AMERICAN ARTILLERY IN THE MEXICAN WAR

1846-1847

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1846-1847

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CHAPTER I

PRELUDE TO CONFLICT

The bold and skillful employment of United States artillery assured American dominance of the battlefields of the Mexican War. The full story of the arm and the weapons system has yet to be told.

The Mexican War, fought between the United States and Mexico from April, 1846, to September, 1847, evolved into five campaigns or separate actions. General Zachary Taylor's Army of Occupation fought the first battles, challenged Mexico's best armies, and executed a deep thrust into northern Mexico. General John Ellis Wool and Colonel Alexander William Doniphan each led lesser attacks into northcentral Mexico. General Stephen Watts Kearny attacked across Mexico's northern territory to the California coast. The final campaign, led by General Winfield Scott, penetrated from Vera Cruz inland to the national capital and subdued the Mexican heartland.

Each of the five campaigns brought success to American arms, but the victory belongs to the armies of Taylor and Scott. They led the larger forces. Their armies experienced the heavy and crucial fighting. It was they who destroyed the best of the Mexican army and subjugated the Mexican nation. In these two campaigns, the most effective resource in the
American arsenal, aside from the soldier himself, proved to be the magnificent corps of artillery.

The Mexican War developed primarily as a consequence of conflicting territorial interests. Spain once held what is today the southernmost parts of the United States from Florida to California. As Spain receded from its highest point of expansion, Mexico acquired Spanish heritage and position. Concurrently the United States expanded. The westward-pushing Americans pressed the Mexican frontier. Several attempts by Presidents John Quincy Adams and Andrew Jackson to purchase parts of Mexican territory where Anglo-Americans lived not only failed, but persuaded Mexicans that the government in Washington had devious designs on Texas.\(^1\)

In 1836, at the time of the Texas Revolution, Major General Edmund Pendleton Gaines assembled a United States force on the banks of the Sabine River in a thinly veiled power threat aimed at Mexico. United States intervention proved unnecessary when Texas defeated the Mexican army and its remnants withdrew south of the Rio Grande. Speculation cannot provide the answer to possible American action had the results of the Battle of San Jacinto been different.\(^2\)

Diplomatic relations between the United States and Mexico remained unsettled, and serious discussions between representatives of Texas and the United States pointed toward an early

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annexation of Texas into the Union in 1845. Mexico adamantly refused to recognize the de facto independence of Texas, and reacted to the pending annexation by proclaiming that she would fight to retain Texas as a part of Mexico.³

President John Tyler ordered a force of 1,200 regular army troops to Fort Jesup, Louisiana, near the Texas frontier. General Zachary Taylor commanded the small army and prepared for possible movement into Texas.⁴ On July 4, 1845, a Texas convention accepted annexation of Texas as a state in the Union, and Taylor's army immediately entered the new state to guarantee its territory. On July 26, 1845, troops of the United States Third Infantry Regiment first raised the American flag on Saint Joseph's Island, offshore from Corpus Christi.⁵

Taylor's army, designated the Army of Occupation, landed at Corpus Christi poorly prepared to fight a war, but its early move gave the initiative to the United States. Its physical presence gave strength to the course of action, and the government next moved to assure the army's ability to hold its position. The initial force composed of the Second Dragoon Regiment and the Third and Fourth Infantry regiments soon grew to twice its initial size. During August and September the Fifth, Seventh and Eighth Infantry regiments converged on the Texas coast. Sixteen artillery companies departed their harbor defense garrisons and moved on Corpus Christi, raising the force to over 3,000 men.⁶

Taylor led his force into Texas under orders to occupy a position of his choosing between the Nueces River and the


⁵Hitchcock Diary, p. 192.
Rio Grande del Norte. The order appeared to give broad authority to the commander, whereas in truth he had little choice. The Texas coast is protected from the open sea by a chain of off-shore islands, and from the mouth of the Nueces River south 120 miles to Brazos Santiago, a pass through the sand chain to the Rio Grande, access to the mainland from the sea is barred by Padre Island. Brazos Santiago is only seven miles from the Rio Grande, and had the army sailed directly to Brazos Santiago or the mouth of the Rio Grande, it would have confronted a Mexican army believed strong and prepared for war. By landing at the Nueces, Taylor complied with the order to move south of the Nueces but to avoid a fight if possible. For more than half of a year Taylor's Army of Occupation prepared for the coming campaign.

The army landed in Texas devoid of artillery. General Gaines, commanding the Southern Military Department from New Orleans, felt deep concern for Taylor's force. He considered the venture foolhardy and, without authority, requisitioned from the Louisiana militia two regiments of infantry and two companies of artillery with firing batteries. The artillery

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7House Executive Documents, 30th Congress, 1st Session, No. 60 (Washington, 1847), pp. 83, 98; New Orleans, The Daily Picayune, August 1, 19, 1845.

mustered quickly and embarked for Corpus Christi, reporting to General Taylor on August 25. Taylor did not welcome the interference by Gaines and so advised the general and the army command in Washington. Nonetheless, Taylor retained the units for the duration of their ninety-day call, mustering them out of the service in November.

Only three of the sixteen regular army companies of artillery at Corpus Christi served with cannon. Other than the two militia companies, Lieutenant Braxton Bragg's Company E of the Third Artillery provided the first fire support. His company reached Texas without guns, but the precocious Bragg procured a nondescript collection of cannon from local citizens and mounted them to form a battery. Taylor described the pieces as unfit for field service, but with this battery Bragg trained his command.

Shortly after Bragg's arrival, Major Samuel Ringgold's Company C of the same regiment and Captain James Duncan's Company A of the Second Artillery joined the American army in Texas. Ringgold's and Duncan's artillery debarked as well trained and fully equipped companies, and brought Taylor's command to combat readiness insofar as artillery was concerned.


11Ibid., pp. 102, 110; Hitchcock Diary, p. 198.
A fourth company with cannon went to San Antonio and joined the force assembling under General Wool. This unit, Company B of the Fourth Artillery, served under Captain John Macrae Washington and joined Taylor's command at a later date deep in Mexico. The remaining artillery companies served as light infantry under the command of Lieutenant Colonel Thomas Childs, except on rare occasions when called upon to man heavy or captured artillery.12

Professional soldiers filled the ranks of the army. Many of the older officers were veterans of the Indian wars and of the War of 1812, but most lacked professional training. The younger officers had benefitted from training at the United States Military Academy at West Point, New York, and knew the latest in the skills and arts of war. Hardy emigrants from Europe accounted for half of the enlisted men, and these men constituted a hard core even though their allegiance sometimes proved lacking and not a few deserted to the enemy.13 Ulysses Simpson Grant, a lieutenant in that army, reminisced in later years that he did not believe a more efficient army ever fought a battle than the one commanded by General Taylor in his first two engagements.14

12 Edward Jay Nichols, Zach Taylor's Little Army (Garden City, 1963), pp. 36-37; Picayune, Aug. 19, 26, 1845; Picayune, Jan. 13, 1846.

13 Smith, War With Mexico, I, 160; Nichols, Taylor's Little Army, pp. 38-42 passim.

On January 13, 1846, President James Knox Polk ordered General Taylor to advance his army to the east bank of the Rio Grande. In the spring the Army of Occupation marched forth as three brigades and an independent command of dragoons. Brigadier General William Jenkins Worth commanded the First Brigade, which consisted of the Eighth Infantry Regiment and Lieutenant Colonel Thomas Childs's artillery companies serving as light infantry. Duncan's Company A of the Second Artillery provided fire support.

The Second Brigade, commanded by Lieutenant Colonel James Simmons McIntosh, followed one day behind the First Brigade and included the Fifth and Seventh Infantry regiments. The Third Brigade under Colonel William Whistler brought up the rear, and received supporting artillery from Bragg's Company E. The long column followed a route laid out by Colonel David Emanuel Twiggs's Second Dragoons, accompanied by Ringgold's Company C.

The army rested on its arms on the east bank of the Rio Grande opposite from the Mexican town of Matamoros on March 28, 1846. Support by sea moved the heavy supplies, some artillery, and miscellaneous personnel. Major John Laranoe, an artillery officer, commanded the seaborn movement which brought Taylor's total force to just under 3,600 men at the river.

16 This provisional battalion is hereafter referred to as the artillery battalion or as Childs's artillery.
17 Nichols, Taylor's Little Army, p. 44.
18 Ibid.; Ripley, War With Mexico, I, 96.
A supply base established on the beach at Point Isabel benefitted from the only deep water landing site short of the mouth of the river. Thirty miles inland from the supply base, the troops raised a fort confronting Matamoros and emplaced heavy guns trained on the city. The American army, not having been attacked at Corpus Christi, moved deep into territory Mexico regarded as its own, although the zone between the Nueces River and the Rio Grande had not been permanently occupied by Mexico nor received serious attention by Texas.¹⁹

The Mexican Army of 1845 reportedly had a strength of from 30,000 to 50,000 men. No estimate of the time placed the army at less than the lower figure.²⁰ The basic material of the Mexican army, the peón, made a good soldier if properly led and equipped, but the army as a unit suffered from the rash of revolutions that swept the land. Commissions and promotions proffered as civic and political rewards weakened the command structure, and a rank-heavy organization thwarted the initiative of junior officers.²¹

The Mexican Army of 1846 consisted of three major components. The national army was the regular army and compared


²⁰Ripley, War With Mexico, I, 89.

²¹Ibid., pp. 87-88.
to the United States establishment. In addition to the national army, the several states of Mexico had active battalions, or state armies, which were also subject to federal service. Towns and cities had a third force, national guards or militia units intended for local defense.\textsuperscript{22}

Mexico relied heavily on cavalry, and this arm was usually well disciplined and filled with excellent horsemen. Unfavorably, their mounts were light and could not stand against the heavier grain-fed American mounts. The fault of the cavalry, however, lay in its weapons. Cavalrymen relied on an obsolete musket, or escopeta, and a lance. The soldiers correctly placed the greatest confidence in their lance.\textsuperscript{23}

The Mexican infantrymen responded to discipline and fought well when adequately cared for and properly led. Both the American and the Mexican infantrymen fought with muskets, but the Americans had a better firearm and consequently outgunned their opponent.\textsuperscript{24}

Artillery offered an interesting analogy in the Mexican Army. Many foreigners served as senior officers, and most of

\textsuperscript{22}Ibid.  
\textsuperscript{23}Ibid.  
\textsuperscript{24}The American musket was sixty-nine caliber, or had a barrel diameter of 69/100 inches. The Mexican musket, an old English model, was seventy-five caliber. The heavier Mexican ball required a very heavy powder charge to match the American musket's range, and the resulting recoil of the piece, or kick, caused the Mexican soldier to fire unaimed shots from the hip. Ibid., I, 83; David Sievert Lavender, Climax at Buena Vista, The American Campaigns in Northeastern Mexico, 1846-47, Great Battles of History Series, edited by Hanson W. Baldwin (Philadelphia, 1966), pp. 224-225.
the younger officers trained at Chapultepec Military College. They mastered the theoretical knowledge of artillery and perfected their gunnery. The ordnance, or the cannon barrels, was of mixed caliber and often old, but the actual cannon were adequate. Mexican artillery suffered from poor logistical support and insufficient mobility.\textsuperscript{25}

The events of 1845, during which the United States placed an army on Texas soil, failed to surprise Mexico. The poor state of her defenses along the Rio Grande resulted from Mexican inability to react. In 1845 President Jose Joaquin Herrera countered the American threat by ordering two divisions to reinforce the Army of the North at Matamoros. He committed the veteran forces of General Vincente Filisola and General Mariano Paredes y Arrillaga. Instead of marching north, Paredes pronounced against Herrera, and used his troops to make himself president.\textsuperscript{26} The revolution within Mexico also caused Filisola to be diverted. Thus, as Taylor marched toward the Rio Grande, the forces of General Francisco Mejia prepared to defend the frontier without assistance from the south. Reports then current in the United States not withstanding, the Mexican Army did not march on Texas, or even march to meet Taylor's initial advance.\textsuperscript{27} General Mejia did use local forces

\textsuperscript{25}Ripley, War With Mexico, I, 88.
\textsuperscript{26}Don Ramon Alcaraz, The Other Side: or Notes for the History of the War Between Mexico and the United States, translated and edited by Albert C. Ramsey (New York, 1850), pp. 36-37.
\textsuperscript{27}Picayune, Aug. 1, 1845 to April 3, 1846; House Exec. Docs., 30th Cong., 1st Sess., No. 60, pp. 85, 99.
to scout the American advance, but the initial Mexican acts were defensive, and concentrated behind the river.

The Matamoros garrison included a battalion of engineers, one light infantry regiment, two regular infantry regiments, one cavalry regiment, and some presidial troops. The artillery included twenty cannon in battery and serviced by one company of artillery. Last minute reinforcements reached the city just before Taylor's army arrived across the river, and included a detachment of marines and some coast guardsmen from Tampico. The total garrison numbered approximately 3,000 men.28

General Paredes, as President, declared that having been attacked, Mexico must meet force with force and that she would defend her national territory against the invaders from the north.29 As Taylor's force approached Matamoros, Paredes ordered General Pedro de Ampudia with 2,200 additional troops to the defense of the city. The additional troops swelled the garrison to 5,700 men, and with this force the Mexicans planned to attack the 3,000 Americans.30

Even as Ampudia prepared to attack, General Mariano Arista succeeded him in command and implemented his own plan. Arista sought to isolate the main American army from its base at

28Alcaraz, The Other Side, pp. 36-37.

