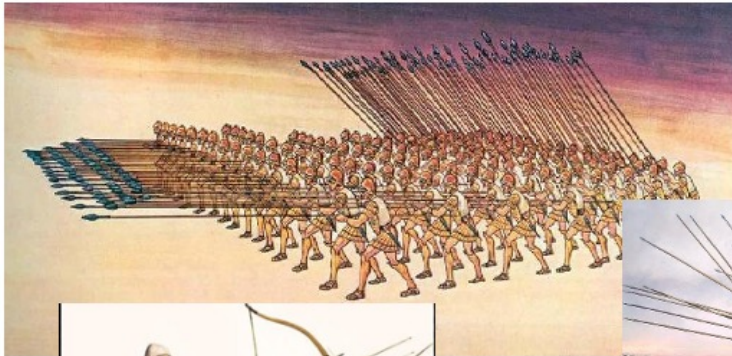


Weapons and Tactics



Medieval Warfare Before Firearms



The Revolutionary War was fought fairly early in the age of firearms with guns that are quite primitive by today's standards. Military leaders can be slow to change their thinking as technology evolves. Therefore, much of the military thinking of the time was based on the way wars were fought before firearms were invented. They only slowly adapted to the realities of firearms.

In the late medieval period, before firearms, the primary infantry weapon was the pike. The pike was a long spear. The way that armies fought with pikes was they would get in massed formations. The pike of the first few rows of the formation would be lowered and would present a formidable obstacle for an enemy that tried to close with the formation from the front. Usually, a battle between armies armed with pikes devolved to a shoving match between the two armies, each pushing their pikes against the shields of their enemy. The army that could break through the enemy's wall of pikes first would usually win the battle. Once the pikes had been broken through, fighting would continue with swords until one side ran away.

Massed pikes were particularly effective against cavalry. It's almost impossible to get a horse to gallop into a wall of pikes. The first several horses that did would almost certainly be killed. Cavalry very seldom succeeded in a frontal attack against pikes. They had more success attacking pike formations from the

sides or rear. A common infantry tactic against cavalry was to form a circular or square pike formation with pikes pointing in all directions. Cavalry could very seldom succeed against such a formation. Thus, mass formations were very effective against both infantry and cavalry.

The mass formations were also effective for command and control purposes. Officers could see their troops and could issue commands relatively easily. Commands had to be issued by voice, or by fife and drum calls. Modern infantry tactics that involve cover and concealment for large armies didn't really become practical until the invention of radio. Up until then, guerilla or skirmish tactics were really only practical for relatively small units.

The one common infantry weapon that mass formations were not effective against was the bow and arrow. An arrow can be fired much farther than a pike can reach. Thus, archers were often used to try and breakup pike formations from a distance. Of course, the problem here is that archers can only carry so many arrows and pikemen can carry shields that will block arrows. But with enough archers and enough arrows, they can be quite effective against pike formations.

Catapults and later cannon were also effective against massed pike formations.

The Earliest Firearms



The earliest firearms were usually fired using an open flame. As technology evolved, various mechanisms were developed to ignite the powder charge that did not involve an open flame, but until the 18th century, these were very complex, fragile and unreliable.

At first, firearms began to replace archers but did not replace pikes. So, armies used combinations of pikes and muskets.

Revolutionary War Firearms

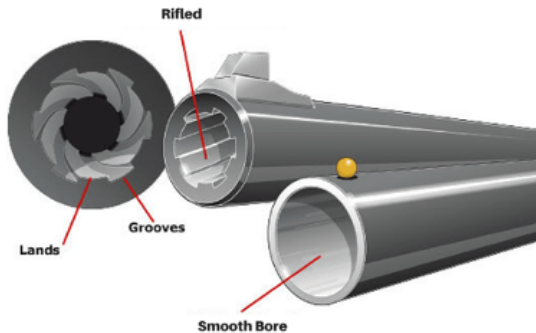


By the time of the Revolution, firearms had advanced to the stage of the flintlock musket. A flintlock gun achieves ignition using a spark created using flint and steel. When a flintlock's trigger is pulled, a piece of flint strikes a piece of steel. This causes a shower of sparks. This ignites a small charge of gunpowder called the priming charge. This in turn ignites the main powder charge in the barrel that fires the gun.

Bayonets eventually began to replace pikes. A bayonet can be affixed to the front or muzzle of a gun that effectively turns it into a pike, although it is not as long as a medieval pike. So, military commanders treated the firearm as a combination of a pike and a bow and arrow.

