclear experience of August 1945 has not yet been repeated, but the United States military has since been involved in fighting two wars of national liberation using combined arms tactics with mixed results. During the Korean War, the United States developed its combined arms tactical capabilities to an even greater level. Massive artillery bombardments were still an important factor, but they could stop a large-scale ground attack only as the shells were falling. By then, air support had tremendous psychological impact; in Korea, the United States Marine Corps maintained strong air-ground cooperation, in part, because the Marines had less

1. House, Toward Combined Arms Warfare, 141.
nondivisional artillery and fire support than the army. In Vietnam, the United States employed its combined arms tactics most successfully in those situations where the enemy could be engaged in prolonged combat, which seemed to be the exception rather than the rule. One major lesson of Vietnam is that superior firepower does not necessarily determine the winner in unconventional warfare. In shambles after the Vietnam War, the Army largely reinvented itself in the 1970s and 1980s, by reorganizing and re-equipping its tactical units, and by rewriting its doctrine and revamping its training systems. All these changes had to take into account the Army’s central dilemma in the 1980s: the ability to fight a war of high-intensity as part of NATO simultaneously with the ability to deploy contingency forces to other regional hot spots of the world.

As a result, not only the United States, but the major armies of the world have since demonstrated a marked tendency to integrate arms and services more extensively at lower levels of organization. This enables them to enhance their capabilities of mobility, protection, and firepower, while posing increasingly sophisticated threats to the enemy. This brings up the critical difference between the placement of massed effects, not massed units. FM 100-5 defines “mass” as the foundation of Army operations:


“Operations should entail the ability to ‘mass the effects of overwhelming combat power at the decisive time and place. Massing effects, rather than concentrating forces, can enable numerically inferior forces to achieve decisive results, while limiting exposure to enemy fire.’”

What this means for field artillery is even greater integration than before, not only with other combat arms of the U.S. Army but with other branches of service as well and an increasing emphasis on the concept of joint fires regardless of branch of service or combat arm. One example of this is the Advanced Field Artillery Tactical Data System (AFATDS), a multi-service joint fires system which meets the Army’s doctrinal requirements for fire support. AFATDS makes possible “integrated, automated support for the planning, coordination, and control of all fires supports assets (mortars, close air support, naval gunfire, attack helicopter, and offensive electronic warfare) execution of counter-fire, interdiction, and suppression of enemy targets for close and deep operations.”

From the experience of the Second World War, we have already seen that field artillery forward observers often played a key leadership role among maneuvering infantrymen. Jonathan House described that trend indirectly noting that “the growing complexity of combat has forced armies to depend increasingly on the judgment and


abilities of junior leaders. . . and the global security situation . . . has made the operating environment even more complex and complicated for these junior officers.” Thus, the increasing complexity of warfare has led to the decision to train enlisted men to become forward observers, something never contemplated in 1941.

When the Army first created the forward observer slot, it stipulated that only a commissioned artillery officer could fill it. This reflected the idea that the technical and leadership requirements of the job surpassed the capabilities of most enlisted men. The Battery Officer course still dominated the Field Artillery School for most of 1941. Yet, in June that same year, the Officer Candidate School for artillery officers was organized.

The original course of instruction lasted thirteen weeks with a curriculum that included emphasis on motors, materiel, gunnery, communication and tactics. In July, 1943, the army expanded the course to seventeen weeks and added instruction in army administration, military law, mess management and other military topics. By that time, eighty-three classes had completed the original thirteen-week course, and 22,338 graduates had been commissioned out of 27,961 applicants, a graduation rate of nearly eighty percent. By September 1943, the number of applicants per cycle had decreased dramatically, probably reflecting the fact that the majority of slots for field artillery


officers had been filled. Upon graduation and commissioning, the second lieutenants were assigned to recently activated divisions to fill vacancies. After the army stopped activating new ones, the graduates replaced artillery officers both stateside and overseas.

The training these new officers received was not specifically to develop forward observers but rather artillery officers with strong leadership capabilities. For example, a board of artillery officers determined a candidate’s aptitude for a commission based upon a number of factors. The most important of these were leadership skills, attitude, and grades. If a candidate had demonstrated strong leadership skills but had academic deficiencies, he received encouragement to bring his grades up to the necessary level.

Because more than 8,000 United States field artillerymen won medals for valor during World War II, and another 48,000 received Bronze Star medals which could be awarded for either valor or meritorious service, even without a breakdown between officers and enlisted men, this would indicate that the Field Artillery School did a good job of preparing young officers for a leadership role in combat. Finally, not all, but certainly a majority of the awards to artillerymen for heroic action and gallantry in action went to forward observer teams in the field.

The histories of the 37th and 87th Divisions, and other units document the fact that during the Second World War, as the number of commissioned officers serving as forward observers decreased from attrition, many non-commissioned officers were assigned their own forward observer teams and did the job well. In Vietnam, during the

10. USAAMS Library, History of the Field Artillery School, 207.

early part of the war, a junior grade officer and an enlisted radio-telephone operator
typically made up a forward observer team. As the war progressed, the need for forward
observers became so large, that enlisted volunteers were sought. They received on-the-
job training or went to the FO school in Nha Trang.

