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THE EVOLUTION OF UNITED STATES MILITARY FIREPOWER

Benjamin Lawrence
blawrence6@murraystate.edu

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THE EVOLUTION OF UNITED STATES MILITARY FIREPOWER

By
Benjamin Lawrence

Project submitted in partial fulfillment of the
requirements for the
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Abstract

The United States has used many different weapons over the years for its military. What exactly caused them to make changes and advance artillery? This essay shows that war is the main reason for technology development. Where did the United States start when it came to weapons? Where are they now? What does the future of weapons look like for the military? This essay is beneficial to those who want to learn a little about what has been used since the United States was first established. I am en route to becoming an Officer in the Army. This paper is beneficial for all to know and understand. The weapons we used in the past and those of today are a part of the development of warfare. We can learn from our history of armaments to be more effective leaders and soldiers on the battlefield.

Keywords: Artillery, small arms, machine guns, tanks, specialty weapons

Acknowledgments

Optional section that thanks those your helped you or who you would like to acknowledge.

Typically, short statement.

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Introduction

The United States military has been around for a very long time. Just like we as people grow and change as we get older, so does our military. The military has changed so much since it first began in the 18th century. It used to be all muskets and cannons, and now we use automatic rifles and tanks. This progression is natural because America must stay ahead of the technological curve to protect the Constitution and the land that we love. The topic covered is the evolution and change of the United States military weapons systems.

The different categories to be discussed will be small arms, machine guns, artillery, weaponized vehicles, and other weapons that do not fit into a specific category. Small arms, in military terms, are standard issue rifles used by the United States common infantry soldier. Machine Guns are fully automatic rifles used in combat for supportive fire. Artillery represents old-timey cannons, and modern field artillery guns are generally used to break down fortifications. Tanks are mobile, armored, weaponized vehicles.

American Revolution

When the United States Army was first founded in 1775, it was primarily composed of farmers and merchants. The Army was created to free themselves from those in control of Great Britain, which later became known as the American Revolution. The American Revolution was a unique time in history because a change in tactics resulted. Before the American Revolution was fought, military conflicts were fought in rows and columns in the form of an organized box. Military strategy was almost like what one would see in drills and ceremonies in today's time.

The problem with rows and columns as a warfare tactic is that many soldiers died just standing out in the open. The British soldiers greatly outnumbered the colonists; therefore, the colonists decided that they would use a type of warfare similar to that of the Natives Americans.

Guerrilla warfare is an attack and retreat type of way to fight. The colonists used this tactic to set up ambushes and kept themselves spread out while attacking from multiple directions (Center of Military History, 2008, p. 41). This fighting style made it impossible for the British to react and use overwhelming firepower against the colonists.

This was crucial to winning the war because the United States did not have the manpower that the British Army had nor did they have the weapons designed for war. The United States Army was a form of militia with no military training. However, the men who composed it all had some sort of hunting rifle. The muskets they used were the ones they brought with them, generally used for hunting. There were no standard-issue rifles during these trying times as guns were produced piece-meal.

Small Arms

In today's terms, the musket, also known as a muzzleloader, took a very long time to load and prepare for fire. Colonists would first have to pour gunpowder down the barrel, ram it, then ram the ball down. It was crucial to pack everything in very tight so that one did not lose the ball and powder while aiming, and two, the more compact it was, the more consistent the shot. After preparing the musket to be fired, colonists could then start working on preparing the flintlock. The flintlock was the type of firing mechanism used during this time. It consisted of a piece of flint and steel that were struck together to create sparks. It is set up using a hammer, frizzen, and pan. The hammer had a piece of flint attached to it, while the frizzen was a piece of steel. The pan would have a little bit of gunpowder put into it. The frizzen then protected the gunpowder before the strike by the hammer (Flintlock or Percussion, (n.d.)). The colonists would then cock the hammer back and pull the trigger. The trigger caused the hammer to strike the frizzen, creating sparks that lit the gunpowder in the pan, causing the musket to fire.

Artillery

The field artillery comprises big guns and cannons used to support ground troops while covering them with indirect fires. Typically, at much further ranges than a small arms weapon can reach and dealing greater damage due to a much larger round. There were cannons used during the American Revolution. The field artillery consisted of three types of weapons: the cannon, Howitzer, and mortar.

According to the National Park Services, on the battlefield of Yorktown, there were two types of cannons used during the war. They were the field guns and siege cannons. The field guns were typically used to break down the enemy's front line, whereas the siege cannons were used mainly for tearing through fortifications because they had a bigger bore. The bore is how big the barrel is in diameter and what caliber the cannon is capable of firing. The field guns were mainly used during the American Revolution because they were lightweight and easy to move around if necessary; they could fire different types of rounds, including a solid shot, grapeshot, and case shot.

The solid shot was quite literally a solid ball of iron. This type of round was typically used to destroy walls or fortresses but could be used on the enemy as well, "Solid shots are used for puncturing walls, buildings, and ships" (National Park Services, 2005, p. 1). If it were used on the enemy soldiers directly, it would mainly be used to break up the enemy line. This type of shot could easily tear through human bodies.

Grapeshot was used for taking out many soldiers at once. It was like a giant shotgun blast. This shot was designed for long-range by firing a charge of lots of tiny bullets at the enemy. Soldiers would put musket balls into a sack with a wood base to make loading more

accessible and faster. "The container for grape[shot] was usually a canvas bag containing lead or iron balls half again as big as musket balls" (The JDN Group, 2014, p. 31).

The case shot was a projectile bomb. It worked similar to a modern-day grenade. Soldiers made case shots by hollowed-out cannonballs loaded with musket balls and gunpowder. These were timed bombs projected to explode right before making contact with the enemy, "Spherical case shots are similar to shells and contain shrapnel (musket balls). These are anti-personnel rounds, timed to explode in front of the target while airborne" (National Park Services, 2005, p. 1).

There were many downfalls to these weapons; the muskets used exposed gunpowder and a pan. The gun would become practically unfireable if there were just enough moisture. Sparks and gunpowder do not like water at all. If it was raining, the flint and steel had the possibility of not sparking, or the gunpowder would not ignite. Cannons were big and clunky, therefore were extremely hard to move around. At some points, one would need a horse to maneuver a cannon to another location. They were also not the most reliable due to spacing between the powder and the cannonball itself. If there was not enough spacing or too much spacing, the cannon had a chance of blowing up.

Early 19th Century (Mexican American War)

The Mexican-American war ended about thirteen years before the Civil War started. The Mexican-American War was President James K. Polk's idea of expanding US territory to the west coast. This idea is known as Manifest Destiny. During the United States expedition westward, US soldiers were attacked by Mexican cavalry troops. At that time, both countries were claiming ownership of the land known as Texas today. Polk used this skirmish to justify going to war with Mexico. This war was relatively short compared to other military conflicts

fought by the United States, going from 1846 to 1848 (History.com, 2009). Due to the short nature of this war, few advancements in small arms and artillery were made because there were only two guns. It can be assumed that the reason there were not many things to improve on was because of the lack of time to make any efficient changes.

Small Arms

Going backward before the Mexican-American War following the American Revolution, the colonists understood the need for a standing army to protect the newly created United States. The relatively new Army of The United States understood the need for standardized weaponry that all soldiers could use. The Army created a standard-issue rifle called the US Model 1816. It was chambered in a .69 caliber and had a smooth barrel. This musket is the United States Military's first standard-issued small arms (NRA, n.d.).

The US Model 1841 and US Model 1842 were the two rifles used during the Mexican-American War. They were the last rifles that used these so-called smooth bore barrels. The significance of the Model 1841 was its involvement in the invention and production of the percussion ignition system. It was the first rifle that was made to use the percussion cap. The percussion caps made muskets more reliable in any weather condition (Adams,2021).

A percussion cap is a small cap with a mixture of Mercuric Fulminate. It is made from mercury, nitric acid, and alcohol. With the correct amount of force, this mixture creates a small explosion. The way the percussion cap worked similarly to the flintlock musket. One would load it just like the original, but instead of a frizzen and pan, it had a hollowed-out nipple leading to the chamber with gunpowder. One would place a cap on the nipple, cocking the hammer back and pulling the trigger. The hammer would strike the cap, which would ignite, causing the flames

from the explosion to travel through the nipple, igniting the gunpowder and firing the rifle (Flintlock or Percussion, (n.d.); Marshall, B. (n.d.)).

Even though they solved the issue of the exposed gunpowder, they discovered that these rifles were pretty inaccurate. Therefore, the military needed to find a way to make the rifles more accurate and more trustworthy, so it wasn't a chance of luck that they hit their determined target.

Civil War

The Civil War was a period in time of great internal turmoil. The United States was divided on the issue of slavery and states' rights. The turmoil will eventually turn to violence, where some families are pitted against one another. The evolution of weaponry during this time will lead to the most significant loss of American lives ever experienced in the United States. The Civil War is also a huge turning point in the creation of what the modern-day firearm looks like and how it functions.