29Mariano Paredes y Arrillaga, Ultimas Comunicaciones Entre El Gobierno Mexicano y el Enviado Extraordinario y Ministro Plenipotenciario de los Estados Unidos Sobre la Cuestion de Tejas (Mexico, 1846), pp. 4-5.

30Alcaraz, The Other Side, p. 39.
Point Isabel, thereby forcing the Americans to leave their fort and fight on the open prairie.\textsuperscript{31} Arista's plan succeeded in part, in that it did force the Americans to give battle on the prairie.

\textsuperscript{31}Ibid., p. 42.
CHAPTER II
CANNON AND CANNONEERS

The United States Artillery of 1845, organized into four regiments with ten companies in each regiment, served as separate companies occupying widely scattered posts. Company strength varied, as did training and equipment, but fifty man companies were typical. Career soldiers filled the ranks, and those who joined the Army of Occupation characterized the disciplined professional. Historically, these men garrisoned coastal fortifications, but throughout the 1830's the Indians in Florida and the British on the northern frontier demanded their presence. A fortunate few trained with the new light batteries known as flying artillery.¹

The artillery weapons that went to the Rio Grande and beyond matched or bettered any in the world at that time. During the late eighteenth and early nineteenth centuries, the United States weapons systems lagged far behind those of Europe.² A number of years before the Mexican War, the national leadership became concerned, and in 1823 Secretary of War John Caldwell Calhoun proposed a School of Practice. The


²In 1759 Frederick of Prussia organized a unit of light field artillery in which all cannoneers either mounted horses, guns, or ammunition wagons. They attained previously unknown
following year, in response to Calhoun's proposal, the Artillery School opened at Fortress Monroe, Virginia. The school's founders visualized it as an advanced school for officers, but it became instead more of a unit training center at which artillery companies practiced professional skills. This first step toward the training and modernization of artillery indicated high command interest in the advancement of the arm. The achievements that followed would not have been possible without such interest.

In 1835, a progressive Army Ordnance Department ruled that all cannon manufactured for the field service would be made of bronze, and that iron pieces would be phased out of the service. The next year the department implemented a program replacing obsolete gun carriages, relics of the Revolution and the War of 1812. The replacement carriages featured less mobility and could move with the cavalry. General Jean Baptiste Gribeauval, in the hire of Austria, fought the Prussians and learned the effectiveness of their artillery. He returned to France and became the father of French artillery. Not only did he mount the cannoneers, but he also developed a fully integrated weapons system. The Gribeauval system was copied around the world. Russia, England, and Sweden made similar if less spectacular progress in the science of artillery.


weight and the increased mobility characterized by newly adopted English stock trails, or box trails. Also in 1836, Secretary of War Lewis Cass, artillery oriented as had been

a. Ammunition chest
b. Box trail
c. Breech and breech ring
d. Elevating screw
e. Hand spike ring
f. Muzzle and muzzle ring
g. Pole and pole prop
h. Frolonge (rope)
i. Sponge and rammer
j. Trunnion
k. Tube

Fig. 2--Cutaway view of a field cannon mounted on a box trail carriage and hitched to its limber.

6Frank E. Comparato, Great Guns, Cannon Kings and Cannoneers Who Forged the Firepower of Artillery (Harrisburg, 1965), p. 188.
Calhoun, further improved the arms inventory by adding a small mountain howitzer\(^7\) of French design.\(^3\)

Military spending and related improvements continued into the administration of Joel Roberts Poinsett as Secretary of War. In the spring of 1840, Poinsett directed the Chief of Ordnance, Colonel George Talcott, to send a board of officers to Europe for the purpose of studying the latest weapons developments. The board visited England, France, Prussia, Sweden, Russia, Belgium, and Austria, among other places. Developments in virtually all phases of Military equipment interested the board, and upon return to the United States, it brought with it or had on order for delivery thirty-five cannon of sixteen different types. The officers also brought samples of ore, smelted metal, and alloys used by European foundries in the manufacture of weapons.\(^9\)

In 1841 the board reported its results to Secretary of War Poinsett. So pleased was the Secretary that he gave the group permanent status and assigned to it the task of developing a complete weapons system for the army. Eight months later the group reported that a "system of guns, carriages and

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\(^7\)A howitzer is a short barreled cannon with a high angle of fire. A mountain howitzer is a small howitzer that breaks down into mule-transportable loads. James Ernest Hicks, *What The Citizen Should Know About Our Arms and Weapons* (New York, 1941), pp. 153-154.


\(^9\)Senate Documents, 26th Congress, 2d Session, No. 229 (Washington, 1841), pp. 2-46 passim.
equipments, for the field artillery have been definitely ar-
ranged, and the necessary drawings and models prepared; the
details of the system of siege and garrison artillery are
nearly completed."\textsuperscript{10} A full system of United States artillery
emerged in 1841, and became known as the family of weapons,
model 1840.

An outgrowth of the board activities was the publication
of the \textit{Ordnance Manual for the Use of the Officers of the
United States Army}, hereafter cited as the \textit{Ordnance Manual of
1841}. This comprehensive manual presented the new family of
weapons, and virtually constituted a report of the board's
accomplishments in the field of artillery. The text describes
the weapons assigned to the artillery as "...cannon of the
following kinds and calibres. ..."\textsuperscript{11}

For field service:

6-pounder and 12-pounder guns, M1840
12-pounder and 24-pounder howitzers, M1840

For mountain service:

12-pounder mountain howitzer, M1835

For siege and garrison service:

12-pounder, 18-pounder and 24-pounder guns, M1840
8-inch siege howitzer
8-inch and 10-inch light mortars

\textsuperscript{10}House Documents, 27th Congress, 2d Session, No. 2
(Washington, 1841), pp. 2, 57, 85; Comparato, \textit{Great Guns},
p. 184.

\textsuperscript{11}Ordnance Manual of 1841, p. 1.
16-inch stone mortar

24-pounder Coehorn mortar

Fig. 3—Mortars are short-barreled cannon that fire projectiles for short distances in a very steep trajectory. Howitzers are moderately short-barreled cannon of light weight which lob a heavy projectile into an arcing trajectory for a moderate distance. Guns are long-barreled cannon which fire projectiles at high velocities in a relatively flat trajectory.

Seacoast artillery was not included in the new family of weapons, but was then, and must now be, considered a part of the overall weapons system. The Ordnance Manual of 1841 lists nine types of cannon in the seacoast inventory.

For seacoast defense service:

- 32-pounder and 42-pounder guns, M1840
- 24-pounder gun, M1819
- 32-pounder gun, M1829
- 42-pounder gun, M1831
- 8-inch and 10-inch howitzers
- 10-inch and 13-inch heavy mortars

In 1844, to give heavier guns to the field service, the ordnance board caused the seacoast 8-inch and 10-inch howitzers to be added to the field service inventory. The board had previously added a 32-pounder howitzer shell-gun in 1843. These heavy additions exploited the Paixhan shell-gun developments in France, and the Columbiad developed in the United States by ordnance Colonel George Bomford. The 8-inch and 10-inch howitzers, or Columbiads, represented Bomford's genius.

A broad concept of United States artillery has been presented. The more detailed information which follows will be confined to the principal weapons of the war.

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14 Birkhimer, Sketch of the Artillery, pp. 282-283; Comparato, Great Guns, p. 181. Columbiads and Paixhan shells were designed for naval use. Although Scott wanted these guns in Mexico, they did not serve there. Vera Cruz, The American Eagle, April 3, 1847.
Fig. 4--Field cannon and carriage

Fig. 5--Siege cannon and carriage
Six-pounder gun: This gun served as the basic field piece of the army. A bronze, smooth-bore piece with a maximum range of 1,500 yards, the tube weighed 880 pounds and had an outside tube length of 65.6 inches. The gun rode a standard two-wheel carriage with a box trail. The mounted piece featured excellent maneuverability and a rapid fire capability.\(^\text{15}\)

Twelve-pounder howitzer: This piece served as the primary field howitzer of the army. A bronze, smooth-bore piece with a maximum range of approximately 1,000 yards, the tube weighed 785 pounds and had an outside tube length of 58.6 inches. The Howitzer rode the same standard type of carriage as its firing mate, the 6-pounder gun, and enjoyed the same mobility with a corresponding firepower.\(^\text{16}\)

Twelve-pounder field gun: This gun served as the heavyweight in the mobile field artillery. A bronze, smooth-bore weapon with a maximum range of slightly over 1,600 yards, it weighed 1,800 pounds and had a tube length of 85 inches. This heaviest field piece rode a carriage similar in appearance to those of the lighter pieces, but of heavier construction throughout.\(^\text{17}\)


\(^\text{16}\)Ordnance Manual of 1841, p. 5; Lavender, Climax at Buena Vista, p. 226.

\(^\text{17}\)Ibid.
Twenty-four pounder howitzer: The piece that served as firing mate to the 12-pounder gun, this howitzer weighed 1,320 pounds and displayed an outer tube length of 71.2 inches. It rode a carriage similar in appearance but lighter in weight than its firing mate.\(^{18}\)

Twelve-pounder, 18-pounder, and 24-pounder siege guns: These cast iron pieces weighed 3,500 pounds, 4,750 pounds, and 5,600 pounds respectively. Designed to breech fortifications, these heavy pieces followed behind the army in a siege train, and used draft oxen or mules with civilian drivers to attain their limited mobility.\(^{19}\)

Ten-inch light mortar: This squat, bucket-like cannon weighed 1,800 pounds, and for its size was light only in comparison to the non-portable heavy mortars of the seacoast service. It measured 28 inches in length and hurled an exploding shell into a high trajectory to come crashing down behind enemy fortifications. Like the siege guns, it normally moved behind the battle forces as a part of the trains.\(^{20}\)

Ammunition supply for the artillery presented a formidable problem. Bulk quantities of this very heavy item followed behind the army in the slow and unwieldy trains. On the battlefield, a caisson accompanied each cannon, and limbers pulled


\(^{19}\)Ordnance Manual of 1841, p. 4; Lavender, Climax at Buena Vista, p. 69.

Fig. 6—Caisson and limber

by six-horse teams drew both the cannon and caisson. Each limber carried one ammunition chest, and each caisson carried two such chests. Prescribed loads, or basic loads set according to the type of piece, filled the 600 pound ammunition chests. Gun crews normally walked behind the drawn equipment so as not to overwork the horses, but they mounted and rode the limbers and caissons when necessary to attain rapid movement. 21

The effective range for the smoothbore cannon remained within the limits of effective visibility for fire adjustment, and rarely exceeded 1,000 yards. 22 Under such conditions, heavy responsibilities rested on the individual gun commander.

21 Board of Artillery Officers, Instruction for Field Artillery, Horse and Foot (Baltimore, 1845), pp. 74-75.

Fig. 7—Tangent scale. At ranges too great for direct sighting along the top of the breech and muzzle, the gunner rested the bottom arc of the tangent scale on the breech ring, taking care that the proper scaled notch was centered over the tube. He then sighted from the tangent scale over the muzzle ring to the target, effectively aiming, or laying, the piece.

Fig. 8—Gunner's quadrant. The angle of elevation for mortars and howitzers was measured with a quadrant. Placing the pole portion of the quadrant in the bore of the tube parallel to the axis of the tube provided an elevation reading where the plumb line crossed the scale.
or gunner. Often in close proximity to the enemy, the gunner controlled both the crew and the piece. He aimed by sighting directly at the target through notches cut in the raised breech and muzzle rings. If the range exceeded the limitations of this method and an increased angle of elevation was required, the gunner held a tangent scale to the breech ring and sighted from the proper slot on the tangent scale, over the muzzle, and to the target. The gunner turned an elevating screw located under the breech, pivoting the tube on the trunnions and thereby changing the angle of elevation. For direction changes, members of the crew stood by the trail and shifted it right or left, as directed by the gunner.

Mortars, and often howitzers, fired at too great of an angle of elevation to use the tangent scale. The gunner then measured elevation with a gunner's quadrant, and the indirect firing techniques of a later era began to appear. Direct laying, or pointing the mortars at distant targets, proved inaccurate and often impossible. A method of placing two aiming stakes in line with the target and clearly visible from the mortar position provided a practical means of aiming. Mortars normally fired at a fixed elevation of forty-five degrees, and varying the powder charges controlled the projectile range or distance.

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23. Board of Officers, Instructions For Field Artillery, pp. 20-32 passim.
24. Kingsbury, Treatise on Artillery, pp. 118-119.
To fire their pieces, gunners chose from an impressive array of ammunition types. Solid shot, shell, spherical case shot, canister, and grape shot filled the ammunition chests. The traditional cannon ball was correctly called solid shot, and hollow iron projectiles filled with a fused powder charge were shells. Hollow balls containing powder and perhaps a load of scrap or shot became spherical case shot. Canister, a tin cylinder filled with small shot and an exploding charge, ravaged the battlefield as an anti-personnel round. The last common round and also anti-personnel in design, grape shot, was a cluster of balls bound between wooden blocks called sabots, and held together by a cloth cover. The cloth burned or ruptured while the projectile hurtled toward the target, thereby freeing the shot to spray the area.  

Ammunition issued to the firing battery came as fixed, semi-fixed, or separate loading rounds. The terms, separate loading and unfixed, were used interchangeably. A complete round issued as a single unit was fixed. Semi-fixed meant the round came assembled in major components of powder cartridge and projectile. Separate loading ammunition came in unfixed components and could be varied in both powder charge and projectile type.  