In the wake of Vietnam, Major General David E. Ott perceived the changes taking
place and saw the need for field artillery to adapt. General Ott, then Commandant of the
Field Artillery School, wrote a memo on June 25, 1975 to General William E. DePuy,
Commanding General of TRADOC, expressing his concerns. This led to the formation
on July 29 of the Close Support Study Group [CSSG] under General Ott’s direction. Its
mission was to make available the best possible observed fire for American ground forces
engaged in combat.

Among its other recommendations, the CSSG suggested a new Enlisted Military
Occupational Specialty [MOS] classification for forward observers, warning that a single
MOS encompassing fire direction, liaison, and forward observation was becoming
“unmanageable.” These functions in recent years had suffered from a lack of attention
and inadequate training, primarily due to the exigencies of the Vietnam war. The CSSG
also recommended a separate MOS (13F – Fire Support) for soldiers performing forward
observation duties at all levels, due to the foreshadowing of more complex observation

12. Bohan Prehar, Brave Cannons: WWII Relic in Vietnam 1st Battalion, 92nd Artillery (Vacaville,
CA, 2003), 17. The Enlisted FO School was known commonly as the “Shake and Bake School.”

Swett Technical Library, Fort Sill, OK, 1. General DePuy, who had great respect for the power of field
artillery summed up his World War II experience as an infantry battalion commander with his own tribute
to forward observers indicating that “what he really accomplished “ ‘was that I moved the forward
and fire direction equipment such as global positioning devices and laser designators.

In summary, the CSSG found that because the modern battlefield had expanded since the days of World War II, forward observer teams simply lacked the ability to provide observed artillery support throughout the entire sector of a supported unit. This was because the air mobility achieved during the Vietnam War had made it possible to shift troops to an ever-increasing number of remote areas not possible during the 1940s or even the Korean War. At that time, trucks carried riflemen to an assembly area and, from there, they typically marched several additional miles to make contact with the enemy. Also the army now needed a more effective method of shifting and massing fires rapidly, from mortars, field artillery, attack helicopters, and even to Air Force, Navy and Marine Corps tactical support weapons. Addressing this last issue, the CSSG found that the current system lacked coordination and the ability for any observer to call for the entire range of fire power at his disposal. In light of all these concerns, the CSSG strongly recommended reorganizing the forward observer team to make better use of new technology and to enhance the capabilities of all available fire support.

These recommendations also led to acceptance of the Fire Support Team [FIST]


17. Dastrup, Modernizing the King of Battle, 7.
concept which is described in Field Manual Number 6-20, dated September 30, 1977. Ott’s words again reflected the growing emphasis following World War II on the Army’s ability to obtain necessary fire support from a number of sources across service lines: “Fire support is the collective employment of mortars, field artillery, close air support, and naval gunfire in the support of a battle plan. These weapons systems are parts of the total fire support system that provide long-range, responsive flexible combat power.”

Under the FIST concept, the Fire Support Coordinator [FSCOORD] plans and coordinates the supporting fires to be used by the maneuver commander. According to the 1977 Field Manual: “The ‘grass roots’ of the target acquisition effort is the FIST observer. These observers, deployed at company/team and platoon levels, acquire targets for the entire FS [Fire Support] system, not just field artillery.” But by 1991, the Army seemed to have backed off from assigning this all encompassing responsibility for observation to FIST observers. FM 6-30, Tactics, Techniques, and Procedures for Observed Fire argued for qualified observers to locate targets and ensure indirect fire accuracy. To ensure the accuracy of indirect fires requires qualified observers to locate targets. Although forward air controllers and firepower control teams provide the expertise to provide close air support and naval gunfire, for artillery and mortar support, FIST personnel are necessary to act as the eyes for the maneuver company, perhaps adding an additional dimension of control that would otherwise be lacking. These


19. Ibid., 3-19.
personnel, therefore, are normally assigned to artillery units.

A FIST team normally includes the infantry company Fire Support Officer, a field artillery lieutenant, a fire support sergeant, a fire support specialist, a radiotelephone operator, typically a Private First Class (PFC), and a driver, also generally a PFC. In addition, it assigns a two-man forward observer party for each infantry platoon. By 1991, the forward observer slot called for an E-5 or Buck Sergeant. Today, at Fort Sill, the U.S. Army assigns qualified privates fresh out of Basic Training to the Field Artillery School for forward observer classes. This represents quite a change from the Army’s thinking during World War II which reasoned that only a commissioned officer qualified to handle the responsibilities of the forward observer’s job. Perhaps this demonstrates a concession made over time, that while the forward observer may require a certain level of leadership qualities, the ability to accurately adjust observed fire counts higher. Also the creation of the new FSCOORD position removes from the forward observer much of the authority to conduct fires and to assign priority to targets.

The forward observer who hung up his binoculars and went home in 1945 would be astounded to see the array of new devices available to determine distance and adjust fire today. Excluding weapons and other items carried for survival, the basic equipment the forward observer from that earlier era used to call for and adjust fire included a radio.