Small Arms

Right before the Civil war started, the Maynard Patent Priming System, designed by Edward Maynard, made loading firearms even faster and made them more accurate. The priming system was a roll of caps stored in a compartment in the rifle, which allowed a cap to replace the previous one. The cap was rotated out whenever the hammer was cocked. This made reloading faster than it was before (Shoaf, 2020).

Maynard also added a rifled barrel to make the shots more accurate. A rifled barrel was a barrel with grooves cut out of the inside, creating a spiral effect. This causes the bullet or ball traveling down the barrel to spin, making it more stable while in the air. For example, take a football; when thrown, the ball can either be spiraling or just fumbling in the air. When the ball is in a spiral, it is a lot faster and sails a lot smoother and in a straight line. Whereas, when the

football is fumbling in the air, the trajectory is pretty unpredictable when first thrown. This is a very similar concept to when shooting a gun, the one who shot it knows it's going in that direction but has no idea exactly where it will hit. When the spinning or spiraling is added, the bullet becomes more stable in the air, and it is easier to predict where the bullet is actually going to hit.

This led to the creation of the minie-ball. The minie-ball was designed for greater accuracy by taking the idea of a musket ball, stretching it out, and cutting it in half. It looks very similar to a modern-day bullet. The combination of a minie-ball and a rifled barrel made muskets much more accurate than before. The shape of the minie-ball allowed for smoother air travel and better stability because of the shape. Even though, the rifled barrel could make a standard musket ball fly through the air better, the aerodynamics could still cause it to tumble after a certain distance (History.com, 2010).

Although this new firearm and bullet were the new standard issue and were quite effective. The military decided they needed different types of firearms for different job sets. For example, three types of carbines were made and issued. Cavalry troops mainly used these carbine style weapons because they were designed shorter, and smaller than the traditional standard issue rifle, making them easier to load and fire while on horseback. The three carbines were the Sharps, the Spencer, and the Burnside. These carbines made things exciting during this period because the United States started to see actual cartridges being used taking it a step closer to what is used in modern firearms.

The Sharps fired a .54 caliber paper cartridge. It still used a percussion cap system but was loaded with a paper cartridge. A paper cartridge was a pre-loaded round. The gunpowder was first placed into the cylinder-shaped paper cartridge, then the bullet itself was placed on top

of the gunpowder. The cartridge would then be sealed so that it did not fall apart. When the percussion cap ignited, it would set the paper on fire, igniting the gunpowder inside to explode and propel the round forward. It was designed to burn up the cartridge and would not need to be removed after being fired, which made it easier to reload. This carbine was made very similar to the modern lever-action rifles we use today, except you had to load one round at a time (Sharp, n.d.).

The Spencer was a magazine-fed weapon that could hold up to seven rounds. It was a .56 caliber that used a metallic cartridge. This carbine's magazine is not like the magazines on modern guns. It is a tube that is run through the butt stock of the gun. You pull the tube from the butt stock, then load the rounds by dropping them into the hole where the tube was originally just at; after loading the rounds, you put the tube back into the hole encasing the rounds one just loaded (Britton, R. 2021).

Finally, there was the Burnside. The Burnside shot a .54 caliber brass cartridge round. Like all the other rifles during this era, it also used the percussion cap. The brass cartridge had a little hole at the rear of it so that whenever the percussion cap ignited, it would travel through the nipple and into the cartridge, lighting the gunpowder (Bodinson, 2011). Although this was not a magazine-fed like the Spencer, it was still the closest to modern ammunition used today. This particular rifle was a single shot like most of the other small arms used during this period. Still, being pre-loaded and brass made it more reliable and durable than any of the other cartridges used.

Specialty Weapons

One of the most iconic and revolutionary firearms was the Gatling Gun during the Civil War. It was invented by Richard Gatling, who had helped his father develop farming tools and

machinery. When the war broke out in 1861, he started to think about how he could help the troops on the North side. "Gatling received the first patent for the new firearm on November 4, 1862" (Dotter G. Gatling Gun, 2021, p. 5). The Gatling Gun was a configuration of six barrels arranged in a circle. All one had to do was turn the crank, and it would start the process of the barrels revolving. As they turned, a cartridge would enter one of the barrels and fire. After it was fired, the next barrel in line was right behind, getting ready to be loaded and fired. It was chambered in a .58 caliber bullet. It started out using a paper cartridge like the Sharps rifle. It was later upgraded to use the brass cartridges like the Burnside soon after implemented brass casings. Based on what Dotter talks about, the Gatling Gun could shoot 200 rounds per minute and later close to 400 rounds per minute whenever they incorporated brass casings.

Even though many improvements were made to weapons, there was not much done for the artillery side of warfare. The Civil War is significant because you start to see ideas coming into place that looks very similar to the things used today. Even with these improvements to small arms, they were still very slow and sometimes unreliable. The Army still relied on cannons to break down fortifications and provide long-range weaponry.

Spanish-American War

During the late 1800s, one will see that things look very familiar to the Civil War. The creation of modern ammunition happened just before the war started. The percussion cap was replaced with a primer on the back of a brass casing. Primers are made of a lead styphnate mixture, which creates enough heat to light gunpowder when struck hard enough. How it works is as follows: A firing pin strikes the primer causing it to "combust" and light the gunpowder propelling the bullet forward (McGrath, 2013). The thing that was so amazing about the creation

of the modern round is that the bullet is all enclosed; making it extremely reliable. Even if the round itself gets wet, it will still fire because the gunpowder enclosed will stay dry.

Small Arms

The Trapdoor Springfield used these new enclosed rounds. It was a single shot rifle chambered in .45-70. The .45 stands for the size of the bullet in diameter, and the 70 signifies how many grains of powder was used. This rifle was good in terms of timing to reload but was dominated by the Spaniards more modernized bolt action, the 7mm Mauser. The reason for this is because the Trapdoor Springfield was still a single shot rifle. Were the Mauser being a magazine fed bolt action, making reloads significantly faster than anything the United States had ever used before.

The United States had to find something that could keep up with the Mauser that was out performing them on the battlefield. It became clear that the United States needed to look at other designs and weapons. Therefore, Canfield (2010 p. 2) states, "A total of 53 rifles, including the standard service arms from 10 foreign countries, were submitted. The remaining rifles were from various US and foreign inventors or manufacturers." The requirements that had to be met during this showing included that it had to be chambered in a .30 caliber bullet and use the new smokeless powder. Smokeless powder was a new development being incorporated in most firearms, because it combusted hotter and propelled the bullet faster than that of the older black powder rifles used, like the Trapdoor Springfield.

After all weapons were submitted, the Danish Krag-Jorgensen won the military competition, thereby making it the new standard issue for the United States military. "The Ordnance Board's final report stated: '[The] Krag-Jorgensen [is] ... vastly superior for use in the United States service to any weapon adapted to single fire loading only,' and urged that the Krag'

be adopted forthwith.” (Canfield, 2010, p. 3). The Krag was a magazine fed, bolt action that was able to keep up with other countries including the Spaniards 7mm Mauser. Due to the acceptance of the Krag-Jorgensen, it gave the United States Army an edge against the Spaniards later in the war. A Bolt action required the user to pull the bolt back after every shot, which would eject the empty casing, then rechamber the next round by moving the bolt forward, back into position.

Starting in 1892, the United States wanted to break off using other countries manufactured weapons. Therefore, Springfield became approved to produce a version of the Krag chambered in .30-40 with a bullet weight of 220 grains. This rifle became known as the "US Model 1892 Krag."

The Spanish American war had very little advancements as far as weaponry technology goes. It was too close to the end of the Civil War to really give the United States time to innovate any of their weapons.

World War I

Starting in the early 20th century, turmoil across Europe began to dominate world news. Europe was on the verge of all-out war due to militarism, extreme nationalism, and secret alliances. Europe became a powder keg that was ignited by the assassination of the Archduke Franz Ferdinand. The United States made every effort to remain neutral as most countries in Europe were overrun with endless trench warfare. However, two events propelled the United States into World War I. Those two events were the Zimmermann Telegram and the sinking of the Lusitania (Andrews, 2014).

Small Arms

Before the beginning of World War I, Springfield Armory was experimenting with magazine fed, bolt action rifles. The biggest issues that they had with the previous Krags were

the reload speed and the speed of the round it shot. The .30-40 round was maxing out at about two thousand feet per second at the muzzle.

Every country during the first World War used a different type of rifle; all of which were different calibers. Springfield Armory was working diligently to create a firearm of their own that would be competitive against what was being used at the time. In 1903 they finally came up with the Springfield 1903 bolt action rifle, chambered in .30-06. The 1903 had a magazine capacity of five rounds and was loaded with a stripper-clip. The clip was a metal strip that had five rounds attached to it. One would open the bolt all the way up, place the clip towards the rear of the magazine, with the bullets facing forward, and use their thumb to ram the rounds down into the internal magazine.