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27 Kingsbury, Treatise on Artillery, pp. 82-84.
Fixed ammunition for guns

Spherical case shot

Grape shot

Semi-fixed ammunition for howitzers

Hale's rocket

Fig. 9--Ammunition types
Another weapon of interest is a war rocket developed by the American inventor, William Hale. The ordnance board accepted Hale's rocket and assigned it to the artillery. This weapon never left the control of the Ordnance Department, however. Ordnance technicians took rockets into battle and fired them at the Siege of Vera Cruz and at the battles for Cerro Gordo and Contreras. The rockets attained fair results with "tolerable accuracy" at ranges of up to 2,200 yards. Although glamour and notoriety characterized their use, the rockets accomplished comparatively little and had slight impact on the total artillery achievements of the war.

The efforts of the often mentioned ordnance board resulted in a weapons system that was second to none. The War Department leadership which encouraged progress in material concurrently recognized that equipment can be only as good as the men who use it. As a consequence, improved training doctrine also received a high priority. In 1844, Commanding General of the Army Winfield Scott reported to Secretary of War Poinsett:

Systems of instruction for the several arms of the military service have been provided: 1. Infantry Tactics; . . . 2. Cavalry Tactics; 3. Instructions for Field and Horse Artillery, now going to press; and 4. Instructions for Heavy Artillery, which will

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29 Kingsbury, Treatise on Artillery, p. 184.
soon be ready for the press. Each system will be
found to include every modern improvement in its
branch of the science of war, and adapted to the
particular constitution of our army and militia. 30

This report foretold the issue of an outstanding training
publication that became doctrinal for the United States artil-
lery throughout the Mexican War. The publication, Instruction
for Field Artillery, Horse and Foot, prepared by a board of
artillery officers, went to the field in 1845. It incorporated
the latest methods developed by Major Samuel Ringgold for the
use of his Company G, Third Artillery, the army's most highly
mobile artillery, into a very fine older manual, an edited
version of a French manual translated by another officer of
the Third Artillery, Captain Robert Anderson. 31

Throughout the long Indian wars of the 1830's, artillery-
men fought as infantrymen, and it is not surprising that they
became "quite unacquainted with the duties of their peculiar
arm." 32 As early as 1839 Secretary Poinsett acted to correct
this deficiency. He directed the establishment of a training
center at Camp Washington, near Trenton, New Jersey, and brief
encampments held there resulted in the retraining of a maximum
number of troops. 33

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30 Senate Documents, 28th Congress, 2d Session, No. 1

31 Evolution of Field Batteries (author not given), trans-
lated by Robert Anderson (New York, 1839); Birkhimer, Sketch
of the Artillery, pp. 59-60.

32 Senate Documents, 27th Congress, 3d Session, No. 1
(Washington, 1842), p. 179.

33 Birkhimer, Sketch of the Artillery, pp. 58-59.
Secretary Poinsett also made use of a long unused Congressional authority dating from 1821, which approved one company of light artillery for each of the four artillery regiments. Poinsett and General Scott designated as light artillery, Company K of the First Artillery commanded by Captain Francis Taylor, Company A of the Second Artillery commanded by Captain James Duncan, and John M. Washington's Company B of the Fourth Artillery. The army then ordered these light companies to proceed to Camp Washington, and there to draw guns and horses. Also ordered to Camp Washington was Major Samuel Ringgold and his Company C of the Third Artillery. Ringgold's artillery had new bronze 6-pounder guns drawn the year before. Company C had a model battery and the company was acclaimed for its achievements. By definition, it was the army's only genuine horse artillery. The other light companies had fewer horses and bore the appellation of mounted artillery.

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34 Ibid., pp. 54-61 passim.
35 An artillery battery of the 1840's consisted of the cannon and accouterments of an artillery company.

"Heavy or foot artillery... takes charge of and manoeuvres the siege, sea-coast [sic] and mountain artillery. Light or field artillery... manoeuvres field pieces with troops in the field. It is divided into horse artillery and mounted batteries. In horse artillery, the cannoneers... are mounted on horses. In the mounted batteries, formerly
The horse artillery trained according to a modified English system developed by Ringgold. While at Camp Washington, the three newly designated light companies trained with Company C, and adopted the same methods. Although Camp Washington remained open for only a few months, an elite corps of light artillery emerged, and the skills and techniques learned in camp went with the companies as they reported back to their parent regiments. Following the Camp Washington experience, each of the four artillery regiments established its own school to train additional personnel on the new ordnance. Companies rotated within each regiment, different companies in turn serving with a light battery and being trained by doubling up on the guns with the regularly assigned company.38

The four light companies commanded by Ringgold, Duncan, Taylor, and Washington retained their batteries and took them to war in 1846 and 1847. Only one other unit, Braxton Bragg's Company E of the Third Artillery, received light cannon prior to hostilities. The study of artillery in the Mexican War must focus largely on these five light companies. They trained and fought by the latest doctrine. They developed the battlefield techniques. They achieved the spectacular. These companies served as artillery throughout the war.

called foot artillery, the cannoneers are on foot, and remain so... except when it is desired to move at a more rapid rate, when they are mounted on the ammunition boxes. The horse artillery... is... designed for service with the cavalry..."
CHAPTER III

TAYLOR'S ARMY OF OCCUPATION

On March 28, 1846, General Zachary Taylor's Army of Occupation established itself on the bank of the Rio Grande opposite from Matamoros. The main force consisted of the Third, Fourth, Fifth, Seventh, and Eighth Infantry regiments, Lieutenant Colonel Thomas Childs's artillery battalion, the Second Regiment of Dragoons, and three companies of light artillery.¹

The American position on the river bank offended the Mexicans, and caused fear among them of a continued advance by the invaders. Consequently the Mexicans, under the direction of General Francisco Mejia, prepared to defend themselves. Their strengthening of the town's defenses appeared warlike to the Americans, who promptly turned from simply bivouacking on the river bank to a program of also preparing defenses.

Coincidentally, at this time the new Mexican President, General Mariano Paredes y Arrillaga dispatched additional troops to Matamoros, and named General Mariano Arista to command the northern army.²

¹Philip Norbourne Barbour, Journals of the Late Brevet Major Philip Norbourne Barbour, Captain in the 3rd Regiment, United States Infantry, and His Wife Martha Isabella Hopkins Barbour, Written During the War With Mexico, 1846, edited by Rhoda Van Bibber Tanner Doubleday (New York, 1936), pp. 50-55.

Fresh Mexican troops under aggressive commanders accelerated the activities along the river. They crossed it at will and conducted a campaign of harrassment against the North Americans. A serious incident occurred on the twenty-fifth of April, when a superior force of Mexican cavalry under General Anastasio Torrejon attacked a sixty-eight man American patrol under Captain Seth Barton Thornton, and killed or captured the entire force. Major Philip Norbourne Barbour wrote prophetically "This unfortunate affair begins the war. . . ."\(^3\)

News of this incident spurred the United States Congress to recognize a state of war on May 13, 1846.\(^4\)

General Arista designed a battle plan to separate the main American force from its supply base on the coast, and thereby force the Americans to do battle on the open prairie. On the first of May, the main Mexican force crossed the Rio Grande, intending to position itself between the main American force on the river and its Point Isabel base. But finding the main American force already enroute to Point Isabel, the Mexicans turned to a siege of the river fort.\(^5\)

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\(^3\) Barbour Journals, p. 46.


\(^5\) Alcaraz, The Other Side, pp. 42-43.
Fig. 10—Fort Brown to Point Isabel
The Seventh Infantry Regiment, Company E of the Third Artillery Regiment and Company I of the Second Artillery Regiment, 550 men under the command of Major Jacob Brown, manned the earthen redoubt, hereinafter called Fort Brown in honor of its commander. Captain Braxton Bragg commanded Company E, and had a battery of two 6-pounder guns and two 12-pounder howitzers. Captain Allen Loud's Company I manned a battery of four emplaced 18-pounder siege guns.

Mexican troops opened a cannonade against the fort on the third of May. Seven Mexican 12-pounder guns, their heaviest artillery in batteries mounting a total of twenty pieces, commenced firing from ranges of from 500 to 700 yards. Loud's 18-pounders counter-fired, dismounting several enemy guns and totally destroying one with a direct hit. The 18-pounders carried the fight to the enemy. Although Bragg's light battery also fired, his smaller pieces proved ineffective against the emplacements.

The ballistical characteristics of the American guns and howitzers rendered them ineffective against mortars emplaced below the ground level. Initially one mortar, and finally

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7 Brooks, The Mexican War, pp. 112-113.

8 Alcaraz, The Other Side, sketch opposite p. 36; George Meade, The Life and Letters of George Gordon Meade, edited by George Gordon Meade, 2 vols. (New York, 1913), 1, sketch opposite p. 73, pp. 75-76.

9 Figure 3--Cannon types and trajectories.
four, shelled the fort with impunity. The troops withstood an almost constant bombardment for five days, but the Mexicans failed to exact a surrender and did not assault the fort.10

On May 7 General Arista had more pressing business than the objectionable fort. On that day General Taylor departed Point Isabel with his main force, and escorted a long train of 300 wagons. Taylor's force moved toward Fort Brown in full expectation of a fight. The march was slow, paced by plodding oxen. Seven uneventful miles from Point Isabel, the column bivouacked for the night, and another eleven miles traveled the next morning brought it to the Palo Alto waterhole and the expected confrontation.11

Arista chose to intercept the Americans on the open prairie where Mexican cavalry could maneuver. At the waterhole, the road to Fort Brown traversed a broad prairie bordered with dense mesquite chaparral. Over 6,000 Mexican soldiers extended in line for more than a mile, blocking the route. Light irregular cavalry anchored the Mexican right flank against chaparral, and a heavy force of regular cavalry anchored the left against marshy ground and more chaparral. Infantry


11 Meade Letters, pp. 77-79; Alcaraz, The Other Side, sketch opposite p. 39. Meade places Palo Alto eleven miles from Point Isabel. He obviously meant eleven miles from the bivouac.
Fig. 11—Battle of Palo Alto
 interspersed with twelve pieces of artillery formed the center.\textsuperscript{12}

General Taylor ordered a line of battle three-quarters of a mile in width and closed his large train against the rear of his formation. On this broad front, he continued his advance toward Fort Brown. Arrayed from right to left, the forces of the Fifth Infantry, Samuel Ringgold's Company C of the Third Artillery with four 6-pounder guns, the Third Infantry, two ox-drawn 18-pounder siege guns under Lieutenant William Hunter Churchill of the Third Artillery, and the Fourth Infantry comprised a right wing under the command of Brigadier General David Emanuel Twiggs. The lighter American left wing included Childs's artillery battalion serving as infantry, Captain James Duncan's Company A of the Second Artillery with four 6-pounder guns, and the Eighth Infantry, all under the command of Colonel William Goldsmith Belknap. The Second Dragoons served in general support.\textsuperscript{13}

The Americans advanced to a position just short of the effective range of the small, 4-pounder Mexican guns. Duncan's battery pushed itself far ahead of the American left, and engaged in a heavy fire fight, throwing from seven to eight rounds per minute, an outstanding achievement for muzzle

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\textsuperscript{12}George Wilkins Kendall, The War Between the United States and Mexico, Illustrated, Embracing Pictorial Drawings of all the Principal Conflicts, . . . with a Description of Each Battle (New York, 1851), p. 2.
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\textsuperscript{13}Ibid.
\end{flushright}
loaders. Ringgold's field pieces and Churchill's heavy guns fired from closer to their own infantry line.\(^\text{14}\)

General Torrejón's cavalry, supported by two field guns, made a pass at the American right flank, but the Fifth Infantry formed a solid square and rebuffed them with disciplined musketry. The cavalry reformed and tried again, this time being met by canister and grape shot from two of Ringgold's guns - displaced to the flank and commanded by Lieutenant Randolph Ridgely. Churchill's far-reaching heavy guns also joined in the action, and Torrejón's battered column withdrew to the rear.\(^\text{15}\)

The Mexican attempt at the American flank took troops from the Mexican line. When Ridgely's battery repelled the attack, the Mexican flank stood exposed. Ringgold galloped his remaining section of two guns through a screen of smoke and into position to infilade the Mexican line, forcing the line to shift to the rear.\(^\text{16}\) A fierce fight developed as


\(^{15}\) Kendall, The Mexican War, p. 2.

\(^{16}\) Barbour Journals, p. 55.
the Mexicans attempted to oust Ringgold. Duncan's guns grew quiet on the far flank as smoke from a prairie fire denied his gunners suitable targets. Rather than remain idle, he hitched his teams and rode toward the American right flank to join Ringgold's hard-pressed battery.17

As Duncan moved, Mexican cavalry also moved. By an accident of war, Duncan's artillery was limbered and moving when Duncan sighted Mexican cavalry riding through the smoke to get around the hitherto undisturbed American left flank. Taylor's lightly guarded supply train stood exposed, and the light artillery had a rare opportunity to demonstrate its worth. Company A wheeled about and rode through the smoke ahead of the cavalry.18

Scarcely had he [Duncan] cleared the burning prairie, and unlimbered two of his guns, before the Mexicans were close upon him, a crushing storm of canister and shrapnel... carried away the entire head of their formation, being almost the first evidence they [Mexican cavalry] had of his vicinity... a few moments before they had seen these guns flying in the opposite direction, and now, they were in their front, and dealing death and destruction...19

Duncan's first two guns contained the regular Mexican cavalry. His second section went into action against infantry and irregular cavalry. The concerted fire from the full battery not only contained the attack, but sent the attackers scurrying into the protective thicket.20

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17 Brooks, The Mexican War, p. 130.
18 Kendall, The Mexican War, p. 3.
19 Ibid.
Duncan's battery dominated the Mexicans' right flank as Ringgold's battery dominated their left flank. The shattered Mexican line dropped back, and "when darkness finally fell... the field was in... possession of General Taylor's victorious troops." The Battle of Palo Alto was an artillery duel in which cavalry and infantry primarily supported the dominating artillery. The light guns of Ringgold and Duncan countered every move of the enemy and drove him from the field. This victory was attained by a force outnumbered three to one, and fighting on a field of the enemy's choosing.