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21. Ibid.
or field telephone, compass, field glasses, and a map or map substitute. Using the coordinates of a known location on the map, to establish his position in relation to the firing batteries, the forward observer used his binoculars to visually sense where the initial rounds were landing in relation to the target and then adjusted the fire accordingly. If the batteries had been laid and registered correctly, the accuracy of the fire then depended largely upon the accuracy of both the map and the forward observer’s visual sensings. For a system that depended so much upon the human senses, it was a remarkably accurate one. The on-the-spot calculation of the necessary adjustment was based upon the forward observer’s eyesight or even his hearing. Yet this system that relied so heavily upon human calculations and human senses, for the most part, worked notably well.

Even aside from factors beyond their control, forward observers during the Second World War could and did make unintentional errors resulting in friendly casualties whether due to mistakes made in map-reading or inaccurate sensings, or whatever. Since 1945, major technological changes have resulted in new equipment. Its use has significantly reduced the probability of incurring friendly casualties due to error on the part of the forward observer.

In Vietnam, the average target location error for a forward observer was about 250 meters. This means that friendly troops that distance or less from the initial


sensing round would have been potentially subjected to friendly fire. Even by 1991, a forward observer, using the old equipment, that is, a map, compass, and binoculars, could expect a mean target location error of about 500 meters.

Two technical innovations developed since 1945 have greatly enhanced the forward observer’s ability to reduce initial target error; laser range finders and global positioning systems. Laser is an acronym for Light Amplification by Stimulated Emission of Radiation. Since 1960 the development of lasers has expanded very rapidly. Lasers can now be used as target designators to guide projectiles toward their targets, thus reducing the chance of causing collateral damage.

Yet despite the enormous destructive potential of high-energy laser weapons, low-energy lasers may actually find wider military applications. Range finding was the first military application of laser technology. United States Armed Force used the first operational range finders in the mid-1960s. For example, by 1971 a typical field artillery firebase in the Central Highlands of Vietnam had among the items at its disposal a pair of 20/40 binoculars, a starlite scope used to see objects in the dark, and a laser range finder.

Laser range finders give the observer the means to discern how far he is from a target or a burst, with extreme precision. The use of global positioning, however, has meant a giant leap in the ability of the observer to pinpoint the location of the target on the face of the earth. This enables a forward observer to communicate to a Fire

24. Headquarters, Department of the Army, *FM 6-30 Observed Fires*, 1-5.


on the face of the earth. This enables a forward observer to communicate to a Fire
Direction Center, the position of a target in relation to a firing battery, again with an
extremely high degree of precision.

The origins of Global Positioning technology lie in the Long Range Aid to
Navigational System or LORAN developed during the early 1940s and used during
World War II. Its basic principles of its operations are as follows; a pair of shore-based
transmitting stations emit radio signals. When a ship or plane with a LORAN receiver
picks up the signals, the difference in time of arrival of the two signals is measured on a
special LORAN indicator. This time difference then is used to determine from special
tables, a line of position on the surface of the earth. The intersection of two lines of
position determined from two pairs of transmitting stations is used to obtain a LORAN
fix. Because radio signals travel at a constant speed, the elapsed time of travel makes it
possible to determine the distance traveled and the measurement of intervals of time
equates essentially a measurement of distance. LORAN stations must use pulse signals
because it enables the system to measure the time intervals.

The same principle applied whether the radio signals originated from land or outer
space. Thus, satellites became a source of radio signals to determine location. The U.S.
Navy used the first satellite navigation system, Transit, in the 1960s. The Omega
Navigation System became the first ground-based, world-wide radio navigation system in
the 1970s.

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27. United States Coast Guard, Treasury Department, *Electronic Navigational Aids: Loran,
Radiobeacon, and Radarbeacon Systems and Loran Radio-Direction-Finder and Radar Ship Equipment*
In response to communications and logistics problems encountered by U.S. forces in Vietnam, Congress in 1976 voted to approve funding to develop GPS technology, primarily in concern for national defense, despite its high cost. In 1978, Department of Defense launched the first experimental Global Positioning Satellite. The Gulf War provided the U.S. Armed Forces the opportunity to test the system in combat conditions and it proved highly successful.

Global Positioning Systems, combined with laser and computer technology, have led to the development of a new equipment used by the forward observer of the twenty-first century. Standard equipment still includes binoculars but now they have a horizontal and vertical reticule patterns or scales divided into given increments in mils. By dividing the horizontal scale into ten-mil increments on both the M-17 and M-19, the observer can measure horizontal deviation from a reference point with a known direction. The M17 lens has three vertical scales. The FO does not use the one on the right to determine data for target location. Instead the infantry uses it for aiming direct fire weapons. The FO looks at the vertical scales on the left and in the center. These are divided into five-mil increments on the M-17 lens and then used to determine height-of-burst adjustments.