A well-trained soldier can load and fire a flintlock musket 3 or 4 times a minute. This is very primitive when compared with today's semiautomatic or fully automatic weapons that can fire several shots every second.

Muskets Vs. Rifles



- Rifling gives spin to the bullet
- Spinning bullets are more accurate
- Bullet must fit tightly for rifling to work
- Military preferred speed of reloading smooth bore musket to accuracy of rifle

There were accurate rifles at the time of the Revolution. However, to get its accuracy, a rifle has a series of spiral grooves called rifling cut in the barrel. Those grooves grab the soft lead bullet and give it a spin. Just like a baseball or a football, a bullet has to spin if you want it to fly accurately. Rifles are thus far more accurate than smooth bore muskets.

The problem with rifles is that the bullet must fit very tightly in the barrel in order for the grooves or rifling to work. That makes it very hard to ram the bullet down the barrel with a ramrod. It becomes almost impossible to ram down a tight-fitting bullet after the barrel is dirtied by even a few shots. So, armies usually preferred smooth bore muskets. They could reload and fire as many as 4 shots in a minute. A rifle would be lucky to reload once a minute. But since they were so much more accurate, they were good for doing things like picking off enemy officers at a distance.

Many people believe that the Americans won the war because they used accurate rifles and shot from covered positions while the British were in strict formations. This is a myth.

In fact the Indians were far better at these guerrilla tactics than the Americans. Since many tribes allied with the British, the Americans often lost these guerrilla

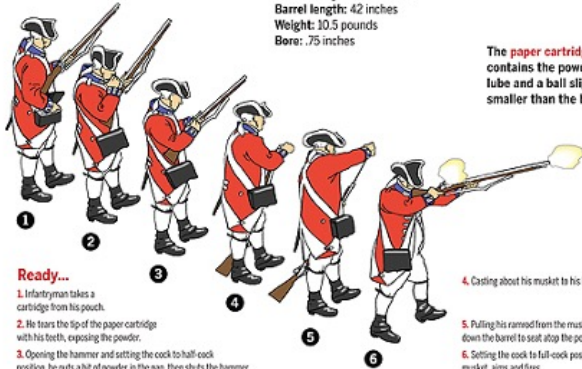
skirmishes such as at the battle of Oriskany.

Loading and Firing a Musket



Short Land Pattern Brown Bess
Overall length: 58.5 inches
Barrel length: 42 inches
Weight: 10.5 pounds
Bore: .75 inches

The paper cartridge contains the powder, lube and a ball slightly smaller than the bore.



Ready...

1. Infantryman takes a cartridge from his pouch.
2. He tears the tip of the paper cartridge with his teeth, exposing the powder.
3. Opening the hammer and setting the cock to half-cock position, he puts a bit of powder in the pan, then shuts the hammer.

4. Casting about his musket to his left side, he pours the

5. Pulling his ramrod from the musket, he rams the powder down the barrel to seat atop the powder
6. Setting the cock to full-cock position, he snatches the musket, aims and fires.



The flintlock musket is a fairly complex weapon to load. You can see the process here.

The process begins by bring the cock to a position called half cock. This is like a safety. You cannot pull the trigger while the cock is at the half cock position. You can see the position of the cock and the hammer after a flintlock is fired in the top right picture. Before the soldier can begin to reload, he needs to pull the cock back to the half-cock position as shown at bottom right. However, he would leave the hammer in the front position as shown at top right.

Next the soldier would grab a paper cartridge from his cartridge box. You can see the gunpowder and lead bullet in the picture of the paper cartridge. He would bite off the long tail of the paper cartridge with his teeth. That exposes the gunpowder. He would then pour a small amount of powder called the priming charge into the pan underneath the hammer. He would then close the hammer on top of the pan. This will ensure that the priming charge will stay in the pan and position the hammer to fire the gun.

