

The Bugle



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Civil War Field Artillery

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The United States Army had four artillery regiments in 1861 as the war began and added a fifth during the war. Northern and Southern states recruited numerous additional artillery regiments and batteries during the war. The artillery was always considered the most professional and scientific of the combat arms and sought energetic and intelligent young men for the service.

During the Civil War, artillery was classified as heavy or light depending on the maneuverability and size of the guns. Light artillery pieces were moved by small teams of horses and used by armies in the field for both offensive and defensive operations. Heavy artillery was used primarily in fixed fortifications for defending cities or in siege operations against such forts. In the Union Army, the heavy artillery units tended to stay together as regiments and saw very little action, living relatively safe and comfortable lives in the forts around Washington. Late in the war, however, when there was less of a threat to the capital, Gen. U. S. Grant pulled the “Heavies” out of the forts and used them as infantry during the campaign to capture Richmond.

As the war progressed, both sides tended to operate their field artillery on the battery level – about one hundred men, commanded by a captain. A Union battery usually had six guns and a Confederate battery had four guns, although there was considerable variation on both sides depending on the year and particular army.

By mid-war, four to six batteries were usually grouped together to form a larger unit called a brigade in the Union Army and a battalion in the Confederate Army. These larger units were usually under the direct control of a corps or division commander to be used at his discretion in support of infantry. There was also a large artillery reserve to be used at the army commander’s orders to meet the demands of the battle. Often the reserve would amount to one-third to one-half of all of the field army’s artillery pieces.

For moving, light artillery pieces were attached to a two-wheel cart called a limber (below left). An am-



munition chest sat on top of the limber and provided a seat for cannoneers (above). The limbers were hauled by six horses although shortages, especially in the Confederacy, sometimes reduced the teams to four horses. Each cannon also had an additional limber to which was attached a caisson with two additional ammunition chests (below).

In the Field Artillery, the gun crew walked along side the guns or rode on the limbers and caissons. In the Horse Artillery, units attached to the cavalry, each members of the crew had his own horse so that he could keep up with the fast moving cavalry.

Many different types of cannons were used during the Civil War. The most common types were the Napoleon, Ordnance Rifle and Parrott Rifle. These were all muzzleloaders. Smoothbores were usually described by the weight of its solid shot (e.g., 6-Pounder, 12-pounder) and rifled guns were described by the diameter of the bore (2.9-Inches, 3-Inches).

Although some of the cannons were capable of shooting a very long distance, artillerymen shot at targets they could see, generally about one mile. Rarely did they shoot “over-the-hill” because of the lack of forward observers and quick communication to correct the fall of shells.



BASIC TYPES OF FIELD ARTILLERY

The Six Pounder Field Gun was a smoothbore developed in 1841 and it saw extensive service in the Mexican War. As the Civil War began, many of these bronze guns were used by both the North and the South but later replaced by more modern pieces. By the time of the Battle of Gettysburg, for example, there was only one six pounder with the Confederate Army and none with the Union Army.

The Twelve and Twenty-Four Pounder Field Howitzers were smoothbore designed to lob explosive shells into fortifications or massed troops. Like the six pounder, their use diminished as the war progressed.

The Napoleon was a 12-Pounder smoothbore based on a French design, developed during the reign of Napoleon III. In the U. S., it was officially designated the 12-Pounder Light Field Gun, Model 1857 (below and cover). It is easily identified by its bronze barrel. The Northern made versions has the classic lines of a cannon barrel while those manufactured in the Confederacy generally had a straight undecorated barrel. Today, many Napoleons dot Civil War battlefield and parks and they can be spotted by their distinctive green barrels, a result of oxidation over the years.



The Ordnance Rifle was a wrought iron gun developed by John Griffin and produced primarily by the Phoenix Iron Company in Phoenixville, Pa. The three inch model was the most common size and was described as sturdy, accurate and superior to other iron cannons. Its solid shot weighed 10 pounds and it



could shoot about two miles. It is identifiable by its simple rounded breech (lower left).

The Parrott Rifle was invented by Robert Parrott of Cold Springs, N.Y., and is easily identified by the reinforcing band at the breech (below). Originally made in with a 2.9 inch bore, it was enlarged to 3 inches in 1863 so that ammunition would be interchangeable with the Ordnance Rifle. The early model had a flared muzzle while the later model had a straight muzzle. Some twenty pounder (3.37 inch) Parrotts were used by the field artillery but vast majority of the larger sizes and used by the heavy artillery and the navy.