However, many of the binoculars available today combine other features with magnification and reticular scales. One model combines night vision with a Laser Range finder, a digital compass, and an inclinometer, (a device for measuring angles from the


horizon) a built-in GPS, and an optional Infrared Laser Pointer. For example, the Leica Vector binoculars currently used by the Army are advertised as able to indicate range, azimuth, and inclination.

In conjunction with binoculars and in place of the radio, today’s forward observer also uses a pocket-sized forward entry Device or PFED for initiating fire missions. This device helps target the enemy and send the request for fire up the chain of command. Slightly larger than a palm pilot, the PFED reduces the potential for errors in understanding, resulting from weak or garbled radio transmissions or ones that the enemy might possibly intercept. Rugged and durable, the device features call-for-fire icons which facilitate distinguishing them from other commands. The screen is visible in daylight or darkness and the PFED operates in all weather conditions, wet, dry, heat and extreme cold. The forward observer from the World War II-era would be amazed at the reduction in the weight of his communications equipment. With a battery box weighing twenty-eight and one-half pounds and a receiver/transmitter weighing thirty and one-half pounds, the old SCR-610 radio used in the Second World War weighed in at fifty-nine pounds. Imagine someone trying to run while under fire with a sixty-pound weight strapped on his back. At that time, the U.S. Army considered the SCR-610 much too heavy for carrying in the jungle and yet this radio set received wide


use during the war.

Because the PFED is actually a miniature personal computer, it requires software designed specifically for its use. Currently the U.S. Army uses PSS-SOF as its basic forward observer software. This gives FOs the precision capability necessary to engage targets using a variety of programs designed for the Army’s use as well as a software package used by the Air Force called joint direct attack munitions or JDAM.

Another recent change affecting forward observers is the reorganization of combat units from the division to the brigade concept. Fires Brigades have replaced the Division Artillery and other large-scale unit groupings used for infantry maneuver. A typical brigade includes less soldiers than a division. Fires brigades, like any brigade combat team, are not organic or a standard part of any Army organization. The Army’s intention is to assign each individual infantry division its own Fires Brigade as it becomes ready and available for combat. The fires brigade has its own organic units and receives other attached units as required. December 16, 2004 marked the sixtieth anniversary of the beginning of the Battle of the Bulge. That same day, the 4th Infantry became the U.S. Army’s first division to incorporate a Fires Brigade within its organization. With increased emphasis on the ability to use all available inter-service


34. Ibid.

firepower rather than field artillery alone, the Fires Brigade concept is intended to make field artillery the primary executor of Army and joint fires for the ground commander in areas not assigned to combat brigade teams.”

Possibly the biggest impact the Fires Brigade has upon forward observation is that it puts more forward observers in the field at one time, thus decreasing the need to shift them from one area to another as they become casualties while enhancing the control each has over his own area of responsibility. During the Second World War, each firing battery had a single artillery observer who had to support three maneuver companies at a time. To keep enough of them in the field, the battery reconnaissance officer was customarily used as an additional forward observer. Often, they moved from one company to another after going into reserve, so that a constant direct relationship of one observer to a company was not always possible. In addition, assistant executive officers from the firing batteries riding in a jeep borrowed from a wire section were also used to provide an additional FO. In this way, there was generally a forward observer with every company in the field.

According to an unpublished history of the forward observer in the custody of the Morris Swett Library at Fort Sill, immediately after World War II, the Army increased the number of FOs assigned to each firing battery of a direct support battalion from one to three, while adding an additional assistant executive officer. This meant that every firing battery now had ten artillery officers available for forward observation duty.

Following the Korean War, without the demands combat imposed, the Army kept three

assigned to each battery, and removed two other assigned officers, reducing the pool of officers available as FOs to six. A few years, later an additional officer was taken away, further reducing the number to five.

Nine per battalion may have been the norm again during the Vietnam War, because in his June 25, 1975 letter to General DePuy, General Ott indicated that the current allotment designated nine forward observers per battalion of field artillery or one for every rifle company in a supported division of three infantry regiments, adding that “Where there are more than nine battalions as is the norm, we do not have the TO&E [Table of Organization and Equipment] number of forward observers to provide support to each battalion and its companies.”

The Table of Organization and Equipment was an organization chart the U.S. Army first used in 1942 and superceded the Army’s old Tables of Basic Allowance. The T/BA only specified allotments of every item of equipment for each type of unit. The TO&E was used to describe the numbers of officers and enlisted men necessary to perform each military occupational specialty function within a standard designated unit plus quantities of equipment.

During the first two years of its existence, the TO&E for various types of field artillery units did not even include the forward observer, probably due to the exigencies

37. History of the Forward Observer, Morris Swett Technical Library, Fort Sill, OK.


of the war. By 1944 the term first appeared as MOS code 1189 and a section for a single
battery consisted of one commissioned officer, a lieutenant of either grade, and two
enlisted men. Since a field artillery battalion typically included three firing batteries
per field artillery battalion and, with three battalions per one infantry division, this
allocated nine forward observers and their crews per division.

