

EVOLUTION OF WARFARE

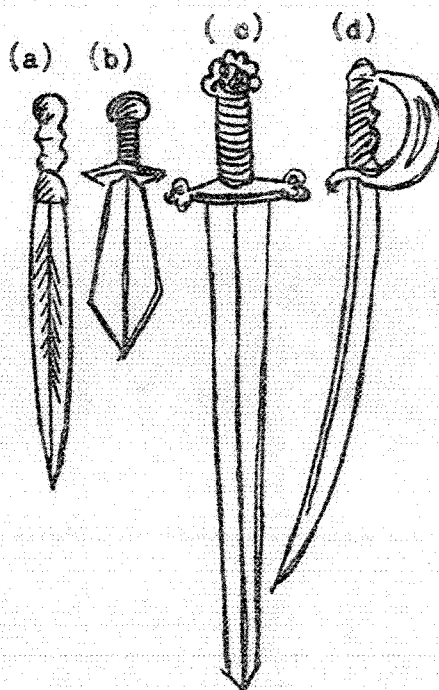
I History as a Teacher:

Many great generals have considered the strategies (Plans of attack) of ancient leaders and developed new tactics from them. Napoleon was said to have created many of his tactics based upon ancient strategies. WE LEARN BY THE MISTAKES OF THOSE BEFORE US.

II Pre-Gunpowder Warfare:

A. Early Weapons:

1. The Sword-



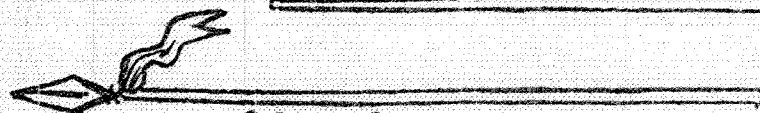
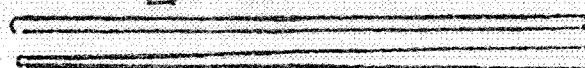
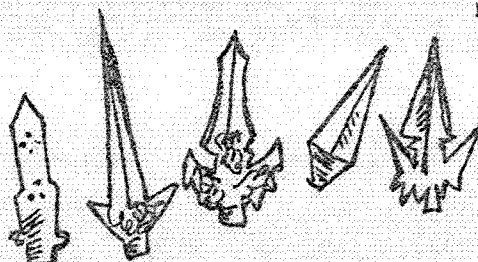
(a) The ancient sword used for short, thrusting blows, but it was made of bronze (a soft metal) and was made obsolete by the advent of iron weapons.

(b) The Iron Roman or Greek Sword- used for short thrusting strokes so as to not expose the un-armored parts of the soldier. The Roman Sword was the same shape but shorter than the Greek.

(c) The Broad-Sword - used for long, sweeping strokes. Normally 6 ft. long it took a powerful man to use one of these. But if used properly it could cut down men as a scythe does wheat.

(d) The Cavalry Saber - used by mounted horseman. Its use was designed for close combat of horseman and infantrymen. (A comparatively recent weapon)

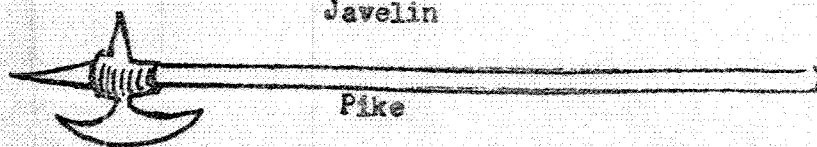
2. The Spear-



Cavalry Lance



Javelin



Pike



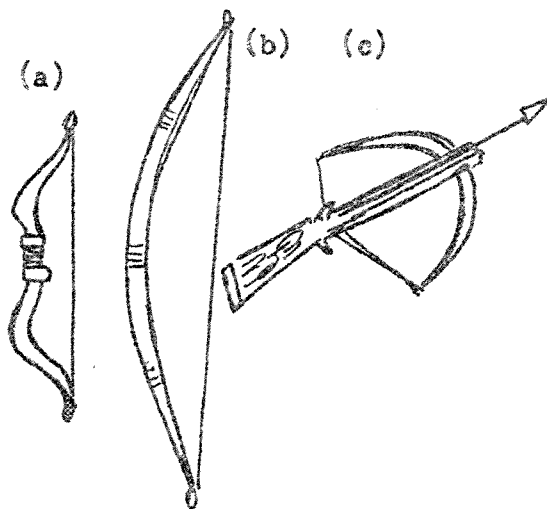
Lance

The Spear was both a contact and a missile type of weapon. Darts or javelins were hurled by hand. The Pike (The heaviest form of Spear) was a contact weapon used by the Infantryman. Pikes were sometimes 20 ft long and very heavy. Pikemen were considered fearsome in the time of Armored Cavalry (Knights)

The Cavalry Lance is a contact weapon. It was used by the mounted soldier to impale the enemy Infantryman. Even in early American fighting the Lancer was a respected foe.

The Lance was once a most fearsome wpn. Used by armored knights it was large and used normally for shock action as in mounted charges. Very long but usually not too pointed. Designed to unhorse the enemy cavalryman. Some lances were known to be 20-25 ft in length.