The 1903 Springfield started out as a .30-03, named after the year of production (Campbell, 2020). Even though the 1903 had solved the issue of slow reloads, they still had the issue of trajectory. This particular caliber was using a 220-grain bullet and could not reach anything over twenty-three hundred feet per second muzzle velocity. Although many soldiers in the US hated the idea of a lighter bullet, they changed the grain to 150 grains, and the round was able to achieve higher velocities and greater range. After the change of the bullet, the round was renamed to .30-06.

Interesting enough, these rifles were not perfect right at the start. According to Campbell (2020, p. 14) "When the US entered World War I, the Springfield and Rock Island armories had made some 843,000-plus 1903 Springfields. Wartime feedback indicated that some rifles failed and injured the soldiers using them, though no fatalities were recorded." It was determined that the receivers of these rifles were not heat treated to the right hardness. To solve the issue,

Springfield did a double heat treatment. After this was accomplished, there were no more issues with the receivers (Campbell, 2020).

Trench warfare was the name of the game when it came to the first World War. Since this was the case, there was a need for a close range or close combat weapon. This is where the Remington Model 10 and the Winchester M1897 came into play. These shotguns got the notorious name of the "Trench Guns" (Canfield, 2021).

The Winchester got its claim to fame while fighting in the Philippines. It was a hammer fire, pump action. The user would pull back on the pump, cocking the hammer and ejecting the spent cartridge. When the user pushed the pump back forward it would load the next shell. Shotguns were literally designed for close range combat because of the spread of the shot (Canfield, 2021). The shell was loaded similarly to grapeshot used in artillery cannons. There was a primer within a brass case and plastic shell. Inside the shell was gunpowder and lots of pellets. When fired the shot would spread in a pattern able to hit a target with lots of small BBs, sometimes even multiple targets.

Later the Remington Model 10 was incorporated into the war. The Model 10 was like the M1897 except it was hammerless, meaning it still used a pump action, just without the exposed hammer to strike the primer. The Army also made modifications to these firearms for combat, affixing them with bayonet lugs to mount a bayonet. This was crucial because they were specifically designed for close combat. Bayonets were basically a knife or pointed edge that was fixed to the end of the barrel for stabbing the enemy. The reason for this is if an enemy soldier charged at you, one could not risk taking a shot and missing. Therefore, they would use the bayonet to stab the enemy up close and conserve their ammunition for the longer-range shots (Canfield, 2021).

Something else that was interesting about the shotguns was that they were specific to the Americans. No other country during the war used shotguns on the battlefield even though they were useful when getting close to the enemy (Canfield, 2021). This is significant to the United States because they were the only ones to use them during war.

Machine Guns

The Lewis Automatic Rifle was invented by Isaac Newton Lewis in 1911. "Throughout its career, it served as a fixed defensive weapon, an aerial machine gun and as a Light Machine Gun (LMG) at the infantry level" (*Lewis Gun*, 2019, p. 1). At first, the machine gun was not accepted by the US. This resulted in the machine gun being sold to the Belgium Army. It wasn't until the United States joined WWI that they the need for a machine gun and accepted the Lewis Gun into their ranks in 1914. The Lewis Gun used a gas operating system, which means that the gasses from the round going off were captured and sent in the opposite direction back toward the receiver to push the bolt back for the next round to be loaded.

Although this was chambered in many different calibers the one used by the United States was chambered in .30-06, which was the same caliber that their main weapon, the Springfield 1903, was chambered in. It used a top fed magazine that was shaped in a disk or pan that held 47 to 97 rounds, depending on which type of magazine one had on hand. The Lewis Gun had an effective range of 800 yards with a rate of fire up to 600 rounds per minute. According to Military Factories (2019, p. 4) "The machine gun played a significant role in warfare for the first-time during World War 1 as it held the ability to single-handedly change any one engagement in favor of the operator." It gave them the advantage during this war because it had such a high rate of fire. During WWI there was a lot of trench warfare, the ability to use a

machine gun to lay down suppressive fire was crucial for the assaulting element to move up and overtake the enemy's position.

Artillery

Artillery during World War I was similar but different to the Civil War. The 155mm field gun was a modernized cannon. The United States bought out the design from the French and made the M1918. "The M1918 gun was mounted on a large, four-wheeled carriage weighing in at 11,065 lbs and having a split tail in anchoring to the ground for firing stability" (Potts, 2017, p. 2). These field guns were extremely heavy and would typically be moved and transported by tractor, and sometimes horses. They would try to keep these guns along roads or open terrain because they were so heavy, but roads were only so smooth. Therefore, the military put a supported limber and semi-elliptical springs to help support bumps and debrief (Potts, 2017).

Specialty Weapons

Chemical warfare was a big deal in WWI. Although there were few casualties from using it, there were several aftereffects of the weaponized chemicals that took place after the war. A. P. Padley (2016) said that the mortality rate for Mustard Gas was pretty low. "However poison gas only accounted for 3% of deaths (91,000 men) and 10% of casualties (about 1.3 million) in the Great War." (Padley, 2016, p. 30)

Mustard gas was the most common chemical used during the war. It was a mixture of 2-chloroethyl and sulfide. The chemical itself was a clear liquid but due to the "impure forms" that were used gave the gas a mustard color (Padley, 2016). The gas itself would give soldiers chemical burns upon contact that produced blisters that would then ooze yellow fluid like a bad infection.

Following World War I and the convening of the Geneva Convention in 1926, gas was banned from being used in warfare. It was considered an inhumane way to fight due to the suffering it caused soldiers. On top of that, gas was not as effective later down the road due to gas masks and other protective equipment designed to protect soldiers from these chemical gasses.

World War II

Even though the world swore that there would never be another great war, just 20 years after the conclusion of World War I, tensions began to mount again. Germany was forced to accept total blame for WWI and faced heavy reparations that brought Germany to the brink of bankruptcy. This time also saw the rise of dictators and strong alliances. Germany was able to take over much of Europe by using the blitzkrieg. This was known as the lightning war and was made possible by advancements in military armaments.

Small Arms

Going into WWII, the first semi-automatic rifle, the M1 Garand, was issued to the United States military. It was designed by John Garand. It had an eight-round internal magazine loaded with a clip and fired a .30-06 caliber just like the Springfield 1903. This model was not the most reliable at first and jammed frequently, but in the early 1940s, they redesigned the gas system and cylinder making it the most effective weapon on the battlefield of its time. The semi-automatic feature and large round capacity made it advantageous for the United States over opposing countries.

The biggest downfall to the M1 Garand was that they were very heavy. They weighed in at approximately nine and a half pounds (Ingraham, 2021). This does not sound like a whole lot of weight but whenever one must carry this weapon day in and day out, it can become overwhelming at times.

To correct some of the problems with the M1 Garand, the M1 Carbine was produced. It is a smaller version of the M1 Garand with a few differences. The carbine was preferred by paratrooper and glider operators because they were smaller and easier to store in their bag or strap to themselves. The two biggest differences between the M1 Garand and the Carbine are the caliber, the size, and how it was loaded. The Garand shot a .30-06, while the carbine shot a .30 caliber carbine round. The Garand was loaded with a stripper clip from the top, while the carbine had a 15 round magazine that was loaded from the bottom. With it being a smaller gun, it also weighed quite a bit less. The M1 Carbine weighed in at just over five pounds. The four-to-five-pound weight difference made it much easier to carry about and maneuver.

Machine Guns

John T. Thompson, was a soldier during World War I and saw the effects of trench warfare. He understood that the basic infantryman only had a bolt action rifle that could only fire one round before having to manually pull back a bolt to load the next round. In close combat it makes these types of rifles extremely unreliable. The Army needed something that could be used to fight off enemy soldiers in the trenches besides one shot and a bayonet.

He decided to start a company called "Auto-Ordnance Corporation" in 1916. This is where he started to experiment. It was his belief that what was needed was something fully automatic and light enough to maneuver through the trenches. Therefore, the Army needed something that could take down multiple enemies before having to reload and something that

was compact and lightweight. What Auto-Ordnance produced is the Thompson Submachine Gun, also widely known as the "Tommy Gun." This machine gun was not completed before the First World War was over, but it was ready before the second. In 1919, John's weapon was labeled as the first "submachine gun" that the military used. It was chambered in .45 ACP. The .45 is the diameter and size of the bullet itself and the ACP stands for "Automatic Colt Pistol." The reason for this is because the caliber was created for the Colt 1911, a semi-automatic pistol used in both World Wars as a sidearm or secondary weapon. This machine gun had a rate of fire of approximately 700 rounds per minute. Even though the goal was also to make the gun lightweight for maneuvering, it still came out at about ten and a half pounds. It was much lighter than that of the Lewis Gun, but still a little heavier than that of the standard issue Springfield 1903 and M1 Garand.