In 1962, the Army decided to include the forward observer’s duties to be part of
the Field Artillery Unit Commander’s function, MOS code, 1193. By 1966, the
TO&E for a field artillery battalion showed an allocation of nineteen lieutenants with an
MOS code of 1193, but included one captain and one lieutenant colonel. While it
may not have purposely intended for all of these officers to serve as forward observers,
their training qualified them to perform forward observation duty, if necessary. Once
again during the Vietnam War, as it had been during World War II, forward observers
became in short supply, forcing the Army to resort to using enlisted men to fill the need.
So after Vietnam ended, the Army began looking for ways to reorganize field artillery
units to provide sufficient numbers of personnel to perform every assigned function.

The post-Vietnam switch to the Fires Brigade unit meant that organic artillery
units would now be supporting a smaller overall unit. In addition, the Brigade Combat


Team concept allowed for increased flexibility in assigning direct support artillery where needed. In both cases, it reduced the number of forward observers necessary to function effectively in combat. But re-organization alone did not ensure that the accuracy of artillery adjustment would significantly improve beyond the level it had attained during World War II.

The histories of the 37th and 87th Divisions both cite instances where friendly fire appeared to be falling on the division’s troops. December 16, 1944 was the day that Lieutenant McGhee and Lieutenant Allee, forward observers with the 87th Division encountered a long frustrating delays in receiving permission to fire upon German targets they could see, while enemy artillery and automatic weapons fire decimated the ranks of the 3rd Battalion, 345th Infantry. Yet, with all the technological advancements and improvements in equipment that have come about since 1945, one might question if the state of forward observation with regard to command, control, and communications has improved significantly since 1945. Seemingly, these technological enhancements would appear to enable today’s forward observer to do a better job than his counterpart did in World War II. Perhaps this is true, but with qualifications. Now, new developments in technology have replaced the human element to a large degree. Technology has greatly reduced the potential for friendly fire casualties resulting from human error on the part of the forward observer. However, a direct correlation exists between the safety and responsiveness of this system and the reliability of its technological components, as well as how they are applied.

For example, the time required to engage a target has increased, not decreased, at
least, up until Operation Iraqi Freedom. In a 2001 interview with FA Journal, retired Major General Robert H. Scales, Jr., historian and former commandant of the Army War College indicated that on average, it took about four and a half minutes to initially engage a close support target and adjust fire in the European Theater in 1944. In Korea, it took about the same amount of time, but by the time of the Vietnam War, it took about eleven minutes, and during the First Gulf War the delivery of massed fires took an average of fifty-five minutes. Scales attributes the increase in mission time to a variety of factors. These include the fear of hitting friendly troops and increased stratification and automation of systems used for air and ground support. Generally speaking, today’s more expensive munitions require more delivery time with the current technology and doctrine.

That same summer, Major General Toney Stricklin, departing chief of Field Artillery and commandant of the Field Artillery School, observed that among the U.S. Army’s most neglected soldiers were Fires Support Teams and forward observers. Stricklin noted that commanders must focus on equipment, training, evaluation and certification of observers. To make artillery more responsive requires “true sensor-to-shooter linkage,” plus streamlining of the digital communication structure rather than communicating by way of a series of fires support elements.

Colonel Gary H. Cheek described the overall effect of post-World War II changes on field artillery while emphasizing the need to retain the human element in the fires


support system. Critical of changes in the system since 1980, Cheek admitted that fires are now more precise and computerized systems offer more capabilities than they did when they were first developed. He added it is disturbing to note that although artillery fire is more accurate than ever, the conduct of fire has lost the human dimension and with it some of its responsiveness.

Using Audie Murphy’s Medal of Honor experience as an example, Cheek made a very plausible argument that under the old system of communication by radio that enabled the soldiers at the Fire Direction Center to hear the voice of the forward observer, the urgency and emotion in the voice of the observer were an important part of his overall instructions; important enough perhaps to compel the firing batteries to respond faster than they might otherwise have. Certainly under conditions of combat, one can more fully articulate his or her thoughts quicker verbally than by written or even digital methods of communication. Cheek argued that, to some extent, the new system in which a forward observer requests a fire mission may be likened to posting a query by e-mail or purchasing a product online, writing that “We have lost the ability to transcend quantitative data with intuitive judgment and exercise that complex translation of emotions and instincts into actions, feeling the sense of urgency that comes from human need and the great sense of satisfaction that comes from serving your fellow soldier.”

Because the forward observers may only use digital devices in limited, specific situations and circumstances, Cheek criticizes the impact such devices may have upon the


46. Ibid., 34.
effectiveness of the FO. While his equipment automates the process, it does not increase his effectiveness. Actually, the time required for technical training to learn to use these device diverts him from more important tactical training, and as a result, renders him less effective.

Thus, one might conclude that although field artillery’s entire system of fire control has gained accuracy and increased deadliness over the last sixty years, the human element involved in sensing rounds and the forward observer’s degree of control have diminished over that same period of time. Technology has brought remarkable improvements in the system of communications the forward observer uses. The Army’s reorganization of field artillery to the Fire Support Team concept, has allowed for an even greater integration of artillerymen with other combat arms and branches of service while taking command away from the forward observer, enabling enlisted men to perform the observation and communications function and giving command back to a commissioned field artillery officer, the Fire Support Officer.