3. The Bow-

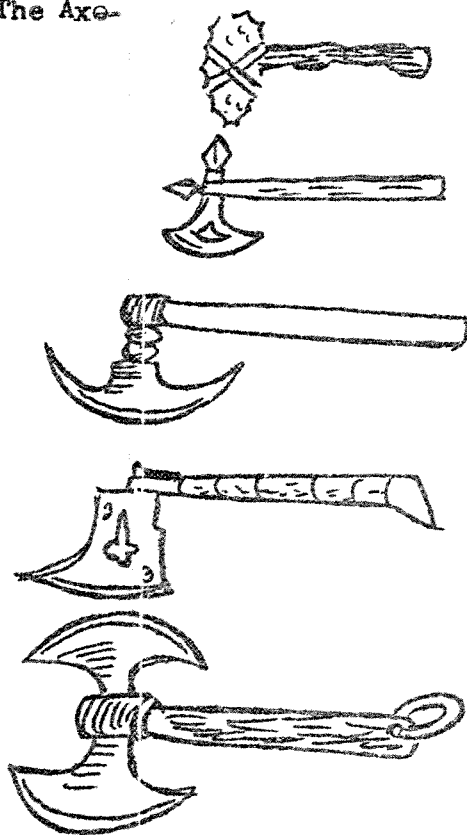


(a) A short, horn bow used by the oriental bowman. Such famous warriors as Genghis Kahn used hordes of mounted bowman and archers, armed with this weapon.

(b) The Long Bow made famous by the English Archers was used EVEN after gunpowder ..., due to its excellent range and accuracy.

(c) The Cross-Bow was extremely powerful and was once said to be so terrible as to put an end to war. However the rapidity of fire is cut down by the loading procedure.

4. The Axe-



Since ancient times, even into pre-historic times the axe has been one of man's hand weapons.

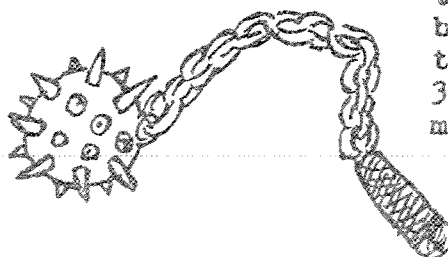
The first axes were crude, shaped stones attached to handles by bindings.

As man's ability to improve developed, the axe developed also. The bronze axe was considered an all powerful hand weapon, used by the infantryman to fight in close combat. But when the iron axe came into being it soon caused the bronze axe to be discarded.

The Battle-Axe has come down through history with the reputation of being one of the most terrible weapons used and if used properly it could carve a path as wide and as long as the man using its arm length.

The last type of Battle-Axe shown was used in the time of knighthood and was attached to the wrist with a thong. The double head allowed the user to make a stroke which was lethal both back and forth. (An ancient lawnmower)

The use of the Battle Axe led to the development of such weapons as the Mace. Due to the development of better armor this weapon is designed to supply tremendous leverage (by use of the ball attached to the chain) so that the normal blow might be magnified 3 times or more. Used generally by mounted cavalry.



III Early Battlefield Tactics:

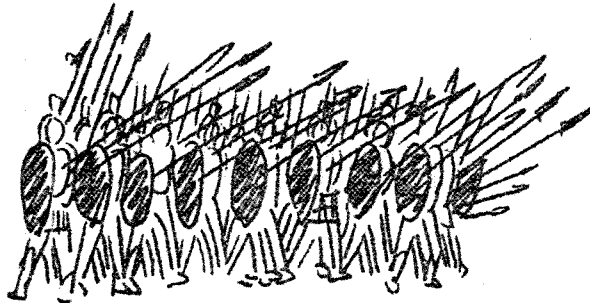
A. The Greek Phalanx

1. Designed for shock type of action.
2. Based on Massed Infantry.
3. The Greeks perfected this type of formation and for centuries were unbeatable. In 500 BC they defeated the Persians, a nation more than five times their size, mainly by the use of this battle formation.

Arms

Arms:	Spear	Breast Plate
	Sword	Shield
	Helmet	Leg Protectors

Weakness: Took time to organize the phalanx and if surprised would be surely defeated.



The first Armored Tank

"PHALANX"

4 to 30 Ranks of men standing shoulder to shoulder. Each rank, as it neared the center of the formation carried a longer spear.

- B. Alexander the Great used the Phalanx but also incorporated the use of fast striking cavalry. Alexander used both Heavy and Light cavalry for support of his infantryman.

Alexander usually used 16 rows in depth shoulder to shoulder. And 6 rows of 20 ft. pikes extended beyond the front rank. Each rank holding a longer pike than the one before.

C. The Roman Legion:

The Roman Legion improved the Greek Phalanx by adding "Joints" to achieve Flexibility.

(10 to 30 units of 100 soldiers in each line)



The Roman Phalanx also spread the distance between the men to twice that of the Greek. Gave the men more fighting room.

At first the Romans used 30 units each of which included 100 soldiers in 3 lines, each line was 250 ft apart. Later they used 600 men in 10 units.