At daylight on the ninth of May, the American troops found the field deserted by the enemy. The American commander knew that the enemy was before him, so he dropped his cumbersome train and a small security force at Falo Alto, refurbished his command, then continued toward Fort Brown. He again encountered the enemy, this time in a very heavy thicket cut in two places by resacas, or old river beds.

21 Kendall, The Mexican War, p. 3.
23 It is of historical interest, though irrelevant to this study, that the principal action of the Battle of Resaca de la Palma occurred at Resaca de Guerrero, approximately 1,000 yards from Resaca de la Palma. Alcaraz wrote "It is generally believed that La Resaca de Guerrero and la de la Palma [sic] are the same... the first is where our troops encamped and gave battle, and the second is... where... the Americans were detained." Meade wrote that the fight was "within two miles of the river." Eaton's battlefield sketch and an 1867 "Map of the Espiritu Santo Land Grant" confirm that the Mexican's main battle position was at the Resaca de Guerrero. Alcaraz, The Other Side, p. 50n; Meade Letters, I, 81; Joseph Horace Eaton, "Sketch of the Battle Ground at
Fig. 12—Battle of Resaca de la Palma
Arista selected a battleground that limited the fire and maneuver of the American light artillery, and Taylor ordered a heavy infantry assault. The battery of Company C, now commanded by Ridgely, moved with the infantry.

Ridgely's artillery moved to within 300 yards of the enemy position, but even then could employ only two guns and engage only one Mexican battery. The impenetrable thicket would not permit maneuver or dispersion, and Duncan's battery, following Ridgely forward, could not fire at all. American infantry carried the day at the Resaca de la Palma. It might be said that the artillery contributed heavily to the victory in a negative manner. If Arista selected the thicket for a battleground to deny the American Artillery, he succeeded, but in doing so he also denied himself the use of his vaunted cavalry. Mexican arms suffered a crippling defeat at the Resaca de la Palma. This defeat signaled the collapse of resistance along the Rio Grande, and set the next scene for combat at Monterey, 250 miles to the south.


Barbour Journals, pp. 58-61; Kendall, The Mexican War, p. 3.

Kendall, The Mexican War, p. 4.
The Army of Occupation spread itself along the Rio Grande that summer, reaching inland as far as Iier. Additional troops expanded the force to a respectable size of approximately 9,000 men, but the army was logistically weak and could not march further without first assembling supplies and transportation. Nonetheless, 7,000 soldiers stood before Monterey on the nineteenth of September. The force was overwhelmingly infantry, strengthened by the three field batteries of Duncan, Bragg, and Ridgely, plus Company K of the First Artillery under Lieutenant William Whann Mackall, and a heavy battery under Captain Lucian Bonaparte Webster of Company A, First Artillery.

Heavy artillery was noticeably absent. Webster's Company A manned a battery of one 10-inch mortar and two 24-pounder howitzers. Ten 18-pounder guns of the type that had served so well at Fort Brown and at Palo Alto remained on the Rio Grande. Transporting the cumbersome giants, each tube alone weighing 4,700 pounds, appeared to General Taylor as an insurmountable logistical problem.

As the army grew its span of control exceeded the command capabilities of one man, and Taylor organized the force into three divisions commanded by Brigadier General David Emanuel Twiggs, Brigadier General William Jenkins Worth, and

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the senior volunteer officer, Major General William Orlando Butler. Bragg's and Ridgely's companies marched with Twiggs's First Division while Duncan's and Mackall's companies marched with Worth's Second Division. Butler's Third Division, comprised entirely of volunteers, did not have assigned artillery.\textsuperscript{29}

The Mexican army of the North, soundly beaten on the Rio Grande, regrouped at Monterey. General Fedro de Ampudia replaced General Arista as commander, and the lack of pursuit by the Americans allowed the Mexicans to assemble additional troops and fortify the city. Over 7,000 Mexican regulars augmented by 3,000 irregulars awaited the Americans. On the morning of the nineteenth of September, the American commander preceded his army and rode to within 1,500 yards of Monterey. His presence drew cannon fire, and the battle for Monterey commenced.\textsuperscript{30}

General Worth's Second Division initiated the action, bypassing the city to the north and cutting the Saltillo Road in the west. Worth found that to control the city from that side, he must first control the heights, Independence Hill and Federation Hill. On the twenty-first his troops stormed and took the latter of the two, and on the following day they subdued Independence Hill and its strong redoubt, the Bishop's

\textsuperscript{29}Brooks, The Mexican War, pp. 165-166.

\textsuperscript{30}New Orleans, The Daily Picayune, October 4, 1846.
Fig. 13--Battle of Monterey

1 American camp
2 Webster's battery
3 Black Fort
4 Independence Hill
5 Bishop's Palace
6 Federation Hill
7 Cemetery
8 Plaza and cathedral
9 La Teneria redoubt
10 El Diablo redoubt

Mex. final position
High ground
Palace. Duncan's and Mackall's guns maneuvered and fired throughout these actions, but the little guns were mostly overmatched by larger guns from the heights. Infantry carried the objectives, and the dominant artillery was Mexican.31

To support the final assault on Independence Hill, artillerymen drug one of Duncan's 785 pound howitzer tubes up the face of the mountain and fired it point blank at the enemy. Infantrymen and Childs's artillerymen wrested the slopes from Mexican control, and as they advanced, the batteries of light companies A and K pressed forward along the valley floor and spewed a murderous fire on the fleeing defenders.32

Worth's attacks in the west made excellent use of his total force. He entered the city on the twenty-third of September, supported from the heights by captured artillery while the light batteries moved into the built-up areas with the foot troops. The light guns, served with discretion, advanced in such a manner as to avoid unnecessary exposure. That afternoon, Webster's 10-inch mortar displaced to Worth's zone of advance and, firing from a cemetery within the city, placed a deadly and close fire upon the contracting enemy force.33

All did not go well for the American army. On September 21 the main force, under the direct control of General Taylor,

31 Kendall, The Mexican War, p. 7; Picayune, Oct. 4, 1846.
32 Kendall, The Mexican War, p. 8; Meade Letters, I, 136.
33 Kendall, The Mexican War, p. 9.
assailed the more heavily fortified northeast. Under the protective fires of Webster's battery, elements of General Twiggs's First Division, commanded by Lieutenant Colonel John Garland, attacked the northeast corner of the town.\textsuperscript{34} Fassing under the guns of the Black Fort, the First and Third Infantry regiments\textsuperscript{35} assaulted strong enemy redoubts and engaged in heavy combat. An attack intended to be a mere diversion for Worth's activities in the west became a major conflict. The infantry gained a foothold, or more aptly a toehold, within the city, and Bragg's Company E charged forward to give support. The company ran past the guns of the Black Fort on the town's outskirts, and Mexican wrath spent itself on both men and horses. Within the town the unit suffered further, because while infantrymen took shelter in buildings, the battery could not leave the streets. Sharpshooters from barricades and rooftops picked at the exposed crews, and even when unlimbered and firing, the light pieces proved inadequate for street fighting. The batteries "brisk but ineffectual" fire accomplished little against heavy masonry redoubts.\textsuperscript{36}

Taylor ordered Company C and Brigadier General John Anthony Quitman's brigade of Butler's Third Division into the

\textsuperscript{34} General Twiggs was ill. Justin Harvey Smith, \textit{The War With Mexico}, 2 vols. (New York, 1919), I, 250.


\textsuperscript{36} Meade \textit{Letters}, I, 134-35; Kendall, \textit{The Mexican War}, p. 7.
city to help his hard-pressed First Division. The two divisions finally secured a meaningful lodgement, but Ridgely like Bragg before him, found his guns too light for the task. Unlike Bragg, Ridgely turned his crews to firing heavier captured pieces from protected emplacements. Though less sensational, Ridgely apparently achieved better results.37

The American attack continued from both east and west through the twenty-third of September. The Mexicans withdrew into a small part of the city near the main plaza, and Webster's single mortar, now in the west, played death and destruction upon them. Under the increasingly heavy attack, but with his army still intact, General Ampudia sought terms with the Americans. Fighting ceased on the twenty-fourth and an armistice agreement permitted the Mexican army to withdraw under arms as the city passed to American control.38

Taylor's army suffered heavily in the Battle of Monterey, and an armistice proviso forbidding close pursuit of the enemy had little meaning. The Americans needed time to husband their strength, and two months passed before General Worth's division occupied Saltillo.39

At this point in the war, and partly in response to the slow American advance, President James Knox Folk directed the

39Brooks, The Mexican War, pp. 189-198 passim.
Commanding General of the Army, Winfield Scott, to launch an attack at the heart of Mexico, siezing Vera Cruz and following Cortez's ancient route to Mexico City. Time considered to be of the essence and fresh troops not available, Scott called for the veterans of the Army of Occupation, and ordered Taylor to assume a defensive mission. Taylor's army, spread from the Rio Grande to south of Saltillo, was reduced to approximately 5,400 men, only 500 of whom were regulars. Of the volunteers, only Jefferson Davis's Mississippi Rifles had fought at Monterey or along the Rio Grande.

Taylor's force lost to Scott's army the artillery of Duncan's Company A and Mackall's Company K, retained Companies C and E of the Third Artillery, and gained one light company under Captain John Macrae Washington. This latter unit, Company B of the Fourth Artillery, was overstrength in field pieces with a battery comprised of two 12-pounder howitzers, four 6-pounder guns and two 4-pounder Mexican guns. Two 24-pounder howitzers assigned to Webster's Company A of the First Artillery provided the only heavy firepower.

The situation also changed for the Mexican army after the Battle of Monterey. General José Mariano Salas ousted

40 James Knox Polk, The Diary of James K. Polk During His Presidency, 1845 to 1849, edited by Milo Milton Quaife, 4 vols. (Chicago, 1910), pp. 244-245.

41 House Executive Documents, 30th Congress, 1st Session, No. 8, p. 47.

42 Kendall, The Mexican War, pp. 11-12.
Faredes as President, and the new government called General Antonio Lopez de Santa Anna home from exile to give battle to the Americans.\textsuperscript{43} Santa Anna assembled 7,000 regular troops and 15,000 irregular troops at San Luis, Potosi, south of Saltillo. In February of 1847 he marched this army north to engage the Americans.\textsuperscript{44}

The American army, defensively positioned in a mountain pass approximately five miles south of Saltillo, confronted the advancing Mexicans on the twenty-second of February. The village of Buena Vista obstructed the head of the pass, above a place called \textit{La Agostura}, or the narrows.\textsuperscript{45}

This position had been thoroughly examined ... with an eye to its advantages as a battle ground. The pass in the mountains was here so narrow that with his inferior force the American commander could present a strong front, while the space was so cut up by barrancas or deep gullies, ..., that an abundance of cover for his new and untried men was offered against either ... the fire of artillery or a sweeping charge of cavalry. And in addition to the ravines, a succession of ... spurs ..., protected the flanks from turning movements.\textsuperscript{46}


\textsuperscript{44}The reported strength of Santa Anna's army varies from 14,000 to 24,000 men. This study accepts 18,000 as the total number of soldiers that marched on Buena Vista. Alcaraz, \textit{The Other Side}, pp. 98, 120; Kendall, \textit{The Mexican War}, p. 11; Lavender, \textit{Climax at Buena Vista}, p. 164; Santa Anna, \textit{The Eagle}, p. 91.

\textsuperscript{45}Kendall, \textit{The Mexican War}, p. 11.

\textsuperscript{46}Ibid.
Fig. 14--Battle of Buena Vista
Brigadier General John Ellis Wool organized the defense for General Taylor. He blocked the narrows with the First Illinois Infantry and Washington's artillery. Three additional regiments of volunteer infantry occupied a plateau east of the road, and the remaining forces waited in reserve. In mid-afternoon of the twenty-second the Mexicans appeared on the road from San Luis, and finding the road blocked, they tried the American left flank. Captain John Paul Jones O'Brien, with a battery of three pieces from Washington's oversized company, supported the infantry on the flank and stopped the Mexicans. Enemy probes continued throughout the hours of daylight, but without significant action.\footnote{Frost, The War and Its Warriors, pp. 105-109; House Exec. Docs., 30th Cong., 1st Sess., No. 8, pp. 146-147; George H. Thomas to Jefferson Davis, August 1, 1858, Daughters of the Republic of Texas Library, The Alamo, San Antonio, Texas.}

February 23, 1847, was a day of battle from first morning twilight until final darkness. Although the American line extended between the mountains and slightly up the eastern slope, daylight revealed General Pedro de Ampudia's light infantry far up the slope, above the Americans and slowly but inexorably flanking their position. O'Brien's battery, still on the left flank, included one 12-pounder howitzer, one 6-pounder gun and one 4-pounder gun. He displaced the howitzer, his best piece for the mission, and fired spherical case shot up the mountain, but the 12-pounder did little damage at the extreme range. In consequence, dismounted Arkansas and Missouri
cavalry climbed to meet the Mexican force, in this, the first of Santa Anna's three thrusts.\textsuperscript{48}

The second thrust also involved O'Brien's battery. A force of infantry and cavalry attacked along the base of the eastern mountains and penetrated a gap in the American line. Six thousand Mexican troops, led by Generals Francisco Pacheco and Manuel Lombardini hit O'Brien's artillery and the flank of the Second Indiana Regiment. The infantry broke and fled to the rear, leaving O'Brien's three cannon to buy the time needed for the Second Illinois and two 6-pounder guns from Captain Thomas West Sherman's Company E to brace for the onslaught.\textsuperscript{49} O'Brien's cannoneers gave ground only at the last moment, after sustaining heavy casualties and loosing the 4-pounder to the enemy. The Americans contained the attack but other troops poured to the rear through a gap at the base of the mountains.\textsuperscript{50}

All fighting occurred on the American left or center. Bragg's main battery of two guns initially covered the American extreme right,\textsuperscript{51} and from the mountain slope Bragg witnessed


\textsuperscript{49}Ridgely died in Monterey, victim of a riding accident. As a result of Ridgely's death, Bragg assumed command of Company C, Third Artillery, and Captain Thomas West Sherman took command of Bragg's old company, E of the Third Artillery. Edward Jay Nichols, Zach Taylor's Little Army (Garden City, 1963), pp. 175-76.