In an all-volunteer army of professionals, where the same groups of men train together for a period of years, the FIST concept serves its purpose well. By comparison, these forward observer teams who served in the Second World War were thrown together with a relatively short period of training and went to war with equipment that might be regarded as primitive by today’s standards. Yet, they achieved the first successful pairing of two modern combat arms in combined arms tactics and in the process, became integrated with maneuvering infantry, as the urgencies of combat broke down distinctions

47. Ibid., 37.
between rank and combat arms. Although the role forward observers played in World War II is largely unknown, they truly were in the war, too.
GLOSSARY

abatis. A form of barricade using trees sharpened and laid with their points outward.

aiming point. An easily distinguishable feature or landmark used to calculate an angle of reference to the a gun in the required horizontal direction. The essential feature of the aiming point is that it is at a sufficient distance from the gun using it.

armor. In modern military terminology refers to tanks and motorized artillery.

army. In organizational terms, the largest single grouping of units, usually two or more army corps together with auxiliary troops; a field army.

artillery. Guns of large caliber, too heavy to carry, field guns.

atrabrine. A drug used during World War II to prevent malaria.

automatic weapon. Any hand-held or smaller portable weapon capable of firing continuously as long as the trigger is pulled or depressed and it is fed with ammunition.

azimuth. The horizontal angle measured clockwise between a reference direction and a the line to an observed or designated point. True azimuth is the angle measured horizontally from the north in clockwise fashion to an observed or designated point. Figuratively, an azimuth is a horizontal angle or direction from a point on a compass.

base point. A point in the target area whose location is known on the ground or on the firing chart, or both. If its location on the ground is known, it must be readily identifiable and should be in the approximate center of the target area, both horizontally and vertically. The registered known point that became the “Base Point” established the Base Deflection of zero mils for each firing battery. Before going forward, the forward observer must know the location of the base point.

battalion. During the Second World War, a typical U.S. Army infantry battalion was comprised of three rifle companies, one heavy weapons company, and a headquarters company; approximately 1,000 men at full strength. There were three battalions to an infantry regiment, and three infantry regiments per infantry division. A typical field artillery battalion included three batteries of four 105-mm howitzers and one battery of twelve 155-mm howitzers, a headquarters battery, and a service battery.

battery. The smallest tactical unit of field guns. The 1943 TO&E for a Field Artillery Battalion, motorized, 105-mm, truck drawn, allocated four howitzers for each of three firing batteries.
battery commander. The artillery officer in command of an individual firing battery, usually comprised of four guns. From the early part of the twentieth century until the start of World War II, the battery commander took a position somewhere between the batteries and the target that would enable him to observe the target while communicating with the batteries. From there, the battery commander than performed the multiple tasks of determining targets for his battery, computing the firing data, and adjusting the fire. The position the battery commander chose presented a tradeoff between the ability to observe and to conduct fire. A battery commander who was closer to the target than to the battery could observe better, whereas one closer to the battery had an easier time conducting fire.

bolt-action rifle. A rifle that requires the shooter to eject spent shell casings and inject new ones manually by sliding a handle with a knob back and up and then down and forward every time the weapon is fired. Operating the bolt action causes the shooter to loose the alignment of the gun’s sight with his target, which means he must re-acquire the target after every shot.

bracket. The distance between two strikes or series of strikes, one of which is over the target and the other short of it, or one of which is to the right of a target and one to the left. Standard procedure is to send one artillery round on line with the target over, and the next round short. The target is now “bracketed” and subsequent rounds split the bracket until the rounds land within fifty meters of the adjusting point. The forward observer than fires for effect.

breech-loading. A firearm or field piece that is loaded near the rear of the bore or above the trigger mechanism as opposed to one that is loaded at the top of the barrel or muzzle.

brigade. A military unit typically composed of two to five regiments or battalions. Usually, a brigade is a sub-unit of a division.

bronze star medal. The United States Armed Forces fourth highest award to recognize bravery, heroism, or meritorious service. During the Second World War the words used to describe a Bronze Star awarded for bravery or heroism typically included “Heroic Action.” Many were also awarded for meritorious service. These typically lacked a narrative indicating what the soldier did to deserve the medal. However, many 37th Division veterans were awarded Bronze Stars for meritorious service with narrative descriptions indicating the awards had been made to recognize deeds of bravery or heroism in combat.

canister shot. Metal cases containing bullets which scatter after leaving the gun; also called case shot.

cannon. A field gun firing a projectile that follows a nearly flat trajectory.

cannoneer. A soldier who performs any of the duties connected with operating a field gun and handling its ammunition.
**case shot.** Synonymous with canister shot.

**casualty.** A member of the armed forces who is lost to active service, especially as a result of being killed, wounded, or captured. A casualty then, can be either temporarily or permanently lost to duty.