On the flanks the cavalry were used as auxiliary arms and for scouting or to follow up a victory or to hinder the enemy's advance.

Usual tactic was to hurl the spear from a distance and then cut through the enemy ranks with the short swords.

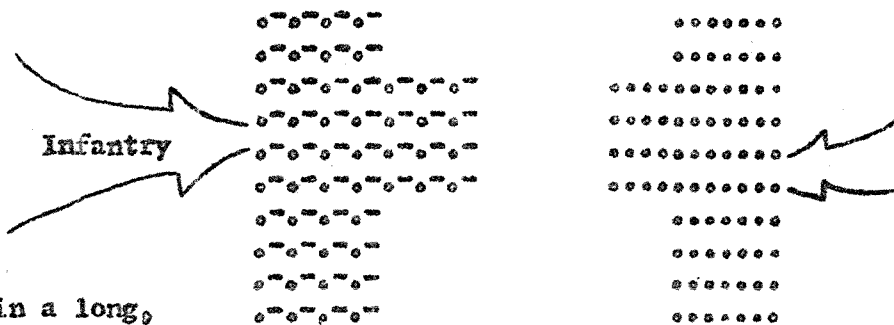
Evolution of Warfare cont'd

- D. The Barbarian Cavalry routed the Romans at the battle of Andrianople in 378 A.D. and the invention of a better stirrup (making it harder to unhorse the cavalryman) made the cavalry become the most important weapon in warfare and the infantryman never again regained his place as the most powerful battle weapon.
- E. The development of the Cavalry as a weapon started long ago when the Greeks and Romans began using chariots for combat. But the greatest use of mounted, armored horsemen came during the medieval times of Knighthood. The tactical formation considered all powerful was the Heavy Cavalry charge of hundreds of mounted knights.

The infantryman played an important part here due to the use of the lance for unhorsing the enemy and the heavy armor making the knights less formidable on the ground. The pikemen usually took care of those knights unhorsed in the original charge.

Weapons used by the Knights:

Lance
Sword
Dagger
Mace
Battle axe
Shield
Armor (fully covering the body)



The battles usually took place in a long, clear meadow area. It was comparatively flat. There was much excitement to such battles and sometimes it took weeks for the battle to begin.

Siegecraft and Fortifications:

Review: BATTLE TACTICS

A. Weapons:

1. Close combat type: Sword, dagger, etc.
2. Close combat type: Axe, Mace. Leverage used for greater power of the blow.
3. Combat at a distance: Javelin, Spear, Pike, etc.,

B. BATTLE FIELD TACTICS:

1. Phalanx - Greek----Roman
2. Cavalry- light and heavy.

* 3. Basic component the individual soldier.

C. SIEGECRAFT AND FORTIFICATIONS

1. Tower defense - "Keep" Started out with just simple wooden palisades on an earth mound.
2. Fire danger caused - Walled tower made of stone. Still based on a rectangular principle of building.

3. The Crusades influenced the building of walled cities:

- a) consisted of moat
 - outer walls
 - inner walls
 - Keep

b) Castle building:

Castle was a city in itself. Ruled by a Lord and manned by the "Sergs" of the region. It was a formidable place to attack.

4. Methods used to capture a walled city or Castle:

- a) Traitor within the walls
- b) Cut off or contaminate the water and food supply.
- c) Military assault.

- * Of the methods the first was the most militarily functional, with little or no loss of men and equipment.
- * The second was only good on heavily populated cities.
- * The last was costly but often used.

Siegecraft and Fortifications:

4. Methods of Assault:

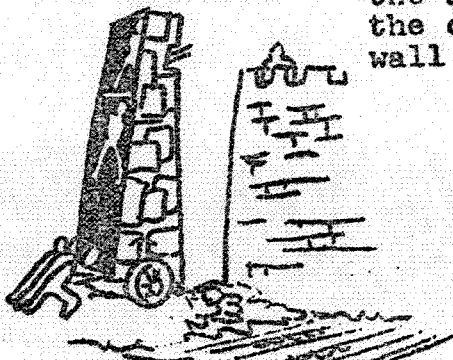
a) Earliest methods:

Scaling Ladders
Scaling ropes

Costly to men and equipment

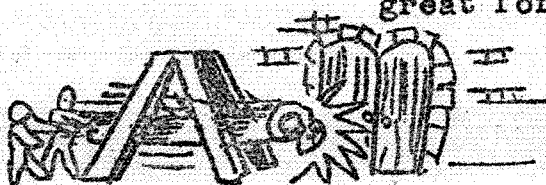
b) Movable Towers:

Begun by the Romans this method put the attacking Army above the walls of the city and allowed them to breach the wall by crossing planks to the walls.