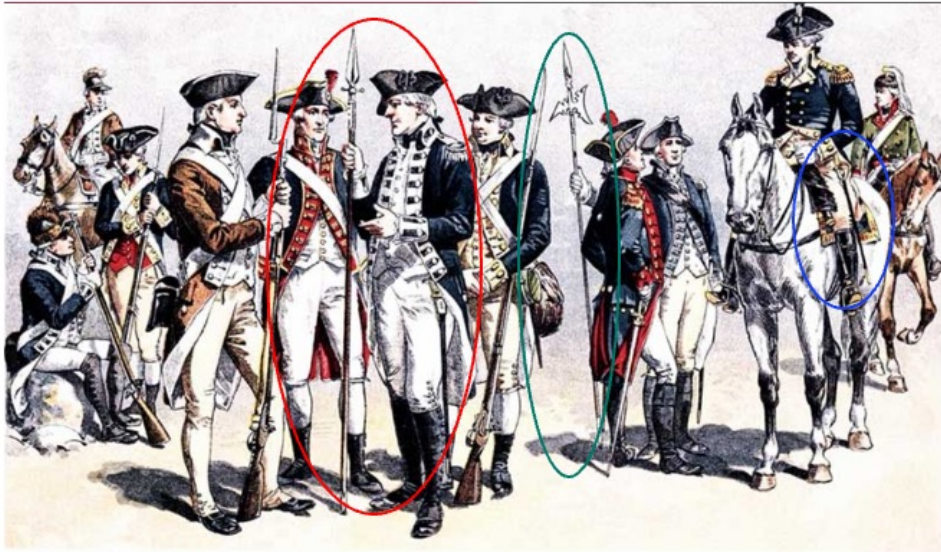
Then he would turn the gun around so the muzzle was close to him. He would then pour the remaining powder down the barrel and insert the rest of the cartridge containing the lead ball into the barrel. He would then pull the ramrod

from its position under the barrel and use it to force the cartridge down to the bottom of the barrel. He would then return the ramrod to its holder.

To make the musket easy to load, the cartridge and ball fit loosely in the barrel. Firing the musket leaves a lot of residue in the barrel so this makes the bore smaller over time. The ball had to fit loosely enough that the soldier could still easily ram it home even after firing several shots. This had the unfortunate side effect of making the gun pretty inaccurate. The bullet would bounce around on its way out of the barrel, so it would not fly very straight to the target.

Now the gun is almost ready to fire. All that is needed is to pull the cock all the way back to full cock. Now pulling the trigger will cause the cock to rotate forward. The flint in the cock will hit the long piece of steel sticking up on the hammer. This will cause a shower of sparks. Along with this the hammer will rotate forward uncovering the priming charge in the pan. You can see in the upper right picture that there is a hole that goes from the pan into the barrel. When the sparks hit the priming charge, the priming charge will go off with flame and smoke. Some of that flame will go through the hole and ignite the main powder charge firing the gun.

Non-Commissioned and Commissioned Officer's Weapons



Jr Officers: Spontoons and Swords

Sergeants: Halberds

Sr Officers: Pistols and Swords

While the flintlock musket had largely replaced the pike on the battlefield, there were still some soldiers who carried what were essentially pikes.

[Build 1]

Sergeants carried a similar weapon called a halberd. It was really more similar to a medieval battle axe than it was to a pike. But, it was really more of a badge of rank than it was a weapon. But they weren't very popular and were soon abandoned.

[Build 2]

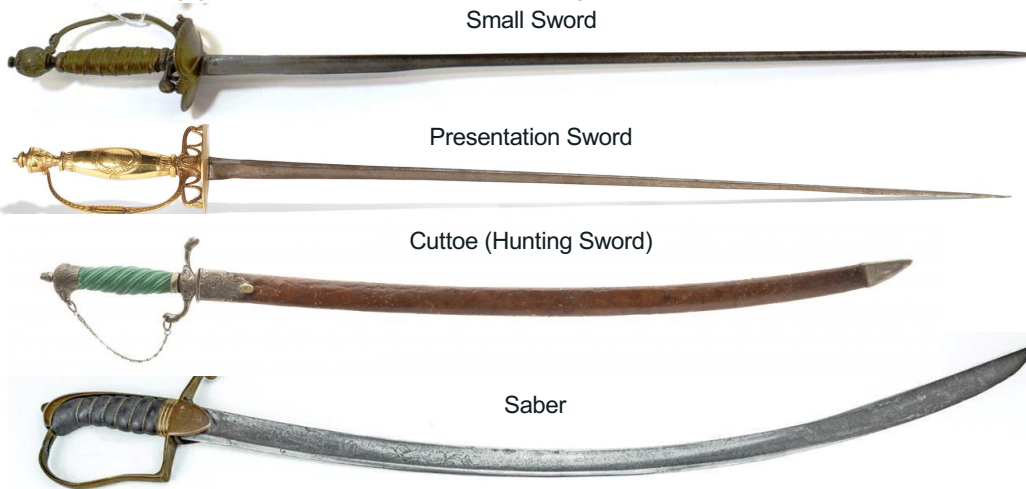
Company officers carried a pike-like weapon called a spontoon. It was considerably shorter than a medieval pike and was not a very effective weapon. Like the halberd, it was really more a badge of rank than it was a practical weapon. However, Washington preferred that company officers carry spontoons rather than muskets because the effort required to load and fire a musket would take the officer's attention away from the men he was commanding.