**combat arm.** Any combatant branch of the military forces; those branches trained to routinely engage an enemy in combat. During World War II, the combat arms of the U.S. Army included infantry, artillery, armor, air, cavalry, and combat engineers.

**combined arms tactics.** The tactical use of two or more combat arms working together; example: coordinated use of field artillery with infantry.

**command.** Authority granted a commander to assign missions or tasks to subordinates, to deploy units, to reassign forces, and to retain or delegate operational and/or tactical control.

**command post [CP].** The post where the person in command is stationed.

**commissioned officer.** An officer in the Armed Forces holding rank by commission from the proper authority.

**company.** A U.S. Army rifle company during the Second World War was comprised of three rifle platoons and a heavy weapons platoon. At full strength a rifle company included a total just under 200 officers and enlisted men.

**control.** The detailed and usually local, direction of the movement, maneuvers, or fire necessary to accomplish missions or tasks assigned.

**corps.** A tactical subdivision of an army composed of two or more divisions plus auxiliary service troops.

**counter-battery fire.** An artillery barrage directed against enemy artillery.

**defilade.** Protection from hostile observation or fire afforded by an obstacle such as a hill, a ridge, a natural depression in the ground or a bank or even a building.

**deflection.** The horizontal shift, left or right, in the direction of a field piece necessary to place its fire on line with the target.

**deviation.** The horizontal angle, measured by an observer, between a burst and the target.

**direct fire.** Artillery fire in which the cannoneers see and take aim at their intended targets.
**elevation.** The vertical shift of a field piece up or down, necessary to enable its fire to reach the exact distance or range from the gun to the target.

**enfilade.** A narrow passage or straight line; the fire placed on a narrow passage or straight line from either flank

**enfilading fire.** Fire that strikes the flank of a target, usually from a defilade position; to rake a line lengthwise from the side by rifle or shell fire. The targets then typically have little or no cover or protection.

**enlisted man [EM].** Any member of the armed forces who is not a commissioned or warrant officer.

**field artillery.** Movable artillery capable of accompanying an army into battle.

**field gun.** A mobile artillery piece for use in the field.

**fire direction center [FDC].** Computes firing data for the guns. The process is done by determining the precise target location based on the forward observer’s location, then computing range and direction to the target from the guns’ location. Fire direction is the tactical command of one or more artillery units for the purpose of bringing their fire to bear upon the proper targets at the proper time with the maximum density and surprise.

**foxhole.** A hole dug in the ground for one or two soldiers used for temporary protection against enemy fire.

**G.I. — “government issue.”** The nickname given to ordinary American soldiers.

**global positioning system.** Developed by the United States Department of Defense, uses a constellation of between 24 and 32 orbiting satellites to transmit precise radiowave signals enabling GPS receivers to determine their current location, the time, and their velocity. Although GPS has significant applications for both military and civilian use, GPS allows soldiers to find objectives in the dark or unfamiliar territory. GPS coordinates can be used to locate the position of an object on the face of the earth to an accuracy of within two meters. GPS allows accurate targeting of various military weapons including those used by field artillery.

**grape shot.** A missile formerly discharged from a cannon with destructive properties similar to both case and solid shot. Grape shot has much of the destructive spread of case shot with somewhat of the range and penetrative force of solid shot. A round of grapeshot consisted of three tiers of cast-iron balls arranged, generally, three in a tier between four parallel iron disks connected by a central wrought-iron pin.
hedgerow. A row of shrubs or bushes forming a hedge. Those found in Normandy were centuries old and included small trees and rocks in the hedge.

high angle fire. Fire in which the quadrant elevation exceeds that for maximum range for the charge. This elevation is approximately 800 mils or 45 degrees or more.

high explosives [HE]. A shell that depends primarily upon blast for effect; the standard projectile for use against personnel or “soft” targets.

howitzer. A short-barreled field gun with low muzzle velocity firing shells in a relatively high trajectory.

inclination. The extent or degree of incline from a horizontal or vertical position.

indirect fire. Artillery fire directed at an unseen target.

infantry. Soldiers trained and equipped to fight on foot.

infantry division. The standard infantry division of the U.S. Army in World War II had a minimum of artillery and auxiliary elements organically assigned. A standard infantry division was comprised of just under 15,000 officers and enlisted men. In addition to three infantry regiments, it generally included three field artillery battalions of 105-mm howitzers, one 155-mm howitzer battalion, air section, engineer battalion, medical battalion, cavalry reconnaissance troop, military police platoon, quarter master company, ordnance company, signal company, headquarters company, and division band.

landser. The German nickname for the ordinary infantryman, equivalent to the American GI.

liaison officer. An artillery officer stationed at the supported infantry command post during battle, who relays requests for fire support to his artillery battalion. Liaison included communications between, cooperation and coordination of different elements of command.

liverflukes. A trematoid, parasitic worm.

logistics. The branch of military science having to do with moving, supplying, and quartering troops.

massed fire(s). Fire delivered by multiple batteries on a target simultaneously.