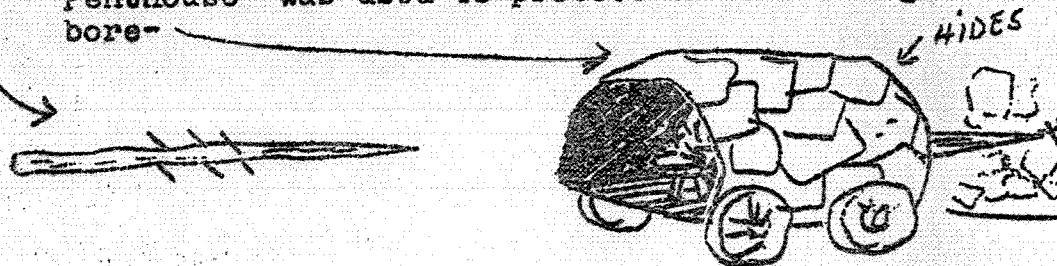


c) "Shock" Apparatus:

- 1) Battering Ram: A huge beam hung between supports and swung back and released with great force.



- 2) "Bore" : A slender pole sharp pointed to pry loose enough stones or bricks from wall to let the attacking army inside the walls.
"penthouse" was used to protect the men using the bore-



d) Missile Throwers:

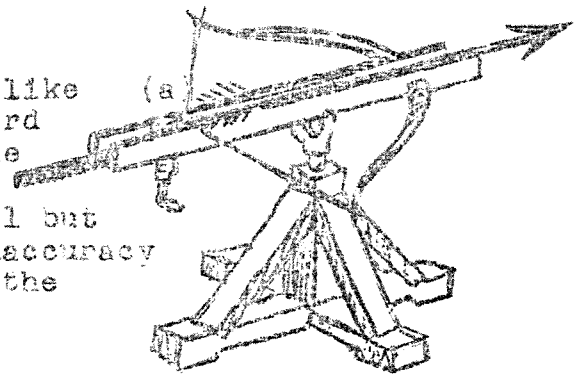
These weapons employed three types of propulsion principles:

- a) Tension
- b) Torsion
- c) Counter-poise

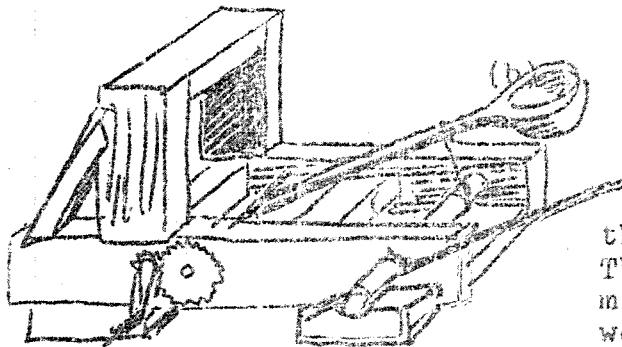
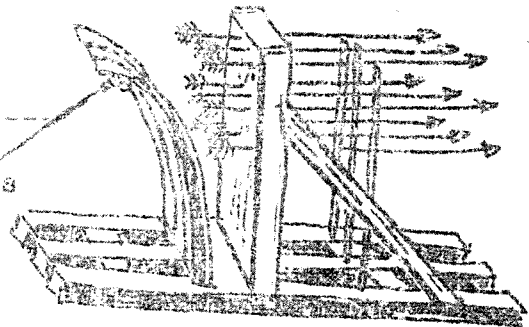
Siegecraft and Fortification:

The following diagrams are those of ancient Medieval Siege weapons. These weapons were used as we use today's Artillery for "Shock" action and support for our other forces. A close look at the weapons and an analysis of how they were used gives us some insight into modern military tactics:

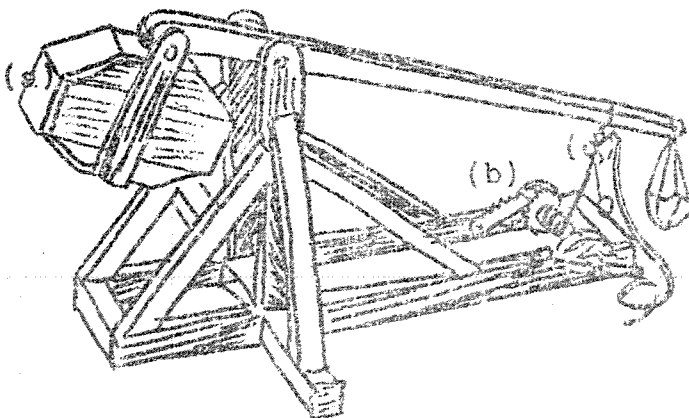
① The first weapon shown is like a giant crossbow which when the cord (a) was released hurled the missile against the castle wall. It usually did little damage to the wall but did clear it of defenders. Its inaccuracy made it of lesser importance than the following.



② This weapon was called the (Ballista) meaning to hurl, it was based on the tension principle of propelling missiles. When the rope was cut the heavy metal strands hurled forward discharging the arrows this weapon, with its capability of hurling many arrows was of great use.



③ This weapon was called the catapult. It is based on the Torsion principle of propulsion. The rope is wound around the roller (a) and then when released the torsion would rapidly unwind hurling the missile in (b) at the castle wall. The bigger the catapult the bigger the missile. Therefore it was a good siege weapon.



④ This weapon was called the (Trebuchet-meaning over) This weapon was based on the counterpoise principle. The weighted end (a) was cranked up by the geared crank (b) and when the rope (c) was released the missile in (d) would be hurled with considerable force at the castle under siege.