During the Gettysburg Campaign, the distribution of guns between the armies was as follows:

Type of Gun	U.S.	C.S.	Total
12 Pdr Napoleon	142	101	243
Ordnance Rifle	144	80	224
10 Pdr Parrott Rifle	60	42	102
20 Pdr Parrott Rifle	6	10	16
Misc Guns	2	36	38
Total	354	269	623

As seen in the chart above, there were other types of guns used by both armies but they were small in number and, in many cases, fall into the category of curiosities. The James Rifle looks like a bronze version of the Ordnance Rifle but the softer metal proved unsuitable for rifled guns and soon wore out. Muzzleloaded Armstrong, Blakely, and Whitworth guns were imported from Britain, along with a few examples of the breechloading version of the Whitworth Rifle.

The Gettysburg National Military Park has an excellent artillery display with examples of more than a dozen tubes on display in the museum. Throughout the park, original barrels are mounted on reproduction carriages but visitors should be aware that some of the guns could not have been at Gettysburg since markings on the muzzle indicate post 1863 dates of manufacture. Additionally, there are some reproduction barrels and original Six Pounders modified to look like 12 Pounder Napoleons.

PROJECTILES AND EQUIPMENT

Solid Shot was the traditional “cannonball,” made of a solid piece of iron. It was a sphere (“round shot”) for smoothbore guns and a cylinder (“bolt”) for rifles. It was designed for smashing fortifications, buildings and opposing cannons. With the right ground conditions, round shot from smoothbores could be skipped along the ground (much like a stone on a pond) and used effectively against massed troops.

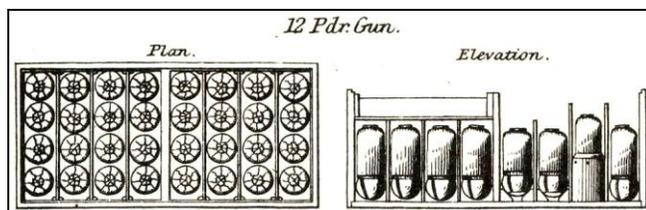
Shell was a hollowed-out projectile, either round shot or a bolt, which contained an explosive charge that burst the shell into fragments that would tear into men and horses. There were a variety of fuses. The simplest was a gunpowder train in the top of the projectile that was lit by the detonation of the propellant charge in the barrel. Other fuses had mechanical timers or exploded on impact.

Case Shot was a shell with a thinner wall and round balls added so that there were more fragments when the bursting charge went off. It was developed by Col. Shrapnel of the British Army, whose name is now associated with the fragments of any exploding device.

Canister was a metal can containing iron balls. It was used against massed troops at close range like a giant shotgun shell. At very close range, two cans would be loaded to double the number of balls being fired at the enemy.

Typically, smoothbore ammunition had the cloth bags of gunpowder attached to the projectile while rifled guns had separate powder bags and projectiles.

Each gun carried a variety of ammunition to meet all contingencies. With four chests of 32 rounds, a typical Napoleon had 128 rounds of ammunition immediately available for use. Additional ammunition was carried in a wagon that served the entire battery and more wagons were in the army’s ordnance wagon train to resupply the artillery.



Grapeshot (clusters of iron balls larger than in canister) was not used by the field artillery although many infantry soldiers described battles where they faced “canister and grape” but the description is thought to be more poetic or thrilling rather than technically accurate. Grapeshot was used by the heavy artillery and the navy.

Artillery was fired using a friction primer, a brass tube filled with gunpowder and topped with a friction compound. Once a gun was loaded, the primer was inserted into the vent and the lanyard attached by means of a hook. When the lanyard was pulled the movement of a twisted wire ignited the compound (much like striking a match) which set the gunpowder off, which in turn burned through to the main charge in the barrel setting off the explosion that sent the projectile down the tube.

Inside the lid of each ammunition chest was a chart showing the elevation of the barrel, distance and time of flight for various projectiles so that fuses could be prepared for the correct detonation.