\textsuperscript{50}Linnard, "Battle of Buena Vista"; Kendall, The Mexican War, p. 12.

\textsuperscript{51}Of Bragg's four guns, one was in Saltillo under Lieutenant William H. Shover, one under Lieutenant Charles Lawrence
the heavy battle on the main plateau. Braxton Bragg rode toward the sound of the guns, and Sherman in reserve with one gun and one howitzer, followed his former chief into the fight. The "well-handled artillery poured a constant storm of metal into the Mexican front... at a range so close that every shot told,"\textsuperscript{52} and the plateau remained in American hands.

General Torrejon's cavalry clung against the mountain and penetrated to the American rear. General Ampudia's light infantry came down off of the mountain, also in the American rear, and moved against Buena Vista. The Mississippi Rifles challenged Ampudia's advance, and disciplined rifle fire drove the attackers back to the mountain. Torrejon's mounted troops maneuvered beyond the Mississippians and charged the village, opposed by only a small force of Arkansas and Missouri cavalry. The Mexicans overran the volunteers, and a force of 1,500 lancers reached Buena Vista. The few soldiers and civilian teamsters with the American train rallied to defend the village. They cut the Mexican column with heavy musketry, sending half of the attackers back to the mountains from whence they came while the head of the column under Torrejon raced through the village and into the mountains on the other side.

\textsuperscript{52}Kendall, \textit{The Mexican War}, p. 13.
guns arrived in time to pursue Torrejon's force to the mountains. 53

Fierce fighting continued in the rear as Ampudia launched a new and greater attack against the Mississippi Rifles, which stood before Buena Vista reinforced by the Third Indiana Regiment and one 6-pounder gun under Lieutenant Charles Lawrence Kilburn. Four thousand troops advanced on 1,000 Americans. A terrible fight ensued in which Mississippi rifle fire, Indiana musketry, and shot from Kilburn's gun checked the enemy. During the height of the contest, Bragg arrived without orders and put his two guns in action. Sherman joined with one howitzer and a gun under Lieutenant John Fulton Reynolds, bringing the fire of five cannon onto the Mexicans, who recoiled back to the mountain, and then on to the south, seeking their original positions. The battle in the north was carried

53 Various accounts place too many guns in action at this time. Lieutenant John Fulton Reynolds of Company E joined the dragoons in pursuit of Torrejon, and is credited with a two-gun battery. At the same time, Lieutenant Charles Lawrence Kilburn of Company C, according to some sources, was with the Mississippian. This could not have been. Of Company C's four guns, one was in Saltillo, one was in the rear with Kilburn, and two were with Bragg. Company E had two guns and two howitzers. Lieutenant George Henry Thomas had one howitzer, and Lieutenant Samuel Gibbs French had one gun on the plateau. Sherman kept one howitzer with him, also on the plateau at the time. Therefore, Reynolds had only one gun. The Mississippian withstood Ampudia's first assault without artillery, therefore the second gun that joined Lieutenant Colonel Charles May belonged to Company C and was commanded by Kilburn. Frost, The War and Its Warriors, p. 119; Brooks, The Mexican War, p. 219; Kendall, The Mexican War, p. 13; Lavender, Climax at Buena Vista, p. 202; Complete History of the Late Mexican War, Containing an Authentic Account of all the Battles... (New York, 1850), p. 59.
by the tenacity and cool fire of the Mississippi and Indiana regiments, and by the devastating fire of the light artillery.\textsuperscript{54}

In mid-afternoon during a lull on the plateau, General Wool ordered the Second Kentucky and Second Illinois regiments to adjust their line forward to the edge of a ravine. At the ravine, they accosted virtually the entire Mexican army, as 12,000 soldiers attacked out of the depression.\textsuperscript{55} Enemy troops burst forth upon the plateau, and Lieutenant O'Brien, this time with one 12-pounder and two 6-pounders, faced them once more at close range. His infantry support, the Kentuckians and Illinoisans, was trapped in a ravine and fought for its very existence. As earlier in the day, O'Brien showered shot and shell to his front and would not give ground.

Two miles to the rear, Bragg and Sherman prodded jaded horses forward in an effort to reach the plateau. The Mississippi and Indiana infantrymen ran forward, stumbling over and through the deep ravines. Bragg's battery, grown to three guns with the inclusion of Kilburn's piece, unlimbered and opened fire as O'Brien's crews faced a bayonet charge. O'Brien ordered his men to the rear and abandoned his two guns. Sherman's battery joined the fray, and again the guns stayed the enemy assault. Washington, still on the road block, maneuvered his battery to fire into the hostile flank, and victory was assured as the Mississippi and Indiana infantry cleared the last

\textsuperscript{54} House Exec. Docs., 30th Cong., 1st Sess., No. 3, p. 201.

\textsuperscript{55} Kendall, The Mexican War, p. 15.
ravine and opened fire on the other flank. The assault crumpled, and the enemy withdrew.\textsuperscript{56}

Sporadic artillery fire continued until dark, but the field once again belonged to the Americans. The day did not provide a clear victor, but the Americans still held the pass, still comprised a formidable army, and continued to occupy Mexican soil. Santa Anna also had a formidable army and claimed a victory. Yet he withdrew his army to the south. His reasons may have been as uncomplicated as he stated them: "... revolution in the capital! The government ordered our troops back. . . . The Minister of War was adamant; the army must return."\textsuperscript{57}

Following the Battle of Buena Vista, General Taylor complied with the wishes of General Scott and the President, placing his army in a defensive posture. General Scott's attack against the heartland of Mexico demanded the remaining Mexican strength, and the war was over in the north. Taylor's Army of Occupation, to include the three companies of light artillery, had staged its last fight.\textsuperscript{58}

\textsuperscript{56}Linnard, "Battle of Buena Vista"; Kendall, The Mexican War, pp. 15-16.

\textsuperscript{57}Santa Anna, The Eagle, p. 93.

\textsuperscript{58}Brooks, The Mexican War, p. 223; Nichols, Taylor's Little Army, pp. 229-40 passim.
CHAPTER IV

THE HEARTLAND

Major General Winfield Scott, the Commanding General of the United States Army, planned a military penetration into the heartland of Mexico. In December of 1846, under a mandate from President James Knox Polk, Scott assembled the veterans of Zachary Taylor's army as his main battle force. On March 9, 1847, an army of 12,000 men went ashore in an unopposed assault landing three miles from Vera Cruz. Within four days the force invested Vera Cruz and its guardian fortress, San Juan de Ulua.¹

Three divisions and an independent command of dragoons comprised the invading army. Brigadier General David Emanuel Twiggs's Second Division occupied the left flank, Major General William Jenkins Worth's First Division held the opposite flank and the beachhead, and Major General Robert Patterson's Third Division manned the center. Scott's battle plan called for an attack by siege and bombardment. Engineers prepared batteries to seat heavy artillery in expectation of its

Siege battery
--- Line of investment
+++ Railroad
== Road
— Aqueduct
A Scott's headquarters
B First Division
C Second Division
D Third Division

Battery 1
4x10-inch mortars
Battery 2
3x10-inch mortars
Battery 3
3x10-inch mortars
Battery 4
4x24-pounder guns
2x8-inch howitzers
Battery 5
3x32-pounder guns
3x98-pounder howitzers

Fig. 15--Siege of Vera Cruz
arrival from the United States, but only a small part of the requested ordnance arrived.²

On March 22, with seven 10-inch mortars in battery, the Americans opened fire. By the twenty-fourth, the siege batteries included ten 10-inch mortars, four 24-pounder siege guns and two 8-inch siege howitzers. Still the city fought back, and for lack of heavier siege cannon, the fortress Ulua went virtually unscathed.³ Commodore Matthew C. Perry of the off-shore naval squadron altered the situation by providing three 32-pounder naval guns and three 68-pounder shell guns, or howitzers, to assist the land forces. Surrepticiously emplaced on a high sand ridge overlooking the city, the heavy naval battery joined in the shelling on the twenty-fourth.⁴ As the naval and army guns hurled solid shot against the walls and buildings, the large howitzers of both services accurately placed bursting shells within the walls. The less accurate mortars killed without discrimination, impacting with little pattern.⁵


⁴Picayune, April 4, 1847.

⁵Ibid.
TABLE I

ORGANIZATION OF SCOTT'S ARMY, MARCH 1847*

Dragoon Brigade--Colonel William Selby Harney

First Division--Major General William Jenkins Worth
    Second Artillery Regiment (light infantry)
    Third Artillery Regiment (light infantry)
    Fourth Infantry Regiment
    Fifth Infantry Regiment
    Sixth Infantry Regiment
    Eighty Infantry Regiment
    Marine detachment
    Louisiana Volunteers (1 company)
    Company A, Second Artillery--Lt. Col. James Duncan
    Howitzer and Rocket Company--Major George Henry Talcott

Second Division--Brigadier General David Emanuel Twiggs
    First Artillery Regiment (light infantry)
    Fourth Artillery Regiment (light infantry)
    First Infantry Regiment
    Second Infantry Regiment
    Seventh Infantry Regiment
    Mounted Infantry Regiment (without horses)
    Company K, First Artillery--Captain Francis Taylor**

Third Division--Major General Robert Patterson
    First Tennessee Volunteers
    Second Tennessee Volunteers
    First Pennsylvania Volunteers
    Second Pennsylvania Volunteers
    Third Illinois Volunteers
    Fourth Illinois Volunteers
    Alabama Volunteers
    Georgia Volunteers
    New York Volunteers
    Field Battery, Third Artillery--Captain Edward J. Steptoe***

*Edward La Lafayette Hardcastle, "Siege of Vera Cruz by the U. S. Troops Under Major General Scott in March 1847," unpublished map, National Archives, Washington, D. C.

**The same company commanded by Lieutenant William Whann Mackall in General Zachary Taylor's Army of Occupation.

***Briefly commanded by Captain William Wall. Formed from the Third Artillery Regiment, no letter designation was given the command.
Fire fell on the city from all batteries until March 26, on which date the city and fortress capitulated after receiving 6,700 American rounds. On the twenty-ninth the Mexican garrison of 4,000 men marched out of the city, surrendered their arms, and continued into the interior. The fall of Vera Cruz was a victory for the artillery heavy siege batteries, which were manned by crews drawn from the artillery regiments serving as light infantry. The field batteries served as support to the infantry divisions on the line of investment. Their role deserves scrutiny.

On the first day ashore Major George Henry Talcott's Howitzer and Rocket Company, an artillery unit manned by ordnance personnel, fired on a threatening force of cavalry. The howitzers were effective, but the strange new rockets reportedly "stampeded" the Mexicans. The second day ashore, as the investment began, several hundred cavalrymen confronted Worth's marching column. Fire from one of Talcott's little howitzers again scattered the enemy.

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7 McClellan Diary, p. 72.

8 Picayune, March 25, 1847.
Captain Francis Taylor's Company K of the First Artillery and Captain Edward Jenner Steptoe's battery landed on the eleventh of March, followed several days later by Lieutenant Colonel James Duncan's Company A of the Second Artillery. Taylor's 6-pounder guns destroyed an enemy powder magazine near the city and helped to secure the Second Division area. On March 25, Lieutenant Henry Bethel Judd employed Steptoe's two 12-pounder guns in support of a dragoon patrol, and his effective fire forced the Mexicans to abandon their position. Duncan's artillery arrived late and lost many horses at sea. It only performed picket duty at the Vera Cruz beachhead.9

Vera Cruz suffered between 400 and 500 civilian casualties, with that number again in military dead. The American troops, entrenched outside of the city, had nineteen killed out of 100 total casualties.10 One artilleryman of considerable renown, Captain Robert Anderson of Company G, Third Artillery, served on the mortars in the trenches near the

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city. He took professional pride in the victory "effected principally by artillery . . . in which not a musket has been fired against the city."^\textsuperscript{12}

The city passed into American hands on March 29, and with the ravages of yellow fever expected daily, Scott hastened to move his army toward the more healthful interior. The march on Mexico City, 260 miles away, began on April 8, 1847. Twiggs's Second Division set the pace, followed the next day by Patterson's Third Division, and several days later by Worth's First Division.\textsuperscript{13} As the advance element of the marching army crossed a deep gorge formed by the Rio del Plano and began the ascent toward the heights of Cerro

\textsuperscript{11}Anderson prepared the artillery manual of instruction in use by the army from 1839 through 1845, and most of the manual adopted in 1845 was taken from Anderson's earlier work. Anderson gained later renown as the commanding officer of Fort Sumter during its defense in 1861. Evolution of Field Batteries (author not given), translated by Robert Anderson (New York, 1839); Board of Artillery Officers, Instruction for Field Artillery, Horse and Foot (Baltimore, 1845); Henry, Story of the Mexican War, p. 354.