Once the war was in effect, the government learned that the "Tommy Gun" was reliable but very expensive to produce. They needed something that was reliable and cheap; typically, in firearms, these two things do not go hand-in-hand.

According to Cannifield (2016) "George Hyde, with the assistance of General Motors' Inland Manufacturing Division, was given the prototype designation of T-15." The T-15 was a select fire firearm that could shoot either one round at a time or full-automatic. Like the Tommy Gun, it was chambered in .45 ACP and had a wire stock that could be collapsed for even more compactness for movements.

General Motors also created the T-20 which was a full-automatic only. The advantage it had over the T-15 was that it was completely enclosed making it easier to keep dust and debris out of the chamber. It was basically two pieces of sheet metal welded or stamped together. Like the T-15 it featured a wired stock. The T-20 was later adopted as the new issue for the United

States military due to its effectiveness and cost efficiency. "Following initial price adjustments, the contract price for each M3 submachine gun, less the bolt assembly, was set at \$18.36.

Production of the bolt was subcontracted to the Buffalo Arms Co. at a price of \$2.58, which brought the total per-unit cost of an M3 to \$20.94. This was about half the cost of the simplified M1A1 Thompson."(Cannifield, 2016, p. 7) On top of it being so much cheaper to produce, the simplicity of the firearm made production rates much faster.

The M3 Submachine Gun was given the nickname "Grease Gun" because of its overall appearance. It had similar features to a caulk gun or mechanical grease gun. The firing mechanism it used was an open bolt firing system, meaning that it was open and would slam the round forward causing the round to fire pushing the bolt backwards then forward again for the next round. The Grease gun featured a flap that could be opened or closed to keep debris from getting inside the chamber. It used a 30-round magazine, loaded from the bottom, to feed rounds into the chamber ready for fire. According to Larsen (2021), the slower rate of fire that the Grease gun had made it easier for soldiers to control than the Tommy Gun. "Thanks in part to the M3's heavy bolt, it fired at a slow 350-400 rounds per minute, making it quite controllable and therefore aiding accuracy despite its wire stock and non-precision parts."

The Browning Automatic Rifle, BAR, named after the inventor John Moses Browning, was first released in the year of 1918, toward the end of World War I. Even though it was used during the first World War, it was only issued to a couple of companies for combat. The short period of time it was used during WWI was good enough for the military to keep it through WWII and the Korean War (Canifield, 2016).

This machine gun was chambered in a .30-06 and was capable of select fire, which means it could shoot both semi-automatic and fully-automatic with the push of a button. It was gas

operated like the M1 Garand and M1 Carbine. It used a 20-round box magazine loaded from the bottom of the receiver. It was originally designed as an infantryman rifle for trench warfare. The government realized after WWI that it would be a more effective light machine gun, also known as an LMG, to replace the Lewis gun due to the heavy weight and slower rate of fire. This amazing machine weighed in at twenty pounds, which is quite a lot of weight for a soldier to be running into battle with, but most soldiers preferred it because of the larger caliber than the smaller sub machine guns.

The last machine gun to discuss for WWII is the Browning M2 chambered in .50 BMG. John Browning had this firearm in development before he passed in 1926, so even after he had passed, he was still able to give the United States military one last war winning firearm (NRA, 2017).

The .50 BMG, Browning Machine Gun, also known as the .50-cal, was developed because the government wanted a heavy round that traveled at a high velocity, "They wanted a heavy projectile at 2700 feet per second (f.p.s.), but the ammunition did not exist" (NRA, 2017). John Browning and his son began experimenting with different cartridges and bullet sizes until they finally produced the current .50 BMG the United States still uses today.

The primary use of these heavy guns was to fight against aircrafts and used as anti-tank weapons. Something to note about the .50-cal is that it is a very hot round. It has to be in order to achieve those velocities with such a heavy bullet. Therefore, the unique thing about the M2 was that it actually had different variations that had different purposes in order to prevent the gun from overheating.

The first was a water-cooled system. The barrel itself had a water tank that surrounded the outside of the barrel that had water circulating through and around the outside of the barrel to

keep it cool when firing off several rounds. This variation was seen typically in bunkers, where they were mounted and stayed within that bunker.

There was also the aircraft variation, which was typically lighter in weight and had a shorter barrel. They were lighter so that they would not add any undesirable weight. Therefore, the plane it was on could still get around and maneuver in the sky. The barrel was shorter so that aiming at the high-speed targets was easier to handle. The aircraft models used a ribbed barrel system to help distribute heat throughout, keeping the barrel cool enough to avoid melting the barrel.

Lastly there was the heavy barrel model. The heavy barrel was longer and had a thicker diameter. The thicker walls that the barrel had was to disperse heat, much like the aircraft design, over a larger area making the barrel more durable and stable when firing lots of rounds. This variation was designed for the field and truck mounts because of its durability and not needing a specific cooling system to run it (NRA, 2017).

Artillery

Artillery played a big role in the success of WWII, more so than in WWI because the enemy forces used these heavy guns to outgun the Allied Forces. During the first world war, artillery was not as effective due to it being hard to move these giant weapons and the limited range that they were capable of.

The first thing that the United States did was to stop using horses and unreliable tractors to move their cannons. They started to use trucks and the M5 tractor that was much more reliable than the tractors artillery units used during the First World War.

In 1927, the M1A1 Pack Howitzer was born and became the standard for artillery forces during WWII. According to the staff members of Military Factory (2018, p. 1), in one of their

articles, "The M1A1 of the Second World War featured a short barrel, could reach a sustained rate of fire of 3 to 6 rounds per minute with a capable crew, and had a range of roughly 9,610 yards." This beat out the old french 75mm cannons they were using during WWI by almost an entire mile of range capabilities.

This small cannon upgrade was not enough for the field artillery. The United States needed a bigger gun for enemy ground troops to work alongside the smaller M1A1. This is where the M115 8-inch Howitzer comes into play. The United States had already dipped their toes into the 8-inch world when they used the British 8" BL Mk VI Howitzer during WWI. The 8-inch Howitzer M1 that the United States had created shot a 203mm round and could reach an elevation of -2 to +65 degrees (Military Factory, 2018). Due to the power of this round and the elevation it was shot at, the gun required some sort of stabilizer to keep it in place. "A hydropneumatic recoil system helped to counter the inherently violent recoil effects of firing such large projectiles as did four spades installed prior to firing" (Military Factory, 2018, p. 4). This is a system that used hydraulics, we typically see them used on heavy equipment used on construction sights.

During the war, the government realized that they still did not have enough firepower to compete against the enemy Axis Forces aerial attacks. Therefore, in the year of 1940 the M1 chambered in 120mm was released to be used on the front lines. This gun was massive, according to JR Potts the M1 weighed in at 62,000 pounds which is 31 tons. In order for this weapon to be mobile it required wheels so that it could be towed around. This cannon was perfectly designed for aerial defense due to it being able to point straight up in the air. "The M1 gun barrel could be set to fire vertically at targets up to an impressive 60,000 feet (18,000 meter) and, with a fairly trained crew, managing up to 10 rounds per minute" (Potts, 2018, p. 3). The

powerful projectile that this cannon fired was a fifty-pound, fuse timed round that would be fired at the enemy aircrafts. These projectiles used a thirty second delay after fired, which means it would fly for approximately thirty seconds before exploding (Potts, 2018).

Specialty Weapons

The United States never did anything with flamethrowers during WWI because troops declared that they were a catastrophic failure to the French and German armies. Come WWII, the portable flamethrower, known as the M2A1 Flamethrower, showed great potential for the fight in the Pacific. The soldiers fighting on the islands were dealing with heavy vegetation and marshlands that were very thick. This made visibility low and maneuverability slow. The flamethrowers could be used to get rid of this heavily dense vegetation so that Soldiers could move through successfully.

Come January 15th, 1943, the flame thrower had its first successful mission in Guadalcanal. "The American portable flamethrower made its first successful combat appearance on 15 January 1943 at Guadalcanal, five months after United States forces began the assault of this South Pacific island" (*Chapter 14: The Flame Thrower in the Pacific: Guadalcanal to the Marshall Islands*, 2001, p. 7).

According to the Smithsonian: National Museum of American History, the flamethrower was a rather simple weapon. The portable M2A1 Flamethrower was set up like a backpack. It had two tanks, one had thick gasoline, the other had compressed air. When the trigger was pulled it would release the compressed air and gasoline into the valve propelling it forward and through the cone like nozzle that would ignite the mixture. The one carrying this devise had to be extra careful. Gasoline explodes, therefore, if the tank with gasoline inside were to be shot, it would explode killing the wearer and anyone around them.

Tanks

The idea of a tank was not necessarily a new idea to the United States for they had been seen in WWI but were not as effectively used during the period as they were come the second world war. The idea was to protect the crew as well as being able to fight off the enemy at the same time. It's hard to do that with just a rifle and a wall. At some point the soldier has to stick their head up above the wall to lay down fires.