SHOT. Charge 2½ Pounds.		SPHERICAL CASE SHOT. Charge 2½ Pounds.			SHELL. Charge 2 Pounds.		
ELEVATION In Degrees.	RANGE In Yards.	ELEVATION In Degrees.	TIME OF FLIGHT Seconds.	RANGE In Yards.	ELEVATION In Degrees.	TIME OF FLIGHT In Seconds.	RANGE In Yards.
0°	323	0°50'	1"	300	0°	0°75'	300
1°	620	1°	1"75	575	0°30'	1"25	425
2°	875	1°30'	2"5	635	1°	1"75	615
3°	1200	2°	3"	730	1°30'	2"25	700
4°	1325	3°	4"	960	2°	2"75	785
5°	1680	3°30'	4"75	1080	2°30'	3"5	925
		3°40'	5"	1135	3°	4"	1080
					3°45'	5"	1300

Use SHOT at masses of troops, and to batter, from 400 up to 2,000 yards. Use SHELL, for firing buildings, at targets pointed in woods, or point, and to penetrate a metal rather than a physical effect, greater effective range 1,500 yards. Use SPHERICAL CASE SHOT at masses of troops, at less than 100 yards, generally up to 1,500 yards. CANISTER is not effective at 400 yards; it should not be used beyond 100 yards, and not over 100 yards and over the most favorable ground at that distance; at short ranges, less than 200 yards, in emergency, use double canister, with single shell. Do not require EXPLOSIVE at less distance than 1,000 to 1,100 yards.

CARE OF AMMUNITION CHEST.

14. Keep everything out that does not belong in them, except a bunch of cord or wire for breakage; beware of loose ticks, nails, nails, or scraps.
15. Keep British papers in their papers, tied up. The pouch containing them for instant service must be closed, and so placed as to be secure.
Take every precaution that prevents dust from getting loose; a single use may cause an explosion. Use plenty of saw in packing.
(This sheet is to be glued on to the inside of Linnet Chest Cover.)

Each gun crew had a variety of tools for serving the gun, including:

Rammer – a wooden pole with one end used to ram the projectile down the tube and the other end, with a wollen sponge, used to clean the barrel.

Worm – a wooden pole with an iron double corkscrew device at one end used to remove debris from the cannon barrel.

Fuse Saw and Mallet – tools in the limber chest for cutting fuses driving fuse plugs into shells.

Lanyard – a twelve foot rope used to fire the cannon, with a wooden handle on one end and an iron hook on the other for attaching to the friction primer.

Thumbstall – a piece of leather than covered the Number 3's left thumb so that he could cover the vent during the loading procedure and prevent an influx of air that could cause any smoldering spark from flaring up and setting off the new gunpowder charge.

Tompion – a plug inserted into the muzzle when the gun was not in use.

Trailspike (Handspike) – a short wooden pole inserted into a ring at the end of the trail to move the gun left and right during the aiming procedure.

Prolonge – A rope used to pull the gun by hand; when not in use it was attached to the trail of the piece.

Sponge Bucket – a bucket with water to keep the sponge wet for cleaning the bore between shots.

Sights – a variety of removable rear sights were used by the gunner to aim the piece but some personal accounts indicate that gunner aimed by feel and experience.

LOADING AND FIRING PROCEDURE

At full strength, a field artillery crew had eight members, a gunner and seven men, numbered 1 through 7. Gun crews were cross-trained so that each man knew every job and could fill-in as losses occurred during battle.

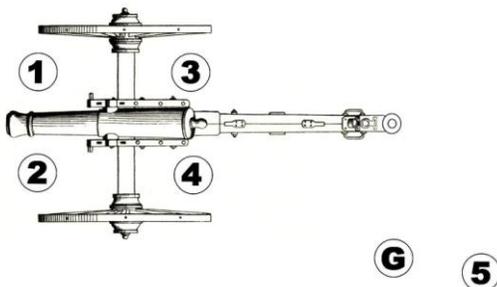
The Gunner (G) supervised the operation. Nos. 6 and 7 were stationed at the limber and prepared the round to be fired by selecting the proper type of ammunition and preparing the fuse, if necessary. No. 5 carried the round in a leather satchel to the Gunner, who checked it to make sure that it was the correct type of projectile. No. 5 then continued on to No. 2, who inserted the powder and projectile into the muzzle of the cannon. As much as possible, No. 2 protected the round with his body so that the powder charge would not be hit and set off by incoming enemy fire.