The basic principles exhibited by these siege machines was tension, torsion and counterpoise. Many newer weapons did

GUNPOWDER ERA

With the coming of gunpowder drastic changes in warfare took place. The use of gunpowder in artillery pieces made the old castles or walled cities vulnerable to attack. Therefore Fortifications went into a new phase of development.

At this time (16th Cent) all key points of a nation including Trade centers and Capitals were carefully fortified. Greatest area of warfare was between France, Germany and Belgium and continued to be so until World War II.

A. Fortification of late 16th and early 17th Century:

1. Change: The old, first used, castles with their high, stone walls were:
 - (a) Too easy and vulnerable a target for artillery
 - (b) The walls lacked suitable positions for mounting of defense guns.
 - (c) The old form of long, straight walls left considerable "dead space" upon which the defenders could not train fire during an attack.

2. New: The new type of fortifications were designed upon the principle that "each part should defend its neighbor and be defended by it." A whole new form of castle was evolved to correct the weaknesses of the old. They called this new form "Bastions".

(a) In the new type of fortifications not only the outline but the whole shape changed. Instead of the towering masonry, so vulnerable to attack, the new walls were described as "sunk in the ground". Although the fortification looked like a great star when approaching it on the ground it would simply look like orderly grassy mounds, with scarcely a trace of masonry visible. The main stone walls (known as the "scarp") were solidly backed with earth or other filling so it could not be easily breached. Above it, earth was piled up to form the "Rampart", from which defense artillery was operated. In front of the "Scarp" was the "Ditch", often 100 ft. wide and filled with water. On its outer side was another stone wall, known as the "Counterscarp". It was surmounted by a bank of earth called the "Glacis" which sloped gently upward to almost the height of the rampart. The "Glacis" was designed to intercept most of the besiegers cannon balls.

Once again fortifications put defense in front of attack.

REFER TO THE DIAGRAMS ON PAGE TWO FOR ILLUSTRATIONS OF THE PRINCIPLES DISCUSSED.

Among the Infantrymans weapons development some advances were made at this time also. A smaller, lighter weapons was developed. The "Brown Bess" Musket emerged from the old Matchlock, and Wheellock weapons. These two were too heavy so a lower form of musket was needed. The Brown Bess helped greatly in improving the regularity of the infantry volley due to its light weight.

Reloading still slow, laborious process. Pikemen still had to protect the musketeer while he reloaded until the bayonet was developed around the first part of the 17th Century.

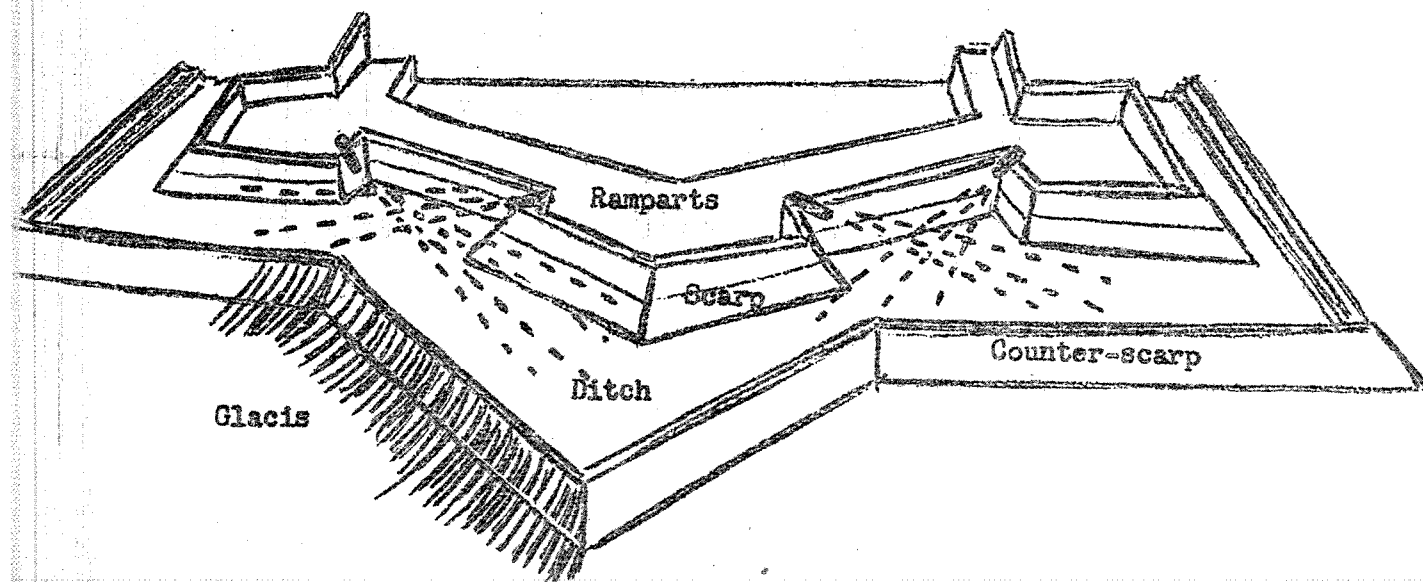
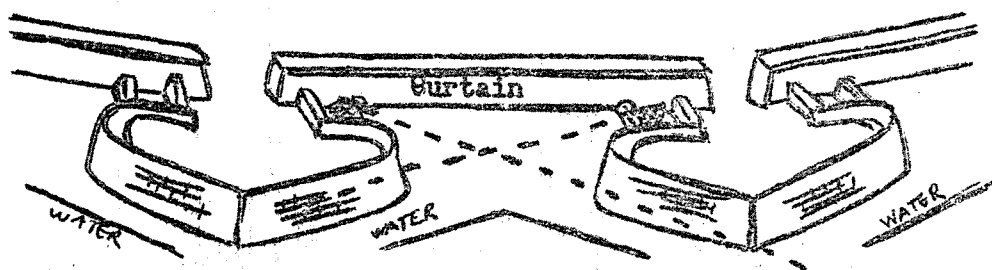
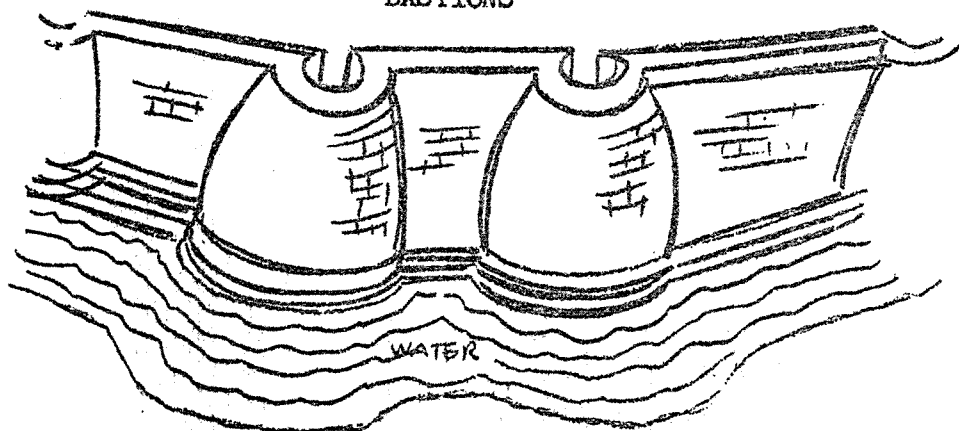
Statistics of the Brown Bess Musket:

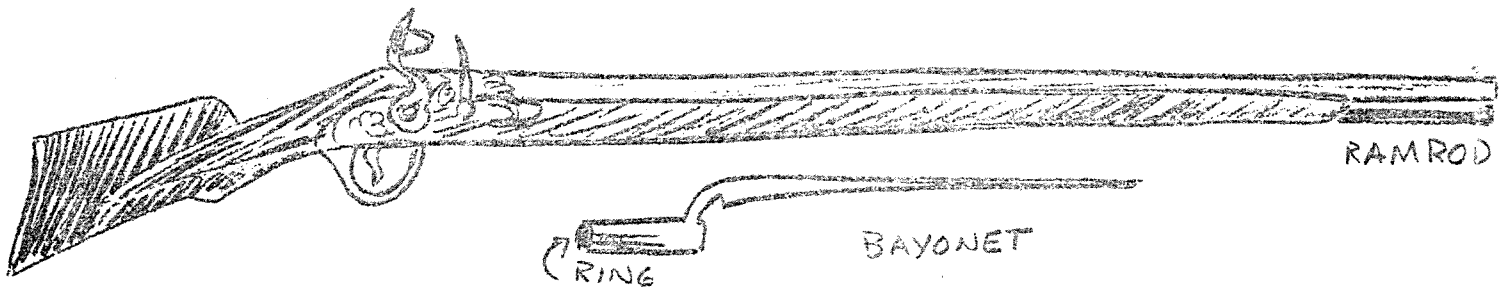
1. Muzzle loader
2. Smooth bore
3. Used black powder for priming and propellant

16th and 17th Century Advances

in FORTIFICATIONS:

BASTIONS

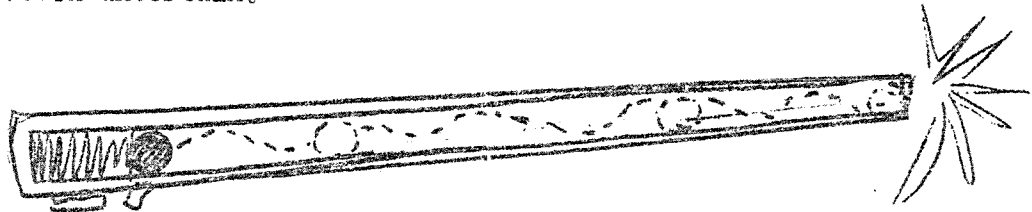




4. Five feet in length
5. Fired one ounce lead balls $\frac{2}{3}$ s of an inch in diameter. (cal .69)
6. Pieces of paper enclosed loose ball and certain amount of gunpowder needed to propel it (called paper cartridge) Most of users avoided loose powder.
7. Loaded while standing upright.
8. Two shots a minute normal rate of fire with wooden ramrod
Four shots a minute " " " " " iron ramrod.