A tank is an armored vehicle on tracks with a big gun mounted on top. The tracks are used over wheels for two reasons. One, they do not go flat. When crossing over a battlefield there is no telling what one might roll over that could puncture a tire, on top of that if the tire was shot it would immediately go flat making the vehicle immobilized. Two, the track is specifically designed for off-roading, it gives the vehicle better traction and grip (Ogorkiewicz, R, 1999). The tracks are very similar to what one would see on a piece of heavy equipment like a bulldozer for example.

The first tanks to see combat were the M1 and M2 during WWI used by the British Army. They were a great idea and opportunity but failed as an overall unit, due to the fact they were not implemented on the battlefield to their full potential. The United States saw them as a great opportunity and chance. Therefore, they bought the design and made a contract with Rock Island Arsenal to make and produce the T2E1 prototype, which later became the M2 (Military Factory, 2017).

Even though the M2 was outdated and replaced by the M3 in 1939, it was still implemented in WWII due to the lack of production before going into the war. The M2 was a tracked vehicle using a front wheel drive system that had a sprocket on the front axle to propel

the vehicle forward. This armored vehicle featured a .50-cal machine gun on top and armored plating for protection.

It was soon incorporated that the tank needed two machine gun mountings. The M2 became the M2A4 by the time the war rolled around. According to Military Factory (2017, p. 9), this is where we see a light tank start looking like a tank by adding a cannon, "The weapon of choice became the 37mm "Gun M5" to which 103 projectiles would be stored about the tank. In addition to the new armament and turrets, armor protection was improved to 25mm while the powertrain was revised for the better." On top of the tank, they decided that more guns were also required, having mounted four Browning M1919 machine guns chambered in .30-06 (Military Factory Editors, 2017).

The M2 was soon replaced with the M3 Stuart, named after General J. E. B. Stuart of the Confederate Army during the Civil War. The M3 was a light tank just like the M2 but had better armor plating and a suspension upgrade. The engine used for it was a 7-cylinder, gas-fueled, Continental W-670-9A that was pushing out two hundred and fifty horsepower, according to Alex D. (2018). As far as weapon systems on the tank, it was set up very similarly to the previous M2A4, "Armament centered around the 37mm M5 (later M6) main gun with coaxial 0.30 caliber M1919A4 Browning machine gun. Four additional 0.30 caliber machine guns were installed including one over the turret, one in the right front of the hull (ball mounting) and the remaining pair in individual side sponsons along the forward superstructure panel" (Alex, 2018, p. 1).

One of the most famous tanks from WWII was the M4 Sherman tank. It was a medium sized tank well designed for battle. It was a lightweight tank that was easy to conduct field maintenance on. On top of that the United States could produce them at a low cost and they were

very easy for the company to make in a timely manner. Therefore, there were more M4 Sherman tanks on the battlefield than any other tanks. Even though the German Panzer IV out classed it, the M4 Sherman was a lot faster than the Panzers, so it could maneuver and get the upper hand with ease.

The M4 was first put into production in 1941. It featured a 37millimeter cannon just as the light tanks did during the time. The design of the M4 included a 12.7millimeter heavy-barrel browning machine gun that was designed as an anti-aircraft weapon. This was not necessarily the best option for the battlefield due to these tanks being used primarily for ground warfare. With the innovations of war fighting planes during WWII, one could assume that this was a great idea, but that was not a tanks main focus nor were ground troops for pilots in the sky. The last weapon that was mounted on this vehicle was a .30 caliber browning machine gun (Alex, D. 2021).

Korean/Vietnam War

After the Second World War, the Soviet Union and the United States went into a Cold War. This was two military powers in a standstill with extreme capabilities to take each other out with the push of a button. Nuclear warfare was no joke, it was a scare across the world. If one country had enough then the entire world was at stake to suffer from it.

The North Koreans were a communist state. They decided that during the Cold War, that they would invade South Korea. The United States feared the entire idea of communism since it spreads like wildfire and does not work. It would be the rise and fall of many countries if not contained and kept from spreading.

The Vietnam War had a very similar effect as the Korean War. North Vietnam wanted to overtake South Vietnam and make it one communist country. The United States could not and would not let that happen for the same reasons (History.com Editors, 2009).

Small Arms

Whenever the United States got involved in the Korean War, it was known very quickly that they were outgunned. The old style M1 Garands and Carbines were not enough for hordes of enemy soldiers swarming their troops. The government realized that they needed something that held more rounds, had a faster rate of fire, and was lighter in weight.

It started out with rethinking the caliber of the standard issue rifle. The previous .30-06 had a lot of recoil and could be hard to control at times, making the rate of fire slower because of target acquisition. The first idea was the M14. It was basically a remodel of the M1 Garand in a 7.62x51 millimeter NATO round that used a twenty round, bottom-fed, box magazine. It was a great idea due to the success of the M1 Garand during WWII, but it was over 44 inches long and weighed in at about 10 pounds. This was not much different from the original M1 Garand weighing in at nine and a half pounds. It was successfully used during the Korean War, but the United States Military needed something different come the Vietnam War right around the corner.

Arma Lite was a company that branched off of Fairchild Engines and Airplane Corporation that wanted to into the firearms world. Arma Lite started out by hiring an engineer named Eugene Stoner that had experience in dealing with lightweight materials for firearm production (Dylan S. 2018). By 1955 Stoner had created the AR-10. The AR-10 was a gas-operated, semi-automatic rifle chambered in the 7.62x51mm NATO, the same caliber as the M14. It had anodized aluminum receivers and a fiberglass stock that helped reduce the weight by

quite a bit, only weighing in at seven pounds. It was first introduced when competing for the new standard issue during the time of the Korean War, but was beaten out by the M14 that was mentioned before. Even though the M14 beat the AR-10 platform, it was not forgotten.

In 1957, General Willard Wyman went to speak with Stoner about his AR-10 project that he had created with Arma Lite. General Wyman was a West Point graduate and was quite impressed by the AR-10 platform, but it had too much recoil due to the weight and not quite enough rounds. He proposed an idea to Stoner about an AR-15. Something that used the same type of platform but was smaller in size and caliber, with a larger magazine capacity.

Stoner made this idea a reality creating the AR-15 chambered in a 5.56 NATO. A much smaller bullet and casing capable of holding 25 rounds per magazine and weighing in at only six pounds. The 5.56 NATO is a .22 caliber bullet which is a lot smaller than what the original .30 caliber that the United States had been using for the past fifty plus years. Unfortunately, the AR-15 was not accepted by the military due to this smaller caliber. Military personnel always thought that "bigger is better." So much in fact, that during the testing of the AR-15, that they were trying to sabotage the course and rifle, so that it did not perform to the requirements of the military. On top of that, higher ups thought that the gun looked too much like a toy. Back then, it may have appeared to look like a toy, because of everything preciously used was made up with wood and steel. The AR platforms used plastic and other non-traditional materials and was not widely accepted right away (Dylan, 2018).

In 1959, Fairchild Engine sold their AR-15 to Colt. Colt is a much more reputable company, being around for so long and producing many different weapons for the United States military and civilian market alike. Since they were more reputable there were tests done with the platform and shown to several military chiefs and generals. They managed to sell the product to

the Air Force in 1962. This was a huge change of events because now one branch of the four branches in the United States military had these AR-15s become their standard issue weapons (Dylan S. 2018). Little did they know that these weapons would soon become known as the famous M16.

The government did not like the fact that all the branches were not using the same firearm and calibers because now they had one more caliber to keep up with. Therefore, it was decided to run tests and make many changes to the AR-15 platform to suit the government's wants and needs to make it the "official" standard issue weapon across the board. Thanks to President John F. Kennedy and the Secretary of Defense, Robert McNamara, the M16 project was put into motion. "McNarmara halted M14 production in January of 1963 and adopted the AR-15 in its current state as the weapon of issue for all services" (Dylan, 2018, p. 60).

It was not long before soldiers were having serious jamming issues with the new M16s during the Vietnam War. What was causing this? Sure dirt, mud, and grime got into the receivers making them jam, but that was only part of the issue. Carbon build-up was, and still is, a common with these weapon systems. This is where carbon will build up inside the receiver making it slow and jam up.

The AR-15 platform is a gas operated system that uses a gas block and gas tube. There is a little hole drilled into the top of the barrel for gas traveling down behind the bullet, which would be captured by this hole, traveling into the gas block, transferring it to the gas tube then back into the receiver to rack the bolt back for the next round. Because of the gas coming back into the receiver, there is a lot of carbon that builds up inside and around both the receiver and bolt, causing it to get sticky. To solve this issue, Colt came up with a "Forward assist." What this is, is a button located on the outside of the upper receiver that when pushed, begins to push the

bolt into the chamber. These M16s with the upgraded forward assists became known as M16A1s (Dylan, 2018).