No. 1 rammed the round down the barrel, while No. 3 covered the vent (the hole from the top of the barrel into the bore) with his left thumb to prevent an influx of air that might flare up a smoldering spark that could ignite the powder charge. To protect his thumb from the heat of the barrel and to get a tighter fit, No. 3 wore a leather "thumbstall" on his thumb.

The Gunner then moved into the position of No. 4 and aimed the piece using a removable sight and the elevating screw at the breech of the gun. No. 3 moved to the back of the gun and used the trailspike to move the gun left or right at the Gunner's direction.

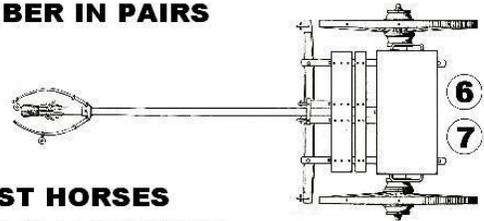
Once the gun was aimed, No. 3 and 4 returned to their positions. No. 3 used a vent pick to puncture the powder bag through the vent and No. 4 inserted a friction primer into the vent and attached the lanyard to the primer by a hook. Everyone then stepped back from the gun so as to be outside the wheels.

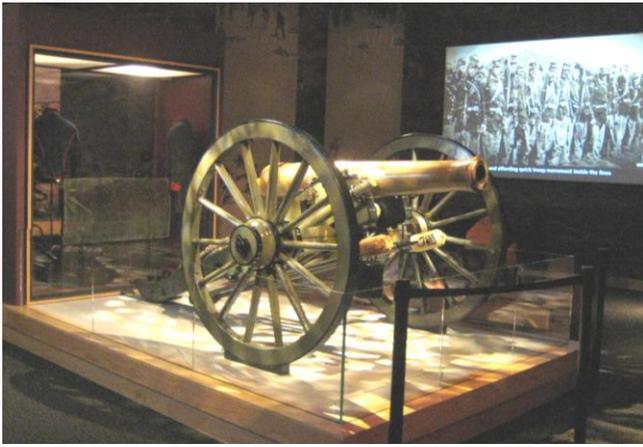
No. 4 pulled the lanyard at the command "Fire!" and the gun discharged, recoiling backwards several feet. The crew then pushed the piece back into its original position. To extinguish any burning embers in the barrel, No. 1 sponged the bore while No. 3 thumbed the vent and the process began again.



4-6 HORSES HITCHED TO LIMBER IN PAIRS

CLOSEST HORSES 25 YARDS FROM GUN





In addition to a display of different types of tubes and artillery equipment, the Gettysburg National Military Park Museum has an outstanding example of a fully equipped 12 Pounder Napoleon.



The night photo of a cannon firing shows the amount a flame generated by the propelling charge.

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Modern Artillery Safety

Civil War artillery firing demonstrations are among the most popular and impressive living history programs held at museums and historic sites. However, *The Artilleryman Magazine* offers the following warning as part of its suggested artillery safety procedures: “Loading and firing antique or replica muzzleloading cannon is a highly dangerous activity, likely to result in death, dismemberment or serious injury. Structural integrity of the barrel, powder charge preparation, premature discharge as a result of burning embers remaining in the barrel from previous cannon fire, reliance on others to follow proper procedures and other unforeseen and unanticipated conditions may contribute to accidents, serious injury or death.”

The National Park Service, the Pennsylvania Historical and Museum Commission, and most other organizations have adopted stringent safety procedures to protect participants and spectators. The Camp Curtin Historical Society has also adopted these generally accepted safety standards for its living history events.

Both the NPS and PHMC recognize the risks in such activity and require independent and experienced safety officers to inspect weapons, ammunition and equipment, establish safety lines for spectators, and monitor loading, firing and misfire procedures. This is the basic minimal legal standard that must be met to protect the public.

Unfortunately, some organizations dismiss safety concerns and leave it to the participants to monitor their own procedures. This is an unsafe and legally unwise practice.

All readers are urged to avoid unsafe firing demonstrations by both artillery and small arms. Accidents are rare but several occur every year. When they do, it places the entire Civil War community under a cloud. When in doubt as to whether the event has adequate safety procedures, ask whoever is in charge. If you do not get a good answer, make your objections known and avoid the event!