9. Weaknesses:

- a) Misfires frequent
- b) Ignition was outside and dampening of the exposed priming pan by rain often made it fail to fire
- c) Priming powder often shaken out of pan
- d) Even if everything went well the bullet did not go very far and its direction uncertain.



- e) Effective range 100-150 yards

This is ~~where~~ original saying "Don't shoot until you see the whites of their eyes got its meaning".

Evolution of Warfare

DEVELOPMENT OF SMALL ARMS:

I First step in transforming the muzzle-loading flintlock musket into an automatic, breechloading weapon was the invention of the "PERCUSSION CAP".

A. In 1814 "Fulminate of Mercury" was placed in a tiny metal cap, this was called the percussion cap.

B. Cap fitted onto a nipple outside the gun, same as flintlock, and worked the same as the flintlock in that the spark caused by cap discharged weapon.

1. Advantages: Less likely to misfire in wet weather; and reduced to a certain extent the former escape of gas thru the vent in the barrel.

2. Weakness: Rate of fire slow due to the care and time required to place the cap precisely in place.

Still A muzzle loader

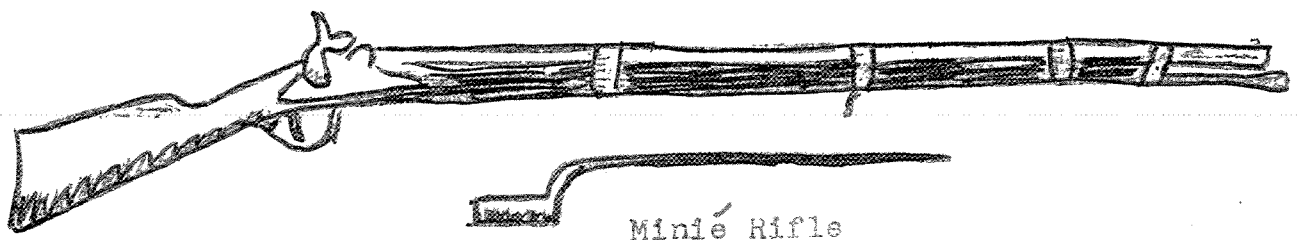
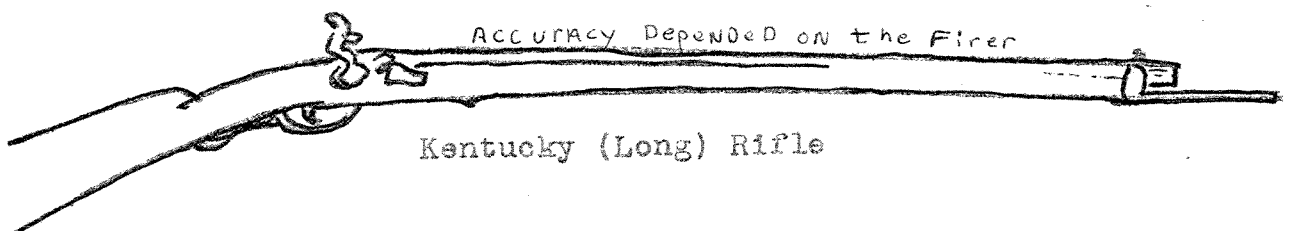
II Next step came in the development of the "RIFLED BARREL". (Although it was known about for 300 years before.)

A. Rifling - straight or spiralled grooves inside barrel which controlled direction of bullet.

✓B. Bullet fitted tightly into gun barrel in order for it to follow the grooves. Less gas escaped therefore increasing range and accuracy.

(1) The tightness of fit caused loading to be slowed however so it wasn't until 1855 that the military used it.

C. On the American Frontier it reached its highest development in the long barreled "Kentucky Rifle". In the battle of New Orleans in the War of 1812 the Frontiersmen were said to have killed 200 British troops with deadly accuracy.



Evol. of Warfare cont'd

- IV. Next major step came in the development of the "CYLINDRO-CONOIDAL BULLET" to substitute for the old round ball.
- A. Shape--base was cylinder that tapered into a cone-shaped tip. Thin and greased so it could be rammed easily into a muzzle loader. The greased bullet was attached to a paper cartridge of powder charge.
 - B. Advantage: Bullet expanded to fit bore, preventing loss of gas and therefore gave greater range. The Brown Bess had an effective range of 100 yds and a maximum range of 200 yds. This new muzzle loading rifle with long bullets had an effective range of 500 yds and a maximum of 1,200 yds.
 - C. A British Captain Minie created a rifle using this type of bullet which was used during the American Civil War as its standard weapon. However in India a mutiny was started in 1857 over the greased cartridges.
- V. Breech-loading was the next step in development of small arms: the problem was to develop a breech which could absorb the "back kick" of the explosion and still be operated.
- A. In 1836 a German gunsmith produced a workable breechloading rifle known as the "Needle Gun."
 - 1. Operation: Open Breech by pulling back a lever; insert into breech a paper cartridge which had a percussion cap between bullet and powder; then close and lock breech by pulling down lever. When trigger was pulled a little needle pierced the percussion cap and created the detonating spark inside the gun barrel.
 - 2. Although this had great advantages only the Prussians used this rifle for 10 years after it was invented. The Needle Gun could fire 7 shots a minute compared to the muzzle-loaders 2 but the Minie Rifle was most popular at the time.
 - 3. A year after the American Civil War had ended the Needle Gun came into popular use. The Prussian Army had two great victories due to its use and all the armies of the world started to change over.
- VI. Development of the Metallic Cartridge in 1856 by the American inventor Morse (also invented the telegraph) was the next real advance in small arms.
- A. In Morse's metallic cartridge the percussion cap was set off when the base of the cartridge was struck by a pin released as the trigger was pulled. This invention led to the later development of the "Repeating Mechanism" (firing several shots without reloading)
- VII. Repeating Weapons:
- A. A revolver by "Colt" was perfected in 1835. It was used effectively in the Mexican War (1846-1848). In this weapon several bullets were loaded at once and fired one after the other without reloading ("Six shooter.")