\textsuperscript{12}Anderson, Artillery Officer, p. 100.

\textsuperscript{13}Scott Memoirs, II, 430-431.
Gordo, it drew artillery fire. The marching men recoiled to safety near the gorge as the war's next battle developed.  

Reconnaissance revealed the Mexican left flank vulnerable to attack from a trail skirting north of the position. Engineers covertly improved the route, while the Third Division girded for a diversionary frontal attack supporting a main effort by the Second Division. Twiggs's force included his First and Second Brigades led by Brigadier General Persifor Frazer Smith and Colonel Bennet Riley, and his normal artillery support from Taylor's four 6-pounder guns. The Second Division received further strength by the attachment of Brigadier General James Shields's brigade from Patterson's Third Division. The bulk of the army's artillery also moved onto the Mexican flank.  

The Second Division, led by Twiggs, advanced on the afternoon of April 17. A fire fight developed along the trail, and the First Brigade, commanded by Colonel William Selby Harney in the absence of General Persifor Smith, siezed Atalaya, a dominant hill, and thereby secured the trail through the mountains and gained an advantageous position for artillery batteries. That night hundreds of men drug heavy artillery up the steep slopes. The morning of the eighteenth fire from


Fig. 17—Battle of Cerro Gordo
one 24-pounder siege gun, two 24-pounder howitzers, and Talcott's mountain howitzers and rockets opened against the heights of Cerro Gordo.  

Harney's brigade stormed Cerro Gordo frontally under an umbrella of protective artillery fire. Riley's brigade swung wide and attacked the same heights from further north as Shields's brigade turned the entire position and attempted to cut the Jalapa road. Worth's First Division followed behind, being prepared to take up the attack or to pursue the enemy.

American artillery fire from Atalaya drove the defenders of Cerro Gordo to cover, thereby greatly reducing the fire against Harney's and Riley's assaulting troops. As Shields's force moved on the Jalapa road, it encountered the Mexican reserve force and was greatly outnumbered. Shields routed the Mexicans, but only after they came under attack from Riley's brigade, which turned to help Shields as Cerro Gordo fell. In the east Patterson's Third Division also succeeded, but only after Cerro Gordo fell and the defenders knew themselves to be cut off from the rear. The key to the battle

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16To appreciate the achievement of manhandling the cannon up the mountain, their weights should be known. Tube weight of the 24-pounder was 5,600 pounds, the 8-inch howitzer weighed 2,650 pounds, the 24-pounder field howitzers weighed 1,320 pounds each, and the little mountain howitzers, designed for such service, weighed only 220 pounds each. Ordnance Manual for the Use of the Officers of the United States Army (Washington, 1841), pp. 4-5; House Exec. Docs., 30th Cong., 1st Sess., No. 8, p. 275.

17Jalapa, American Star, April 25, 1847.
was Cerro Gordo, and Harney's infantry siezed it with the invaluable assistance of heavy artillery support. 18

An evaluation of other artillery units in this first great test of American arms in the south is relevant. One 8-inch howitzer, under Lieutenant Roswell Sabine Ripley of the Second Artillery, fired from the south bank of the river in general support, primarily benefitting Patterson's frontal effort. Light Companies A and K, Duncan and Taylor's artillery, remained with their assigned divisions but found the guns unable to stay with the column over the crude trail. Their contribution to the battle was negative, as they blocked the trail and made it impassable for even the mule borne mountain howitzers. Two of the little cannon under Lieutenant Franklin Dyer Callender and Lieutenant George Henry Gordon were thus denied the role for which they were especially suited. 19

More encouraging, two one-gun sections of Company K, under Lieutenants James Green Martin and Joseph Finley Irons broke loose from the congested column when the enemy routed, and chased the Mexicans for twelve miles until forced to halt by darkness and fear of capture. One of the heavier field pieces, a 12-pounder gun from Steptoe's artillery and


commanded by Captain William Wall, also joined in the pursuit. These three mobile field pieces moved along the road and fired at targets of opportunity.\textsuperscript{20}

On the morning of April 19, Worth's First Division, not blooded in the battle, followed the retreating Mexicans. The legion marched uncontested through Jalapa and to the castle at Perote, while the balance of the army disentangled itself from the terrain at Cero Gordo.\textsuperscript{21} The advance continued to Puebla on May 15, and that city meekly accepted the invaders as they entered town in parade formation. Dragoons led, followed by Duncan's light artillery and a siege train. Six siege guns, 24-pounder giants, trundled the streets, followed by two 8-inch howitzers and one ugly 10-inch mortar. Five regiments of infantry interspersed the column and 200 wagons followed with the division's life support.

The army lost 4,000 short term volunteers that summer of 1847, and dared not move further until supplies and fresh troops arrived. It was August before the advance continued and by that time Scott had a marching force of 9,000 men re-organized as four divisions.

\textbf{TABLE II}

\textbf{ORGANIZATION OF SCOTT'S ARMY, AUGUST 1847}\textsuperscript{a}

Dragoon Brigade--Colonel William Selby Harney


\textsuperscript{21}Brooks, \textit{The Mexican War}, p. 339.
First Division—Major General William Jenkins Worth
First Brigade—Colonel John Garland
  Second Artillery Regiment (light infantry)
  Third Artillery Regiment (light infantry)
  Fourth Infantry Regiment
  Company A, Second Artillery Lt. Col. James Duncan
Second Brigade—Colonel Newman S. Clarke
  Fifth Infantry Regiment
  Sixth Infantry Regiment
  Eighth Infantry Regiment

Second Division—Brigadier General David Emanuel Twiggs
First Brigade—Brigadier General Persifor Frazer Smith
  Mounted Rifle Regiment (without horses)
  First Artillery Regiment (light infantry)
  Third Infantry Regiment
  Company K, First Artillery Capt. Francis Taylor
Second Brigade—Colonel Bennet Riley
  Fourth Artillery Regiment (light infantry)
  Second Infantry Regiment
  Seventh Infantry Regiment

Third Division—Major General Gideon Johnson Pillow
First Brigade—Brigadier General Franklin Pierce
  Ninth Infantry Regiment
  Twelfth Infantry Regiment
  Fifteenth Infantry Regiment
  Company I, First Artillery—Capt. John Magruder
Second Brigade—Brigadier General George Cadwalader
  Eleventh Infantry
  Fourteenth Infantry
  Voltigeurs (without horses)
  Howitzer and Rocket Company—Lt. Franklin Callender

Fourth Division—Brigadier General John Anthony Quitman
First Brigade—Brigadier General James Shields
  New York Volunteers
  South Carolina Volunteers
  Marine Corps detachment
  Field Battery, Third Artillery—Capt. Edward Steptoe
Second Brigade—Colonel Benjamin Stone Roberts
  Second Pennsylvania Volunteers


Generals Patterson and Pillow left Mexico with the discharged volunteers after the Battle of Cerro Gordo. Pillow helped raise a new division, and led the new troops to Mexico.

The same Franklin Pierce who became the fourteenth President of the United States.
Magruder captured a battery of guns at Cerro Gordo. Scott rewarded him with the command of a new battery.

The Voltigeurs, otherwise the Tenth Infantry, was a rifle regiment authorized a company of mountain howitzers and one horse for each two men. The unit mounted double for rapid movement. In Mexico, the unit did not receive its mounts and the attachment of the Howitzer and Rocket Company provided the fire support.

The National Road from Vera Cruz to Mexico City approached the capital from the east, passing beneath the dominant heights of El Fenon and between lakes Chalco and Texcoco. Scott elected to avoid the main approach and strike the city from the south. His column passed south of Lake Chalco toward San Antonio, where the first Division encountered a strong enemy defense. Probing further, the main army continued west toward Contreras.

As General Gideon Johnson Pillow's Third Division hacked a small road through lava beds to accommodate the accompanying artillery, the working parties came under fire. Lieutenant Callender's mountain howitzers moved into the lava beds to return fire against enemy emplacements on Contreras. Captain John Bankhead Magruder and his Company I, First Artillery, with a newly acquired battery of two 12-pounder guns and one small howitzer, also took up the fire. After sustaining

22 Alcaraz, The Other Side, p. 227; Scott Memoirs, II, 452-465 passim.

23 Major George Talcott transferred from the Howitzer and Rocket Company to the Voltigeur Regiment. Lieutenant Franklin Dyer Callender assumed command of the company. John Bankhead Magruder's Company I, First Artillery, received a battery of field pieces and was designated light artillery.
Fig. 18—Battle of Contreras

A Magruder's battery
B Callender's battery

† U.S. battery
‖ Mexican battery
—- Smith's route
▲ U.S. assault
heavy casualties in a two-hour attempt to counter-batter twenty-two heavy cannon, the American batteries backed out of range. Enemy fire temporarily knocked out, or dismounted, two of Magruder's three pieces, and his company lost fifteen men. The Howitzer and Rocket Company made better use of the terrain and was less vulnerable, but it too suffered heavily and lost the unit commander, Lieutenant Callender.24

American artillery retained the attention of the opposing cannon while the infantry brigades of Smith and Riley slipped through the lava flows and onto the Mexican flank. During the night the Americans strengthened these forward elements and General Smith, the senior officer present during the critical early phases, moved the brigades in a wide encirclement. At dawn on August 20, the Americans attacked the enemy from the rear. In a brief seventeen-minute engagement the invaders opened the way to Mexico City.25

The Battle of Contreras was not an artillery action. The siege train of heavy artillery remained uncommitted, as only


24George Wilkins Kendall, The War Between the United States and Mexico, Illustrated, Embracing Pictorial Drawings of all the Principal Conflicts . . . with a Description of Each Battle (New York, 1851), pp. 28-32.

Magruder's Company I with its three pieces and the Howitzer and Rocket Company saw action. Even they could not maneuver in the lava beds, or pedregal. Out gunned during the entire action, they accomplished little and suffered severely.

After Contreras fell to American arms during the early morning hours of August 20, the Second and Third divisions advanced to Coyoacan, outflanking the enemy position at San Antonio and thereby contributing to its fall to the First Division. The next objective was Churubusco and its two strongpoints, San Mateo Convent and the Tete de Pont. The pursuing Second Division followed enemy troops directly into Churubusco and engaged in a piecemeal commitment of forces without any real battle plan. Taylor's crews and their 6-pounder guns charged into the fray and pitted exposed field pieces against emplaced heavy batteries. As with Magruder's battery the day before, the field guns accomplished little more than to draw the fire away from the attacking infantry. In a two-hour duel Company K lost twenty-two men and thirteen horses before Twiggs ordered the shattered unit to withdraw.

The First Division fought its way past San Antonio and approached Churubusco from the southeast. As cannon fire restrained Twiggs's division, Worth's troops encountered similarly heavy fire from the Tete de Pont, a fortified bridge.

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Fig. 19--Valley of Mexico
within the village. Determined infantrymen charged the redoubt and carried it by the bayonet, thereby opening the roadway for Duncan's battery of guns. Company A charged under the guns of the convent, and opened fire at a range of 200 yards. Too close for the elevated guns of the defenders, Duncan's battery gave more than it received.\(^{28}\)

The Battle of Churubusco developed spontaneously, the result of breaking the defensive positions at Contreras and San Antonio. Scott, with his forces heavily engaged, brought order to the encounter, and directed the brigades of Pierce and Shields to isolate Churubusco. The brigades, with mountain howitzers attached, moved north into fierce combat with an overwhelming Mexican force. The infantry, and four little howitzers serviced under Lieutenant Jesse Lee Reno, successfully held the enemy at bay.\(^{29}\)

White flags of capitulation showed at the convent as the defenders saw themselves cut off in the north, under assault from the south, and hammered by Duncan's cannonade in the east. This battle, the second of the day, ended as a credit to the assaulting infantry and the bold fire and maneuvering of the light artillery.\(^{30}\)

The city of Mexico lay open to a continued American attack on the afternoon of August 20, but Scott halted the army.


\(^{29}\)Kendall, The Mexican War, p. 32.

hopeful for peace negotiations. As expected, the Mexicans made peace overtures. On the twenty-fourth an official truce ensued, only to be broken by the Mexicans on September 2.\textsuperscript{31}

Six days later, at daylight on May 8, the Americans resumed their offensive. Worth's First Division, with General George Cadwalader's brigade and additional artillery attached, attacked Molino del Rey. Duncan's Company A and its four 6-pounders secured the left flank against a demonstrating cavalry force and fired against a supposedly minor redoubt, the Casa de Mata. Captain Benjamin Huger of the Ordnance Corps commanded two 24-pounder siege guns in the center, and concentrated their fire on the heavy masonry buildings in Molino del Rey. Captain Simon Henry Drum's Company G, Fourth Artillery, manned two 6-pounders on the right flank, assisting Huger's battery and also securing the flank.\textsuperscript{32}

After a brief cannonade, a 500-man assault team stormed Molino del Rey. Drum's two 6-pounders and one of Huger's 24-pounders displaced forward to fire point-blank, as a tenuous hold on the village was challenged from the Casa de Mata. The latter redoubt proved to be very strong and the battle see-sawed as Duncan directed his full fire against the works.


\textsuperscript{32} At Contreras, Drum recaptured the two 6-pounder guns lost by Company B, Fourth Artillery, at Buena Vista. Kendall, The Mexican War, p. 35; Edmund La Fayette Hardcastle, "Sketch of the Operations of the 1st Division, United States Army, Under the Command of General Worth on the 8th Sept: 1847, Battle of Molino del Rey," unpublished map, National Archives, Washington, D. C.
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Duncan's artillery, 3 Sep. 6
Huger's artillery, 7 Sep. 7
Drum's artillery, 9 Sep.