Machine Guns

During the Korean and Vietnam conflicts there were issues with not having enough rounds due to the swarms of enemy soldiers coming at the American troops on line. Like it was mentioned in the start of the sections, the United States military was still using weapons from WWII in the start of the Korean War. This includes the BAR. No matter how great and fantastic this weapon was, it was not as effective during this conflict due to the low round count magazine. It could only hold 20 rounds, which means that it could only fire 20 rounds before having to reload.

This is where the M60 comes into play. This machine gun was originally designed off of the German MG42. The MG42 is the most famous of the machine guns used by the Germans during WWII. It was so reliable and remarkably well designed, that the United States wanted to create something similar.

The M60 machine gun weighs in at about 23 pounds and has an overall length of 43.5 inches. This is the first machine gun in the United States military that had a quick detach barrel. The weapon feeds rounds that are connected through a chain link belt and comes straight from an ammunition canister. The quick detach barrel is crucial to this weapon because the rate of 500 to 600 rounds per minute of 7.62x51 NATO, putting that many rounds through a single barrel creates a lot of heat. So much heat that these barrels can turn red from how hot they can get. If the barrel gets to this stage, it can warp causing the barrel to become unfireable. Making a quick detach barrel allows for Soldiers to switch out the barrel quickly so that it can continue to fire while the other barrel cools down (Alex, 2021).

Artillery

The United States was outgunned when it came to field artillery in Vietnam. The North Vietnamese had the Soviet Union 122mm D-74. This powerhouse of a gun could reach ranges out to 15 miles with extreme accuracy. The United States needed something better in order to compete with North Vietnam's field artillery.

Therefore, in 1963, the United States government started to produce the M107 chambered in a 175-millimeter artillery shell. This gun could reach out to 25 miles in distance. It was also self-propelled, which means that you did not need another vehicle to tow it around. This made moving them around a lot easier. The biggest downfall to these guns were that they would only be so accurate for about three hundred rounds before the barrel was considered shot out. This means that the barrel has lost its integrity of rifling causing the round to not rotate like it should, making accuracy dangerous to friendly infantry forces that may be supported by these guns. By 1970 the producers of these guns were able to create a better barrel using stronger materials. They managed to get the barrels to last for about 800 to 1,000 rounds. "But the M107 suffered from high barrel wear and rapid bore erosion that affected accuracy at ranges beyond 17 miles and initially limited the barrel life to 300 rounds. By 1970 improved materials extended the life to 800-1,000 rounds" (Schuster, 2019, p. 3).

Rock Island Arsenal was working on a lightweight artillery gun called the M102 Howitzer. The military wanted something lighter than the average artillery gun so it was easier to transport by plane or even helicopter. It was still chambered in the 155-millimeter shell but with an increased barrel length it was able to reach further ranges. This gun was put into action in the year of 1964 when it was deployed to South Vietnam in the helped in the efforts against the North Vietnamese. The lightweight chassis was perfect for supporting the airborne units since it

could be parachuted out of aircrafts. It was soon retired after the Vietnam War due to other issues that it had during the war, because it was not designed for the rainy weather, nor could it reach the distance that newer guns could reach (Potts, 2019).

Specialty Weapons

One weaponized substance that was used during the Vietnam War was Agent Orange. Agent Orange is a type of chemical known as an herbicide. It is used to kill off foliage which is exactly what the United States used it for in Vietnam. The United States military was not used to fighting in these very thick and cramped places like the jungles of Vietnam. Therefore, they needed something to eliminate all of the thick vegetation. "From 1961 to 1971, the US military sprayed a range of herbicides across more than 4.5 million acres of Vietnam to destroy the forest cover and food crops used by enemy North Vietnamese and Viet Cong troops" (History.com Editors, 2011, p. 3). In total, the United States used more than 20 million gallons of different types of herbicides, including Agent Orange, in Vietnam.

The aftereffects of this chemical were horrendous. Reports of cancer, birth defects, and even heart disease were being traced back to the use of herbicides. It was discovered that Agent Orange has traces of Dioxin in it, which is something very toxic to living creatures, not just humans. According to History.com's editors in Agent Orange (2011, p. 15), "Dioxin is a highly persistent chemical compound that lasts for many years in the environment, particularly in soil, lake and river sediments and in the food chain. Dioxin accumulates in fatty tissue in the bodies of fish, birds and other animals. Most human exposure is through foods such as meats, poultry, dairy products, eggs, shellfish and fish."

Tanks

Just like everything else that the United States was using, the tanks were also becoming outdated for these new weapon advancements. During WWII, most of the tank designs were based on defeating the German Tiger tank. Now going into the Vietnam War, they needed something to give them the edge over the North Vietnamese.

Episkopos (2021) suggests this led to the idea for a "main battle tank". "One of the early design efforts in this new direction was the M47 Patton, but a slew of technical shortcomings and performance issues kept it from widespread adoption" (Episkopos, M. 2021, p. 2).

This failed attempt at creating a "main battle tank" was not a complete loss, because it created the opportunity for the T48 project to begin. This project tank became the new M48 that dominated the battlefield during the Vietnam War. It had a smaller hull, lower turret mount, and was lighter in weight (Episkopos,2021). With the suspension and turret being lower, the center of gravity was a lot lower, making it less top heavy than its predecessors from WWII. Its main gun mounted on top was an M41 that fired 90-millimeter shells. This particular gun is very similar to those mounted on the heavy tanks from WWII, designed for long range combat. The M48 also had an improved gasoline engine in it. Even though it had great fuel efficiency it was still lacking at only being able to travel about 110 kilometers, without having to refuel (Episkopos , 2021). By the late 1950s, the M48 was improved by replacing the gasoline engine with a diesel engine. The diesel run engine allowed for a travel range of 450 kilometers and could crank out more torque and horsepower than the gasoline engine.

Persian Gulf War to Present

Saddam Hussein, president of Iraq, claimed power over Kuwait for their massive oil reserve. Kuwait is known for being the biggest oil reserve in the world. This riled up countries across the world with the United States leading the way. The United States teamed up with many

other countries and invaded the Iraqi Army in Kuwait to push them back into Iraq. In just four days, the Allied Forces took Kuwait back over, pushing the Iraqi soldiers back into their country, relieving Kuwait from Saddam Hussein's reign.

Saddam Hussein was under the suspicion of building weapons of mass destruction shortly after the Persian Gulf War. The UN (United Nations) was keeping tabs on him and Iraq. Hussein soon began to refuse the UN any kind of access into Iraq, causing the United States and the United Kingdom to become very uncomfortable. Therefore, they came together and began to take arms against insurgencies in search of these produced weapons and to officially remove Saddam Hussein from power. Saddam Hussein was captured and put on trial for crimes against humanity in 2006. Even though the war was technically over, the United States continued to fight off strong forces of insurgents while searching for weapons of mass destruction. It was declared over in 2011 and no weapons of mass destruction were ever found within the area (History.com Editors, n.d.).

Once the United States gets involved in the Persian War and Iraq War, we start to see what modern weaponry looks like. Most of the weapons discussed in this section are still in use today (History.com Editors, 2009).

Small Arms

First up on the list is a newer version of the M16 platform called the M16A2. Like the M16A1, where they had added the forward assist to help with jamming and reliability issues. The A2 was the introduction of the heavy barrel and brass deflector.

The old style M16 and M16A1 used what is called a "pencil barrel." The Pencil barrel is a lightweight barrel with thin walls. The common issue with them is that whenever they get hot, the barrel then expands, causing the weapon to lose a lot of accuracy. The heavy barrel made the

barrel walls thicker so the heat would be dispersed throughout. Since these weapons had more steel involved, they were a lot heavier to carry around, but did not get as hot as the old style M16 barrels. Therefore, the A2s were able to hold their accuracy making every shot count and did not have to worry about the barrel getting too hot.

One of the common issues that soldiers had during Vietnam was the brass casing from the spent round coming back and hitting them in the face. The reason for this is due to the fact that the round had no way to go but backward when ejected from the weapon. Therefore, Colt came up with the idea of a brass deflector. They ended up foraging a triangular block right outside the chamber, located on the side of the receiver. This allowed the brass casing to bounce off this block versus the face of the one shooting. The angled block also allowed for the brass to be kicked outward. This made it to where the brass would not fly back forward and into the chamber. If it did, brass casings would collide, or the empty casing might want to jump back into the chamber causing a jam in the weapon system (Dylan, 2018).

During the wars fought in the middle east, there were a lot more urban operations and building clearing. It was learned from this, that the M16A2s were difficult to maneuver around corners and clear rooms in buildings because of the long 22-inch heavy barrel. Colt designed a similar weapon, using the exact same forged receivers, with a shorter barrel and an adjustable stock. This weapon became known as the M4, which is the standard issue weapon that the United States still issues to today's soldiers.