[Build 3]

Majors, lieutenant colonels, colonels and generals were usually mounted on horses. They were usually armed with pistols. Notice in the picture that the pistol's holster is attached to the horse's saddle rather than to the officer's belt. A mounted officer would usually have two pistols, one on each side of the horse. Once he fired both pistols, they were effectively useless for the rest of the battle. It is impossible to reload a flintlock pistol while on a galloping horse.

Officers were also armed with swords. These, of course, were only useful in hand-to-hand combat. Generals, who were usually wealthy gentlemen, often carried very ornate and expensive swords.

Some Types of 18th Century Swords



There were various types of swords in the 18th century, a few of which are illustrated here.

The most common type carried by senior officers was the small sword. This was typically a narrow bladed straight sword. Many well-dressed gentlemen carried small swords even in civilian life.

Presentation swords were particularly ornate small swords that were presented as an award for a special achievement of some type. They often had hilts made of gold or some other expensive substance and may be encrusted with jewels.

A cuttoe was a hunting sword and would be used to skin and butcher the animal after the hunt was complete. Cuttoes could also be quite ornate as a symbol of their owner's wealth. George Washington often wore a small sword, presentation sword or cuttoe even after the war as president.

Sabers are curved swords. Curved swords excel at slashing where straight swords like small swords are only for stabbing. Curved swords were preferred by officers who needed to fight from horseback since a slashing attack could be

quite damaging to an opponent.

Most senior officers, such as generals, really carried their small swords or cuttoes more as a badge of rank and didn't really expect to fight with them.

Artillery

Three Categories of Artillery/Cannon

Gun: Long tubes, relatively low flat trajectories
Solid shot favored against cavalry, troops in column and flanked infantry lines
Solid shot could be ricocheted along ground
No system of indirect fire developed

Mortar: Short and squat, high arcing trajectories
Fired explosive shells over fortification walls
Not as mobile as gun

Howitzer: Medium length tube, hybrid of gun and mortar
Could fire explosive shell similar to mortar
More mobile than mortar
Could also fire canister or grapeshot – essentially a large shotgun
Very effective against infantry in line



Artillery were the big cannons used by the army and the navy. There were three major types.

First is the gun which is what you normally think of when you think of antique artillery. They had long tubes and usually fired solid round iron shot at a relatively low trajectory. Skilled gunners could ricochet those cannon balls along the ground like skipping a stone on water which could cause devastating losses to unprotected infantry.

Another type of ammunition often used against infantry was grape shot which is a stack of smaller iron balls that effectively turns the gun into a large shotgun.

Guns were typically mounted on wheels so they could be moved.

[Build 1]

Next is the mortar which had short tubes usually elevated at a high angle for lobbing explosive shells over fortified walls during a siege. Mortars were very effectively used during the siege of Yorktown.

Mortars were not mounted on wheels. They would be mounted in place and left

there for the duration of a siege.

[Build 2]

Finally comes the howitzer which is a hybrid of a mortar and a gun. Its almost like a mortar on wheels.

Linear Warfare – The Americans Did It Too!



Most armies of the time still used a formation that was similar to what they used in the pike days. However, it wasn't nearly as deep. It typically had only two or three rows of men. Because of the inaccuracy of the weapons, they were usually fired in volleys where several soldiers fired together. That way, even though they were inaccurate, some of the bullets in the volley would probably hit the enemy.

This kind of linear formation in battle looks insane to us today. But, given the primitive nature of technology of the time, it was really the only way that large armies could fight each other. Soldiers needed to be massed together to protect against cavalry. They also need to be pretty close together to hear the orders that are transmitted via the fife and drum. It is also really difficult to load a musket if you are not standing up. So, this worked. General Washington even hired a German officer named Friedrich Wilhelm von Steuben to teach this form of fighting to the Continental Army. Before they learned how to do this, the Americans lost most battles against the British.

Bayonet Charge



The final stage of a linear warfare battle would be a bayonet charge. This would be using the musket as if it was a pike. If the volley fire had done enough damage to one army, that army would often retreat when faced with a bayonet charge from superior numbers. If not, there would be a clash and vicious had-to-hand fighting would decide the winner of the battle.

Example

<https://www.youtube.com/watch?v=IFpFHj4XfFg&t=56s>

Here you can see what it might have actually looked like.