Battery No. 1, 12-13 Sep.
Battery No. 2, 12-13 Sep.
Battery No. 3, 12-13 Sep.
Battery No. 4, 12-13 Sep.
Howitz & Rkt Co, 13 Sep.
Magruders arty, 13 Sep.
Jackson's gun, 13 Sep.
Mexican battery, 13 Sep.

Fig. 20--Molino del Rey and Chapultepec
Worth's Second Brigade, temporarily commanded by Colonel James Simmons McIntosh, masked the guns and Company A shifted its attention to cavalry on the flank. As artillery fire abated on the Casa de Mata, Mexican defenders repulsed the American infantry. Duncan's guns again turned on the redoubt.33

The First Division's 3,000 men encountered 10,000 defenders in this bloodiest battle of the war. Scott, fearful of the battle's outcome, committed the fresh troops of Bennet Riley's and Franklin Pierce's brigades and Magruder's artillery. Duncan's artillery proved adequate, however, and the Mexicans, isolated by the fall of Molino del Rey, abandoned the Casa de Mata and fled through the lowlands to Chapultepec.34 Of the fresh troops, only Magruder's artillery joined the fight, firing belatedly at the distant cavalrymen on the flank.35

The Battle of Molino del Rey was a raid designed to deprive the Mexicans of a foundry. After the bloody victory, the American troops withdrew. The fierce contest and a disappointing aftermath gave vent to charges and countercharges. Scott criticized Worth for using too little artillery before

33Picayune, October 17, 1847; Anderson, Artillery Officer, p. 312.


35Magruder and his second in command, Captain Thomas Jonathan Jackson, the "Stonewall" Jackson of a later war, forced the guns over the rough terrain at such a pace that cannoneers were thrown from the caissons. Ballentine Autobiography, p. 258.
the attack. Captain Robert Anderson blamed Duncan, as Worth's artillery officer, for the absence of artillery fires. Lieutenant Pierre Gustave Toutant Beauregard believed there should have been a much heavier artillery preparation, or a surprise assault without artillery. Scott's Inspector General, Colonel Ethan Allen Hitchcock, called the entire attack a mistake. The reflections of another participant in the battle, Lieutenant Ulysses Simpson Grant, are meaningful. He observed that the Americans, although greatly outnumbered, assaulted an entrenched enemy that "stood up and fought as well as any troops ever did."

The small American army deep within the interior of a hostile land could not lose a major battle without facing certain disaster. The affair at Molino del Rey apparently had a sobering effect, as the subsequent engagements reflected greater planning. After deliberation, Scott chose to reduce Chapultepec and then strike the capital from the west.

36 Kendall, The Mexican War, p. 38.
37 Anderson, Artillery Officer, p. 326.
40 Grant Memoirs, II, 169.
41 Beauregard, Mexican War Reminiscences, pp. 68-69.
On September 11 the Second, Third, and Fourth divisions feinted with a demonstration south of the city, then quietly slipped away during the night. The next daylight revealed an ostentatious display of Steptoe's and Taylor's batteries, which boldly fired against the southern edge of the city for the next two days. The batteries and the unseen but supposedly present infantry held Mexican troops in position in the south.\footnote{Scott Memoirs, II, 510-511.}

Siege batteries were laid out by engineers, and Drum parked his newly acquired 6-pounder guns to man Battery Number 1 on the Tacubaya Causeway. His two 16-pounder guns and one 8-inch howitzer, all captured pieces, commanded the Belen Causeway connecting Chapultepec with the city. Siege Batteries 2, 3, and 4 lay to the southwest of Chapultepec and unobserved by persons within the city. Number 2 pointed two 24-pounder guns and one 8-inch howitzer at the fort. Battery Number 3 mounted another captured 16-pounder gun and one 8-inch howitzer, while Number 4 mounted a 10-inch mortar.\footnote{Accounts differ as to the armament of Battery Number 2. The official sketch submitted by General Quitman to report his operations in the west shows only one 24-pounder. Most subsequent reports agree with Quitman's report, but several of these obviously used Quitman's sketch as a source. An observer of perception, George Wilkins Kendall, reported two 24-pounders in the battery. The 24-pounder was Scott's best battering piece. He had two in action at Molino del Rey and two in operation against the city. It is difficult to believe that one 24-pounder remained idle in the siege against Chapultepec. Kendall's account is therefore accepted. "Plan Accompanying Genl Quitman's Report," unpublished map, National Archives, Washington, D. C.; Kendall, The Mexican War, p. 40.} In addition to the siege artillery, twenty field pieces supported...
the attack. 44

Scott planned coordinated thrusts against Chapultepec from the south and west, designed to open the causeways to the city through San Cosme and Belen. Pillow’s Third Division, composed of Pierce’s and Cadwalader’s brigades plus a 250-man assault team from the First Division, struck from the west. Magruder’s field battery and Reno’s mountain howitzers accompanied the division and provided close fire support. 45

General John Anthony Quitman’s Fourth Division, numerically weak, had attached to it Persifor Smith’s Brigade and a 250-man assault team from the Second Division, in addition to its normal complement of Shields’s First Brigade. To bolster his strike from the south, Quitman also gained the fire support from two of Duncan’s 6-pounder guns, long range support from Steptoe’s batteries near Piedad, and one 8-pounder gun under Drum. 46

All day on September 12 the American artillery attacked by fire. Following the heaviest such preparation of the war,

44 Duncan had four 6-pounder guns, Taylor four 6-pounder guns, Magruder two 12-pounder guns and one small howitzer, Steptoe two 12-pounder guns and two 24-pounder howitzers, Reno four 12-pounder mountain howitzers, and Drum had one captured 8-pounder gun. Drum’s two 6-pounders are not counted.

45 Kendall, The Mexican War, p. 41.

46 Smoothbore cannon of the period were of little use beyond 1,000 yards. Therefore, Steptoe’s battery at almost 3,000 yards was of no real value. Charles Feoble Kingsbury, An Elementary Treatise on Artillery and Infantry, Adapted to the Service of the United States, Designed for the Use of Cadets of the U. S. Military Academy, and for Officers of the Independent Companies of Volunteers and Militia (New York, 1849), p. 135.
the infantry advanced at eight o'clock on the morning of the thirteenth.47 In the west, Magruder's battery ployed the cypress forest before Chapultepec with shot and shell until its fires were masked by friendly troops, and Reno's little howitzers lobbed shells over the woods to burst ahead of the advance. As the assault team and the Voltigeurs stormed to the edge of the fort, Magruder's battery advanced one gun forward on the left flank where it engaged an enemy battery in a muzzle-to-muzzle shoot-out.48

The Fourth Division suffered heavy casualties attacking across open ground in the south. Sustained by the fire from Drum's battery and the accompanying 6-pounders under Lieutenant Henry Jackson Hunt, the assaulting infantry broke through, pressed against the fort, and joined forces with the Third Division. As the Third Division took Chapultepec, the Fourth veered toward Belen Causeway and the city.49

With Chapultepec reduced, Scott committed the First Division to attack the city through the San Cosme Gate. To support this main effort, Hunt and his two guns left the Fourth Division and returned to their parent unit. Cadwalader's

47Kendall, The Mexican War, p. 43.


brigade from Pillow's Third Division also joined the First Division, as did Magruder's and Reno's artillery.\textsuperscript{50}

Colonel John Garland's First Brigade led the attack by swinging to the north of Chapultepec. As the enemy fled from the falling Chapultepec redoubts and Garland bypassed, Lieutenant Thomas Jonathan Jackson charged along the causeway with Magruder's artillery, and fought almost into the city itself before Magruder, fearing the loss of his guns, ordered Jackson back. Cadwalader's brigade and Magruder's battery then joined forces to establish a blocking position at San Tomas Gate, securing the division's rear and flank.\textsuperscript{51}

Worth assigned Reno's versatile little howitzers to Garland's brigade, then with a brigade on each side of the causeway and Duncan's artillery in the center, the First Division attacked San Cosme Gate.\textsuperscript{52} The narrow causeway beyond San Tomas could accommodate only two of the 6-pounders, and the section under Lieutenant Hunt advanced, exposed on the causeway. One crew charged to a position fifty yards from the enemy and fired point-blank, shifting position after each discharge to keep the counter battering guns also shifting. Two of the mountain howitzers also went into battery against the gate at a very close range of 200 yards, and the

\textsuperscript{50}Scott Memoirs, II, 520-524 passim.

\textsuperscript{51}Arnold, Stonewall Jackson, pp. 110-111.

\textsuperscript{52}Reilly, "Artilleryman's Story," p. 444; Grant Memoirs, I, 155.
Fig. 21—San Cosme and Belen Gates
artillery fire permitted the infantry to advance. Shortly before dark on September 13, the First Division penetrated the northwestern suburb.53

Two thousand yards to the south, Quitman's Fourth Division attacked the Belen Gate. Shields's First Brigade and Smith's attached brigade comprised the division at the time of the attack, and with the departure of Hunt's 6-pounder guns and Steptoe's continued demonstration in the south, the division was noticeably short of artillery. Only Drum, still tied to cumbersome siege cannon, could be counted, although unexpected help came briefly from Hunt. Proceeding with Worth's column toward San Cosme, he displaced to the flank and fired laterally in support of the attack on Belen Gate.54

Drum's cannoneers of Company G followed him onto Belen Causeway and dueled the emplaced enemy guns with whatever ordnance could be served. They fired their own heavy siege cannon, and are credited with firing a conglomerate assortment of other weapons. Drum and his successor, Lieutenant Calvin Benjamin, both died on the causeway, and high unit casualties deprived the company of its fighting integrity during the Fourth Division's ultimate entry into the city.55

53Ibid.

54Kendall, The Mexican War, p. 44; Beauregard, Mexican War Reminiscences, p. 90; Brooks, The Mexican War, p. 419.

55Accounts vary on Drum's activities; it is doubtful that he manned as many different cannon as are named. The snarl defies disentanglement, but at one time or another he reportedly had in battery a 4-pounder gun, two 6-pounder guns,
The two divisional salients held through the night. In the north, the First Division shelled the city with one 24-pounder siege gun and one 10-inch mortar, while in the south Steptoe rejoined the Fourth Division and placed in battery one 24-pounder gun, one 18-pounder gun, and one 8-inch howitzer. As both divisions prepared to resume the attack, the Mexicans sued for peace. Major fighting ceased with the surrender of Mexico City on September 14, 1847. Artillery played a major role in gaining the two lodgements which induced the capitulation.

an 8-pounder gun, a 16-pounder gun, an 18-pounder gun, a 24-pounder howitzer and an 8-inch howitzer. Reports invariably give him a battery of one small gun, one large gun, and one large howitzer. This study concludes that Drum manned the three cannon he had in Siege Battery Number 1: one 8-pounder gun, one 16-pounder gun, and one 8-inch howitzer. Roswell Sabine Ripley, The War With Mexico, 2 vols. (New York, 1849, II, 433-442 passim; A. R. Ginsburgh, "O’Brien’s Bulldogs," Field Artillery Journal, XXVII (May-June, 1937), 185; Brooks, The Mexican War, 421-422; Kendall, The Mexican War, 43; Smith, War With Mexico, II, 160; Beauregard, Mexican War Reminiscences, pp. 90-96; "Quitman's Report."
CHAPTER V

ARTILLERY AND VICTORY

In America’s first foreign war, artillery emerged as the greatest power on the battlefield. The artillery arm of the United States Army demonstrated its worth by repeatedly influencing the actions at critical moments; its responsiveness to combat requirements saved the American armies from certain disaster. ¹

Both siege and field batteries fought throughout the war, but the lightest weapons, the guns and howitzers known as flying artillery, bore the brunt of the early and critical fighting in northeast Mexico. From Major General Zachary Taylor’s campaign opener at Palo Alto until his final contest at Buena Vista, the light batteries strongly influenced each action. ²

Light companies of flying artillery fought from exposed forward positions in front of American infantry and directed their primary efforts against vulnerable forces of Mexican


infantry and cavalry. Their cannon fire persistently hurled back attackers short of the numerically inferior American forces, denying the enemy the opportunity he sought for close combat.\(^3\)

Soldiers who served as both cannoneers and teamsters in the American units and drilled incessantly in evolutions known as the school of the soldier, the school of the piece, and the school of the battery\(^4\) knew their exacting tasks so thoroughly that even under the heavy stress of combat they still performed ably and poured fire against the enemy formations. The soldier teamsters managed teams of horses which had also drilled in battery evolutions and performed under stress with remarkable equanimity. Rapid fire and a quick displacement capability long having been established by practice and drill, the flying batteries amazed the Mexicans by their techniques of fire and maneuver.\(^5\)

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\(^4\)Board of Artillery Officers, *Instruction for Field Artillery, Horse and Foot* (Baltimore, 1843), pp. 28-125 passim.

American commanders selected grape and canister shot to bombard concentrations of Mexican cavalry and infantry, and accepted the disadvantage of necessarily firing at a range shorter than that required for solid shot. For protection they relied primarily upon outmaneuvering the enemy.

Mexican artillery, tube for tube of about the same design as American pieces, still suffered a tremendous handicap. Mules pulled their cannon, and the army relied on contracted civilian teamsters for most movements. Untrained in military maneuvers and inadequately disciplined to stand under fire, Mexican teamsters reacted poorly and could not match their American counterparts. From positions generally on line or to the rear of their infantry, Mexican batteries fired at greater ranges than the advanced American batteries, and attempted to offset this disadvantage by firing solid shot with an increased powder charge. The shot proved deadly where it struck, but by its one shot characteristic, it offered ineffective small target coverage.