The M4 features a fourteen-and-a-half-inch barrel with a quad rail handguard. The quad rail handguard allows for the user to attach certain pieces of equipment to the rifle, like a flashlight, laser, or even a front foregrip for more control. Instead of a fixed position stock, like the M16s had, the M4 has an adjustable stock that has 5 different positions that could be adjusted

to the user's comfort. This made it more efficient to the user, because when shooting a firearm, you have to be comfortable. The more comfortable the shooter, the better they will be able to shoot. The old M16s had what is called a "carry handle" on top of the receiver, the new M4s took that carry handle completely away and replaced it with a flat top picatinny mount. This made it possible to mount red dots and scopes on the weapon much easier or made it more practical since it was lower to the receiver itself. The last thing that was updated was the select fire. All of the different M16 models used a semi-automatic fire and a three-round burst feature, the new M4 made it semi-automatic and fully automatic. This allowed the M4 to be used very similarly to a bigger machine gun (Dylan, 2018).

Machine Guns

The previous light machine gun that was being used was the M60, in which was chambered in a 7.26x51 NATO round, was becoming a little too much to handle. The United States military was looking for the latest and greatest machine gun to add to their arsenal. What was being pursued was a smaller caliber weapon that would match the M16 series of weapons.

The weapon of choice was developed by Fabrique Nationale out of Belgium, known as the Minimi. The Minimi was a light machine gun only weighing in at 13 pounds. This was a significant jump from the original M60, weighing in at 23 pounds. This weapon used the same caliber as the M16 rifle, the 5.56-millimeter NATO. Much like the M60, it was a belt fed weapon that utilizes a 100 and a 200-round belt. The Minimi also has the capability of running a standard M16 magazine if the belt was not an option. This was a good idea since it had such a high rate of fire, running low on ammunition was a good possibility. This made cross loading much more effective and easier on soldiers. Unfortunately for Fabrique Nationale this was a failed attempt

because there had to be modifications done to suit the overall needs of the United States military (Mizokami, 2018).

After a few modifications, the Minimi was officially adopted by the United States, as the M249, in 1991 right before the very start of the Persian Gulf War. The new light machine gun joined the ranks as the new squad automatic machine gun, also known as the SAW. The M249 SAW was still chambered in the 5.56-millimeter NATO. This was significant because of the weight of ammunition and the recoil of the weapon. The smaller caliber made it way easier to control and the overall weight made it to where only one person had to carry it. The previous M60 weighed quite a bit more and so did the ammunition. It was typically broken down for a team to carry: a gunner, assistant gunner, and ammunition barer. This is an effective team for a weapons squad but not for a basic infantry squad (Mizokami, 2018).

The SAW was improved over the course of the years, by adding optics to it. In today's military, they are equipped with the Trijicon "Advanced Combat Optical Gunsight," also known as an ACOG. The ACOG allows for the user to have better target identification and for better accuracy (Mizokami, 2018). Even after adding the optical accessory to the M249 SAW, about 30 percent of soldiers did not approve of the weapon, Mizokami. It was reported that many did not have faith in their own weapon system due to the inaccuracy of the weapon. "The M249 is not a particularly accurate weapon, accurate to only twelve minutes of angle (MOA). In other words, at 100 yards a burst from an M249 could be expected to place rounds with twelve inches of the designated aiming point. At 500 yards, that increases to 5 feet" (Mizokami, 2018).

The M249 was originally designed for suppressive fire, therefore accuracy was not the biggest concern to higher ups. The entire purpose of suppressive fire is to keep the enemy ducked for cover, in order to give your assaulting element cover, concealment, and time to

maneuver on the enemy. Even though this was the case in the past, the M249 SAW is still used in the military today and a squad automatic machine gun.

The M240 series is very similar to the M249 SAW and manufactured by the same company, Fabrique Nationale. The M240 series is chambered in 7.62x51 millimeter, just like the M60, but are much more accurate and reliable. This machine gun has a rate of fire of approximately 650 to 950 rounds per minute, and a maximum effective range of 2,000 yards (Military Factory, 2022).

The United States Marine Corp. uses an M240G while the United States Army uses an M240B variation. The main difference between the two is that the M240B has a molded heat shield that wraps around the top of the barrel to aid in barrel changes when hot.

The M240 was first brought into the United States military by the Marine Corp. in 1977. It was intended as a secondary weapon to the M2 Browning Machine Gun mounted on tanks and other armored vehicles. It piqued the Army's interest because of its performance during the Persian Gulf War. By 1995 the Army added the M240B variant into the arsenal of weapons (Military Factory 2022). When the United States Army brought it into their branch, they had a different idea for them.

In a standard platoon sized element, the Army has a weapon squad implemented into their standard infantry platoon. This weapon squad is assigned two M240Bs and split into two separate teams that man them. Just like the when operating the M60, these teams were composed of a gunner, assistant gunner, and ammunition bearer. The weapons squad is specifically designed to be on the support line covering the assaulting element, so that friendlies are able to maneuver on the enemy (Military Factory 2022).

Artillery

The M119 is a lightweight artillery piece. It is towed, therefore requires a vehicle to make it from place to place or position to position. This gun is good for fast quick artillery fires, because it is so much smaller and lighter than other artillery guns. This gun was created by a company in England, known as the L118 and L119. It is an artillery gun that shoots a 105-millimeter shell. The United States wanted one of their own, so bought the license in 1987 and had Rock Island Arsenal produce them (*M119A1/A2 105mm Towed Howitzer*, 2020). Even Rock Island Arsenal started manufacturing them, the first M119 was not placed into the United States military until 1989, right before the Persian Gulf War (*M119A1/A2 105mm Towed Howitzer*, 2020).

Over the years, the M119 evolved. The improvements first made to create the M119A1 were small simple changes done to make repair and travel a little easier. They changed the design of the original M119 to make parts easier to change out. Then they added taillights and a cover for traveling. They also added a computer that was battery powered to assist in firing. The M119A2, was an upgrade in the program in which the computer was used. The new system allowed the computer to keep tabs on the overall health of the artillery gun. It checked oil pressure and monitored the hardware itself. This upgraded program was called LASIP and incorporated in 2004 (*M119A1/A2 105mm Towed Howitzer*, 2020).

The last upgrade that was made to this system was the computer again. Since this was easy to maneuver, it was moved around a lot. Therefore, the INU, or Inertial Navigation Unit, was added to it making it the current lightweight artillery gun the United States military uses today. This allowed for better target assist and even added an internal GPS to it. This allows it to calculate its exact location, making calculations for trajectory much easier for the troops utilizing the weapon.

The M110 Howitzer is a self-propelled artillery gun. It shoots a 203-millimeter cannon that actually dates back to the Korean War and was used through the Persian Gulf War. These artillery guns looked very much like a tank. It runs on a track and is equipped with armor. The 203-millimeter gun is mounted toward the rear, also known as the hull, with hydraulic arms for adjusting elevation. Even though a normal artillery shell could be fired through this gun, it was typically used as a type of artillery rocket launcher. Because of this, after the Persian Gulf War, they were replaced with newer M270.

The M270, also known as the MLRS or Multiple Launch Rocket System, is a moving vehicle that houses many rockets inside. It looks like a flatbed truck with a big box in the bed. This so-called box contained within the bed holds many rockets within it, ready to launch at any given time. Since the original M110 Howitzer was used a lot to shoot rockets, the United States decided to get a vehicle that was more specifically designed for the job (*M270 Multiple Launch Rocket System*, n.d.).

In further detail, the M270 is loaded with twelve rockets, with two six rocket pods for reloads. It uses a self-loading and self-aiming system that is hooked up to a computer that does all the work for the user. As weird as this thing may look, it is quite effective. It has the capability of firing all twelve rockets in approximately sixty seconds (*M270 Multiple Launch Rocket System*, n.d.).

Specialty Weapons

The MK19 is a fully automatic grenade launcher used by the United States Army and Marine Corp. Larson, C. describes the MK19 in great detail. It shoots a 40-millimeter grenade that is set up similar to the belt fed machine guns only bigger. It weighs in at about seventy-seven pounds, which makes it hard for a light infantry man to carry. They are typically mounted

on vehicles because of the disadvantage of weight. This gives soldiers the ability to fire these 40-millimeter grenades accurately out to 1,500 meters (Larson, 2021). This can be a huge advantage on the battlefield if implemented correctly.

If one is to think about suppressive fire, one thinks about keeping the enemies head down so that the assaulting element can maneuver on them. If a MK19 is accessible, this can allow the support by fire line to take out multiple targets before the assaulting element even gets into position. This makes the job for those assaulting even easier.

Another weapon that is used but not talked about much is the Javelin. Its official nomenclature is FGM-148F. The Javelin is a portable anti-tank missile launcher. It is manufactured by Raytheon/Lockheed Martin (*Javelin Portable Anti-Tank Missile*, 2022).