mil. 1/6400 of a circle. Artillery calculations use this basis almost exclusively for determining the angle of deflection to a target.
military occupational specialty [MOS]. A specific job description for every separate function performed by members of the Armed Forces.

military time. Denotes each hour of the day by its cardinal number, beginning with 1:00 a.m. or 0100 hours. Thus, the first hour after midnight is 00 hours and 12:59 a.m., 00:59 hours. The a.m. and p.m. designations are not used.;1:00 p.m. is 13:00 hours, 2:00 p.m., 14:00 hours, and so on. 23:59 hours represents 11:59 p.m. and midnight is designated as 24:00 hours.

mortar. A short-barreled cannon, typically light enough to be carried in sections, which throws shells in a very high trajectory.

non-commissioned officer [NCO]. An enlisted person in the armed forces appointed by proper authority to any rank above that of Private First Class and below that of a commissioned officer or warrant officer.

observation post [OP]. A position from which one can observe the location and actions of the enemy.

ordnance. All weapons and ammunitions used in warfare; any equipment or supplies used in servicing weapons.

organic. In military organizational terms, a subunit which is assigned as a regular part of a larger unit; e.g., during World War I, the composition of U.S. infantry divisions did not include their own aviation units but during World War II, aviation units were organically assigned.

private first class [PFC]. Pay grade E3; two steps up from a buck private.

pill box. An enclosed gun emplacement, typically of made concrete and steel.

platoon. During World War II, a U.S. Army infantry platoon typically included three squads of thirteen riflemen.

quadrant elevation. The vertical angle from horizontal to line of elevation.

range. The distance from a field gun to its target.

regiment. During World War II, a standard U.S. Army infantry regiment was comprised of three battalions and included just over 3,000 officers and enlisted men.

registration. Fire delivered to obtain corrections for increasing the accuracy of subsequent fires.
rifling. The system of spiral grooves in a gun barrel which impart spin to a bullet or projectile, increasing its ability to maintain a straighter trajectory.

rolling barrage. A artillery fire delivered on successive lines, advancing immediately ahead of the attacking troops, according to a pre-arranged schedule. Rolling barrages may be employed to support an attack when the locations of hostile dispositions are obscure, to crater the ground, and to orient and guide attacking troops.

set piece attack. The attackers know the general location and strength of the defenders and the locus of battle is not likely to change once the attack is underway. Set piece operations are those that generally go according to plan, however, in modern combat, few things ever go exactly as planned.

shrapnel. An artillery shell filled with an explosive charge and many small, metal balls, set to explode in the air over a target. Over time, shrapnel has come to mean the fragments from any exploding shell.

silver star medal. The United States Armed Forces’ third highest award to recognize gallantry in action against an armed enemy of the United States.

small arms. Firearms that can be carried such as rifles, carbines, pistols.

sniper. A sharpshooter concealed to harass the enemy by shooting individuals, usually at a long range, with a telescopic rifle. In both world wars, the German Army referred to its snipers as sharpshooters.

squad. The smallest tactical unit of a rifle company, typically comprised of thirteen enlisted men.

table of organization & equipment [TO&E]. A standard table established for each type of military unit prescribing the number of its officers and enlisted men, the grade and job of each, the proportion of various military occupational specialties, the arrangement of command an staff, and the numbers of each item of equipment to be supplied to this unit. The publication of the first Tables of Organization and Equipment in August 1943, replaced the Tables of Organization [T/O] and Tables of Basic Allowance [T/BA] previously used.

tactical doctrine. The various instructions the U.S. Army teaches all members of combat arms for engaging in combat.

target acquisition. The means of locating and bringing fire to bear on targets using indirect fire. The conversion to indirect fire meant that artillery had to have separate elements to find and observe targets.
**target location error.** The distance from the burst of a shell to the target by which the forward observer has initially misjudged the location of the target.

**time-on-target [TOT].** Artillery fire from multiple sources that is synchronized to fall on a particular target simultaneously.

**triangular division.** An infantry division premised on the association of all its elements, from squad to regiment, in threes. Ideally it presupposed that one element would fix the enemy while another maneuvered against him, while the third, acted as a reserve.

**unconventional warfare.** Warfare where the attempt to achieve victory is done through acquiescence, capitulation, or clandestine support for one of two sides at war against each other. Unconventional warfare differs from conventional warfare because forces and objectives are covert, or not well defined; tactics and weapons used intensify the perception of subversion and intimidation, and the general or long-term goals are coercive or subversive to a political body. The general objective of unconventional warfare is to instill a belief that peace and security are not possible without compromise or concession. Whereas conventional war is fought to bring a swift conclusion, those engaging in unconventional war hope to intentionally prolong the struggle to induce wars weariness in the enemy and a decline in his civilian standards of living.

**volksturm.** The People’s Storm or Assault was a German national militia Hitler founded in October 1944 conscripting all German males between the ages of 16 and 60 years old who were not already serving in another military unit.

**wehrmacht.** The armed forces of Nazi Germany from *Wehr* meaning armed and *Macht* meaning might. Some writers have used the term interchangeably with reference to the German army. The German word for army is *Heer*.
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