American artillery excelled in its earliest battles largely because of the intrepid courage of the commanders and the discipline and training of the crewmen. As the war progressed, artillerymen tested and developed theoretic tactics

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7 Meade Letters, I, 79; Lavender, Climax at Buena Vista, pp. 69-70; Grant Mémoirs, I, 95.
into battlefield techniques, and made innovations often resulting in doctrine for the artillery arm. Initially at Palo Alto, artillerymen maintained the integrity of full four-gun batteries, and whenever possible acted to reinforce the fires of other batteries. This policy indicated even at the earliest contact a sound appreciation for fires massed against a single target. As the situation changed and as battlefield requirements dictated, the four-gun batteries split into two-gun batteries to meet multiple threats, and mobile fire teams flitted about the field. This technique of employing artillery in small increments, frowned upon by tacticians, nonetheless proved its merit in meeting simultaneous threats in open field combat at Palo Alto and Buena Vista.  

The skillful fashioning of a defense from a fixed position of artillery fire occurred only once during the war, at Buena Vista, and became the key to American success. Taylor's small army withstood attack by a force three to four times its own size. As Americans occupied a strong position particularly suited for artillery defensive measures, Captain John Macrea Washington's overstrength company of eight pieces occupied the critical center of the battlefield, a position from which it would not yield.  

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8 Later critics condemned this employment of artillery as a harmful lesson adversely affecting the practices of the American Civil War. Birkhimer, Sketch of the Artillery, pp. 78-79.

9 Washington's light field batteries served admirably as the unyielding center of the line, and the company accomplished its assigned mission. Although the light pieces
The balance of the artillery at Buena Vista, two light companies with the normal complement of four cannon each, remained a flexible maneuver force and practiced tactics similar to those employed earlier at Palo Alto. Displaying elan and steeped in confidence gained in earlier fighting, these versatile forces combined into larger batteries, split off one, two, and three-gun batteries, and maneuvered from flank to flank and from front to rear. Here as in all actions, the light batteries operated largely without orders or central control as they fought side by side with the infantry, or alone and unsupported.¹⁰

The light artillery assigned to Major General Winfield Scott’s army in the south fought a different type of war. Mountains, lakes, and marshy ground imposed limitations on movements, and the Mexicans used this to advantage by fortifying critical terrain. Consequently, every major action by Scott’s army involved an attack against a fortified position. The little field pieces, outgunned by emplaced cannon and deprived of their advantage of maneuver, were relegated to a secondary role. Scott’s army had a substantial siege train of heavy guns, howitzers, and mortars, and he relied on these effective. Taylor had no siege cannon south of the Rio Grande, consequently the mission fell on the light artillery. Justin Harvey Smith, The War With Mexico, 2 vols. (New York, 1919), 1, 503, 505; John Frost, Pictorial History of Mexico and the Mexican War: Comprising an Account of the ... Recent War With the United States (Philadelphia, 1850), p. 365.

heavier cannon for primary fire support while his division commanders controlled the light artillery.¹¹

In the initial battle in the south at Vera Cruz, the army employed ten mortars, five howitzers, and seven guns. After six days of bombardment by the heavy siege batteries, the city capitulated, defeated by artillery alone.¹² Scott's faith in the heavy siege cannon caused his army to exert tremendous efforts, and transport the big pieces through the mountains as the army advanced on the city of Mexico. Mortars, of less value in breeching fortifications and an outstanding defensive weapon, were dropped off to help secure garrisons established at Vera Cruz, Jalapa, and Puebla, but the army that entered the Valley of Mexico still pulled with it the heaviest cannon, cast iron 24-pounder guns and 8-inch howitzers.¹³ In the valley, Scott integrated captured 16-pounder guns into his siege train to further strengthen his bombardment capability.¹⁴


¹²House Executive Documents, 30th Congress, 1st Session, No. 8 (Washington, 1847), pp. 222-223; Edmund La Fayette Hardcastle, "Siege of Vera Cruz by the U. S. Troops Under Major General Scott in March 1847," unpublished map, National Archives, Washington, D. C.


¹⁴Captured field pieces were also assimilated. Captain John Bankhead Magruder of Company I, First Artillery, and Captain Simon Henry Drum of Company G, Fourth Artillery, each placed captured field pieces in battery. Kendall, The Mexican War, p. 40.
Scott's army included significant quantities of both light and heavy artillery, and this fact warrants study of the techniques of employment. The southern army held its heavy artillery under central control, militarily referred to as in general support. Heavy cannon participated in each deliberate and preplanned attack. Only at Contreras and Churubusco were the siege pieces idle, and it is obvious that in those fast developing situations the siege artillery could not be positioned. Otherwise, they would surely have seen action.

Scott also recognized that the advantages of one type of cannon often offset the limitations of another, and in the major engagements his artillerymen mixed the calibers and types of weapons that fired on the objective. That is to say, Scott massed and integrated artillery fires.

At the Battle of Cerro Gordo one 24-pounder gun, two 24-pounder howitzers, two 12-pounder mountain howitzers, and a battery of rockets fired simultaneously against the same target area. Firing from mountain top to mountain top, they massed their fires and suppressed the enemy resistance, greatly aiding the assaulting infantry. The Battle of Chapultepec

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15 The battering capability of a gun firing solid shot complements the arcing trajectory and bursting shell of a howitzer or mortar.

furnished the war's best example of integrated fires and a coordinated artillery-infantry effort. Eight field pieces in the batteries commanded by Captain Francis Taylor and Captain Edward Jenner Steptoe feinted by attacking the city of Mexico with artillery fire as a diversion for the main attack against Chapultepec. Nine siege cannon and nine field cannon then attacked Chapultepec, and infantry assaulted under their protective fires. The cannon fired closely in front of the friendly infantry and as the infantry masked the fires, field pieces advanced with the infantry and continued to fire.17

Companies of medium weight field artillery, in addition to the light field batteries, also served in Mexico. Captain Lucien Bonaparte Webster commanded a company of medium field artillery with the Army of Occupation. Manning two 24-pounder howitzers as a field battery, Webster's troops also manned one 10-inch mortar as a siege battery. Taylor treated these three cannon, the heaviest that accompanied him south of the Rio Grande, as siege artillery, a role for which only the mortar was particularly suited.18 Steptoe's medium field artillery accompanied Scott's army, and serviced a

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18 *Kendall, The Mexican War*, p. 16.
standard armament of two 12-pounder guns and two 24-pounder howitzers. Although heavier than the flying light batteries, it correctly served in the role of field support to an infantry division.\(^{19}\)

The Howitzer and Rocket Company, an experimental unit manned by ordnance personnel, entered Mexico under the command of Major George Henry Talcott. The rockets lacked an adequate guidance system and inaccurately dispersed their fire over a very large area. For this reason, they did not prove particularly successful, but the little 12-pounder pack howitzers proved their worth. The short-range, light-weight cannon became an integral part of the Voltigeur Regiment, otherwise known as the Tenth Infantry, and served well in independent operations of a type of warfare for which they were designed.\(^{20}\)

The cannon and cannoneers of the Mexican War, both tools in the hands of commanders, performed magnificently when assigned missions within their capabilities. Their inadequate or improper use caused catastrophic situations at Monterey and Molino del Rey. Taylor’s army attacked the fortified city of Monterey with one mortar comprising its total heavy


\(^{20}\)Jalapa, American Star, April 29, 1847; Charles Peoble Kingsbury, An Elementary Treatise on Artillery and Infantry Adapted to the Service of the United States, Designed for the Use of Cadets of the U. S. Military Academy, and for Officers of the Independent Companies of Volunteers and Militia (New York, 1849), p. 28.
artillery, and the army's very fine but badly outgunned field pieces contributed little in wresting a bloody victory. Excessive American losses could surely have been reduced by adequate artillery fires supporting the attack.21 One year later at Molino del Rey, General Scott permitted his First Division to attack a strong enemy position with little more than token artillery support. Again, catastrophe struck and the Americans suffered their heaviest losses of the war. This latter engagement appeared even more tragic because an abundance of artillery then on hand could have supported the attack.22

American arms triumphed in Mexico. In the victory, artillery dominated the critical battles at Palo Alto, Buena Vista, and Vera Cruz. Coordinated infantry-artillery action vanquished the enemy at Cerro Gordo, Chapultepec, and the city of Mexico. The absence or improper use of artillery was disastrous at Monterey and Molino del Rey as unsuppressed Mexican fire inflicted excessive casualties on the attacking Americans. Battlefield tests and experiences contributed to the techniques and tactical skills of the artillery, and apprised commanders of both the capabilities and the limitations of field and siege cannon. Commanders learned to appreciate

21Smith, War With Mexico, I, 503.

the maneuver and rapid fire capability of light artillery, and they also learned of light artillery's ineffectiveness against fortifications.\textsuperscript{23}

A generation of United States Military Academy graduates, strong in theoretical knowledge, applied their lessons to field practice and became more proficient officers for the experience. Commanders learned the skills and techniques of coordinating infantry and artillery formations, and artillery-men practiced suppressing enemy fires to assist assaulting infantry. Defensively, commanders learned to build a defense upon artillery's heavy fire capability, as practiced at Buena Vista. A further lesson of the same action taught that strong and close artillery support may be used to hold the line for raw and inexperienced infantry, and that such troops, adequately supported, can successfully withstand attack.\textsuperscript{24}

The military history of the Mexican War, from the Rio Grande to the breeched gates of the Mexican capital, is a significant chapter for American arms. The small armies led by Taylor and Scott, deep within a hostile land and far from their bases, fought and won eleven major engagements against


numerically superior forces, armies in each case ostensibly well-trained and equipped.25

United States artillery, recently given new importance as a branch of the armed forces, but still relegated to a secondary role by infantry-minded commanders, matured on the battlefields of Mexico. Throughout the course of the war it proved itself the most efficient arm in determining the outcome of battles. Artillerymen demonstrated excellence in tactical concepts, gunnery, and above all else in personal courage and the will to fight. These disciplined and superbly trained men, and the ordnance they serviced, elevated the artillery to a position of battlefield dominance and made the corps the largest contributor to the military victory.28


APPENDIX

GLOSSARY OF TERMS

Angle of elevation--see elevation.

Ballistics--science of projectiles in motion.

Battalion--military unit of two or more companies, but smaller than a regiment.

Battery--one or more artillery pieces.

Bore--hollow portion of a cannon tube.

Breech--rear or closed end of a cannon tube.

Brigade--military unit larger than a regiment and smaller than a division.

Caisson--ammunition wagon accompanying mobile artillery.

Caliber--diameter of the bore of a cannon, expressed either as the weight of the solid shot, inches of diameter of the bore, or the diameter of the bore divided into the length of the tube.

Canister shot--a tin projectile containing small shot.

Cannon--all tube artillery, to include guns, howitzers and mortars.

Carriage--wheeled mount for a cannon.

Cartridge--bag or case containing a propelling charge.

Case shot--see canister shot.

Columbia--American coastal defense shell-gun or howitzer.

Company--military unit smaller than a battalion.

Direct fire--fire against a target visible from the cannon.

Division--military unit larger than a brigade.

Dragoon--mounted infantryman and forerunner of American cavalryman.
Elevation--angle formed between the axis of the bore and the horizontal.

Elevation screw--handscrew under the cannon breech for adjusting elevation.

Field--scene of active military operations.

Field artillery--artillery accompanying troops in the field.

Fixed ammunition--propellant and projectile complete as a single unit.

Fuse--device to detonate a shell or other weapon.

Grapeshot--cluster of small shot.

Gun--long barreled cannon with a characteristic high muzzle velocity and flat trajectory.

Gunnery--Science of delivering artillery fire to the desired target.

Handspike--stout pole extending from the cannon trail.

Howitzer--short barreled cannon with a characteristic high angle of fire.

Indirect fire--fire against a target not visible from the cannon.

Lay--direction and elevation of the axis of the bore.

Limber--two-wheeled horse drawn vehicle for pulling gun carriages or caissons.

Line of sight--straight line from the muzzle of the piece to the target or point of impact.

Linstock--punk for igniting powder charge.

Mortar--very short barreled cannon with a low muzzle velocity and a very high trajectory.

Paixhan--French shell-gun or howitzer.

Piece--a firearm.

Point-blank--coincident point of the trajectory and line of sight.

Port fire--tube of combustible powder for igniting propellant.
Projectile -- portion of a round intended for delivery to the target.

Propellant -- main powder charge of a round of ammunition.

Quadrant -- device for measuring the elevation of a piece.

Regiment -- military unit larger than a battalion and smaller than a brigade.

Round -- one complete load of ammunition for one piece.

Semi-fixed ammunition -- one complete round with adjustable components, such as powder charge.

Separate loading ammunition -- powder cartridge and projectile independent of each other.

Shell -- elongated hollow projectile containing powder and fused to detonate.

Shell-gun -- shell firing cannon or howitzer.

Shot -- spherical projectile.

Siege train -- heavy artillery following an army for the purpose of attacking fortifications.

Tangent scale -- firing instrument for laying an elevated piece.

Trail -- that part of a cannon carriage resting on the ground.

Trajectory -- path of a projectile in flight.

Trunnion -- cylindrical projections on the side of a tube.

Tube -- the cannon, synonymous with barrel.

Unfixed ammunition -- see separate loading ammunition.

Unlimber -- unhitch from limber and prepare to fire.

Vent -- small opening at the breech of muzzle loading cannon.

Voltigeur Regiment -- the Tenth Infantry Regiment with one horse for each two men, permitting double-mounting for rapid movement.
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