Evol. of War cont'd

VII Repeating weapons cont'd

- B. A repeating rifle was invented by the American "Winchester" in 1860. This weapon was first used by the Turks against the Russians and in 1884 the Germans used it. But the US still used the old fashioned breech loaders until 1892.

VIII Development of Smokeless powder and smaller caliber bullets.

A. Smokeless powder

B . Major Rubin's .30 cal bullet

Evolution of Warfare

From Early Times

- I. Individual attack
- II. Unit attack (family)
- III. Unit attack - army (Greek and Roman)
- IV. Unit attack - family in a fortified castle
- V. Siegecraft
 - A. three main principles used in siegecraft weapons
 - 1. tension (bow)
 - 2. torsion (crank)
 - 3. counterpoise (counter-weight)
- VI. Gunpowder
 - A. first known in the 13th century
- VII. Early firearms
 - A. crude, innaccurate, and poor range.
 - B. infantry was the most used weapon
 - 1. they used the longbow and the pike as they were the main weapons then.
 - C. early artillery
 - 1. very crude

2. noise and smoke were the main objectives.

VIII. Muzzle loaders first used in the 14th century

A. used black powder

B. at this time better artillery was being developed

C. ignition (lighting the charge)

1. loose match

a. crude and uncertain

2. wheel lock

3. flint lock

IX. Description of ignition named above

A. loose match

1. used in 14th to 15th centuries

2. a man carried a burning stick to ignite the weapon.

3. this type of ignition was used primarily for artillery

B. wheel lock

1. introduced a pan

a. a little pan to put a little powder in (primary charge). This was lit, lighting the main charge, firing the weapon.

2. used in the 16th century

3. the wheel was sprung tight by a spring; when the trigger was pulled, the wheel spun around against the edge of the pan creating friction to ignite the primary charge which lighted the main charge.

C. flintlock

1. main principle

a. sparks

2. when the trigger was pulled the mechanism struck against some flint causing sparks to ignite the primary charge.

D. matchlock

1. used in the 17th century

2. an ancient pistol (horse pistol)

a. it was a cavalry weapon

3. the fuse was inserted into the trigger mechanism; when fired, the trigger went down to the pan, lighting the fuse in the trigger going down to the main charge

X. All weapons were clumsy, inaccurate.

and very heavy.

XI. Black powder

A. ignited by heat

B. cannon balls were not used

XII. Artillery

A. ignition

1. fuse came out of back of barrel; was lighted by a loose match.
2. 600 pound cannon balls were used in the 13th century
3. primary use was for siege-craft.

Evolution of Warfare

I. Castle

A. old wooden enclosed castle was called the palisades

B. basic shape

1. high walls

2. square shaped

C. "keep"

1. place of safety

2. only if all other defenses failed

II. Siegecraft

A. siege

1. under attack

B. 4 types of weapons

1. movable tower

2. spy or traitor within the walls to open the door

3. starvation

4. missile throwers

a. catapult

b. crossbow

APPOINTMENT IN TOYKO

I. 1942-43 allied forces began the pincer movement.

A. our supply line was over 10,000 miles long

B. 1942-44 Japanese supply lines were constantly pounded.

II. We were greatly outnumbered but we took the following islands with less casualties than the Japanese:

A. New Guinea

B. Admiralty Islands

C. Gilbert Islands

D. Marshalls

E. Marianas

III. There were 152,000 Japanese killed to our 13,000 but the islands had to be taken by very hard fighting. We were able to buy-pass 160,000

IV. Invasion of the Philippines

A. October 20, 1944 we returned to the Philippines

- B. Luzon and Mindinao were the main islands of the Phillipines.
- C. We struck at Leyte a very small but important island.
- D. Battle for Leyte Gulf was the biggest naval victory for us in the whole war.
- E. On February 1945 Corriegidor was attacked and 12 days later it was ours

IV. Important dates

- A. March 19, 1943 - Battle of the Bismarck Sea.
 - 1. 22 Japanese ships were sunk.
- B. March 19, 1943 was also the turning point in the war mostly because of air power.
- C. August 1945 - first atomic bomb dropped.
- D. September 1945 - surrender of Japan on the battleship Missouri.