The Javelin runs off a system called the Command Launch Unit, or CLU, that guides the missile into its target. Once fired, it gives the shooter time to adjust and get the target acquired back into their sights. From here the system will track that target and help guide the launched missile into the desired destination. Over the course of its time and use in the United States military, Raytheon has upgraded the targeting system to be more and more accurate. This eventually leads to the point that the user does not have to keep eyes on the target. Once the system is locked onto the target and ready to fire, they launch the missile and the job is done (*Javelin Portable Anti-Tank Missile*, 2022).

The missiles that the Javelin uses, have a distance of 2,500 meters. This makes quick work of any light tank that may pose a threat to any friendly forces. On top of this, it only takes about thirty seconds to employ and get ready to fire (*Javelin Portable Anti-Tank Missile*, 2022). This weapon is great in several patrolling scenarios that involve any kind of armored vehicle within reason (*Javelin Portable Anti-Tank Missile*, 2022).

Tanks

The United States Mechanized Infantry and Cavalry have access to the M2 and M3 Bradley. These are light weight tanks designed as off road, tracked vehicles that have armored protection from artillery shells and small arms fire (*M2/M3 Bradley Fighting Vehicle*, (n.d.)). It has mounted M240 machine guns, a 25-millimeter cannon, and anti-tank missiles. The 25-millimeter cannon allows the Bradley tanks to engage most armored targets, and the TOW missile can be effective out to a range of 3,750 meters.

The M2 Bradley is used by the United States Infantry while the M3 is used by the Cavalry. Both the M2 and the M3 Bradley run off the Cummins diesel engine known as the VTA-903T that allows the vehicle to operate at a 300-mile range and reach a top speed of 41 miles per hour (*M2/M3 Bradley Fighting Vehicle*, (n.d.)). In order to operate this piece of equipment it would require a six-man team. The positions that each crew member would have are; someone to drive, another to command, and the others to man the cannon and M240 machine guns.

The United States military became big on finding an all-purpose tank during the Vietnam War, this tank was known as the "Main Battle Tank." The replacement for the original "Main Battle Tank" is the M1A2 Abrams that are still being used today. According to Military-today.com, the M1A2 Abram is currently one of the best main battle tanks in the world. "It is planned that this tank will remain in service beyond 2050" (*M1A2 Abrams*, n.d. p. 1).

The Abrams use a special type of armor that is made from depleted Uranium mesh (*M1A2 Abrams*, n.d.). This armor has significant protection from every type of anti-tank weapon that is currently in use. On top of this the interior of the tank is lined with Kevlar, which is a type

of lightweight armor that helps protect the crew just in case something does actually penetrate the outer layer of protection.

This tank is equipped with a M256 cannon, chambered in a 120-millimeter shell. This gun is significant compared to other tanks, because it is manually loaded after every shot. This makes the cannon more reliable because the operators do not have to worry about jams. The downfall to the single shot cannon is rate of fire. Since it has to be loaded after every shot, the speed in which the gun is fired is a lot slower than the majority of tanks used. It is also equipped with mounted machine guns that are located at the gunner's hatch and commander's hatch. Even though this tank is bigger than its little brother, the M2 Bradley, the crew size needed to operate it is only a four-man team. "Vehicle has a crew of four, including commander, gunner, loader and driver" (*M1A2 Abrams*, n.d. p. 5).

Future Weaponry

Even though we have come a long way since the American Revolution, the United States military is not stopping. There are many weapons in production that could alter how wars are fought. Technology is improving every day to give the United States military the upper hand over any possible enemies that may come their way. Here are a few different weapons that could change everything.

Small Arms

The United States Army is currently working on the next generation of small arm weapons. There are currently two weapons in the running for the new standard issue rifle for the basic infantryman. They are the General Dynamic Bullpup and the Sig Sauer MCX-Spear. According Balestrieri (2022), the contracted requirements for the new rifle is: it has to be chambered in the improved 6.8-millimeter bullet, has a maximum overall length of thirty-five

inches, a maximum weight of twelve pounds including attachments, the ability to suppress enemy targets out to twelve-hundred meters, accurately hit targets at six-hundred meters, and the ability to use the Small Arms fire-control system. The thing about this battle between the two weapons, is it isn't just the design of the weapon. The caliber that they create with the 6.8-millimeter bullet could make or break the expectations of the United States military. This change is a complete one eighty from improvements made throughout history. The United States kept getting smaller and smaller in bullet and caliber size, until we got the 5.56-millimeter NATO. Now the United States is going back in the opposite direction and trying to go bigger.

The General Dynamics bullpup design is awesome, due to the overall design of the rifle. The bullpup rifle is not new to the civilian market. The design takes the receiver itself and moves it back into the stock making it appear shorter than it is. Moving the receiver makes for a shorter overall length, without having to sacrifice precious barrel length. In most cases barrel length is important for muzzle velocity. When a round is fired, all those gasses from the controlled explosion travel down the barrel propelling the bullet forward. When the barrel is shorter, the bullet tends to exit before reaching its full effective velocity. The reason for the loss in velocity is since all of those gasses are released out of the end of the barrel as well, losing all the pressure from behind the bullet itself. Muzzle velocity is important for distance and foot pounds of pressure when it hits the target (Balestrieri, 2022).

General Dynamics has teamed up with a company called True Velocity. They are the ones in charge of the ammunition and caliber itself. They have created a new design that may be revolutionary to firearms across the world. They are currently creating a caliber known as the 6.8 TVC. It is a 6.8 caliber bullet in a composite style casing. Although it is confidential on the round's capabilities based on True Velocities website, tvammo.com. It can be assumed that the

TVC stands for True Velocity Composite based on the casing being made of a composite material. On top of that the Army is looking for something that can reach out to six-hundred meters accurately, therefore it is possible that this round will reach out to that or further. This is a huge jump from the three-hundred to four-hundred-meter range that the 5.56-millimeter NATO is currently capable of.

Sig Sauer has their MCX-Spear in the running, firing a 6.8x51 millimeter round. They are calling the military variant of the round the 6.8 Raptor. They have created a civilian version of the round, called the .277 Sig Fury. Sig Sauer, letting out the caliber for civilian use, is beneficial because it gives one an insight to what the military round might be like. The only thing is the civilian round has not been released for very long. Therefore, there is little public knowledge on its capabilities thus far (Beckstrand, 2022).

What is known about the round is that it uses a 6.8-millimeter bullet, with a hybrid casing. Sig Sauer talks about this round at Shot Show 2020. What they have done is taken the brass casing and thinned it out to reduce weight. The back of the casing, or the head of the casing, is made of steel making it more durable for the thinner brass itself. At this point they then took an aluminum spacer that is pressed into the bottom of the casing clamping the brass and steel together. According to Cox (2019), the 6.8x51 round is more compact than a 7.62x51 millimeter and has greater velocity and accuracy than the 5.56 millimeter.

The MCX-Spear rifle itself is on the AR-15 platform very similar to the traditional M16 and M4 series rifles. This would be beneficial for the United States military because they would not have to retrain soldiers on how to function it. The biggest difference between the M4 and the new MCX-Spear is that the MCX-Spear is a piston driven operating system opposed to the gas operating system that the M4 uses. A piston driven system means that the gas is not going back

into the receiver. This also means that carbon lock, that was common on the M16s and M4s, will be a thing of the past. The MCX-Spear is also completely ambidextrous which would make things so much easier for left-handed shooters because all the controls can be used from either side of the weapon. This is important because it will allow those that are left-handed to perform better on the battlefield (Douglas, 2021; Balestrieri, 2022).

Machine Guns

Not only is the United States trying to issue a new small arms weapon, but the military is also trying to replace the M249 and M240. As discussed earlier, there are many complaints with the M249 and a lot of compliments about the M240. They are almost identical as far as the platform itself. As of right now, it seems that the M249 is to be replaced very soon, while the M240 may see service a little bit longer before replacement. What are they looking at to replace it?

General Dynamics has entered their machine gun bullpup design. It is almost identical to the small arms rifle that they have entered. It has a few differences from its smaller counterpart. The Machine gun uses a handguard that splits into a bipod. This replaces the standard bipod seen on your current M249 rifle that is bulky and gets in the way a lot of the time. This does make the bipod feature a lot easier and less inconvenient, but it still has the complexity of use due to the bullpup design. The bullpup is completely different from what the United States military is used to. Not only is it a bullpup but it uses magazines as well versus the belt fed out of an ammunition canister. The use of magazines makes it easier to load and carry but it is incapable of running as much ammunition through it before having to reload (Douglas, 2021; Balestrieri, 2022).

Sig Sauer's entered replacement for the M249 is their 6.8 LMG (Light Machine Gun). This automatic machine gun looks very similar to the M249 with slight modifications to make it

more modern looking. It includes an MLOK handguard which allows for attachments much easier than it does currently. The MLOK attachment feature is used with specifically sized slots within the handguard. When adding an attachment, one puts the attachment where he or she wants it and starts to tighten down a screw with a wedge on it. This wedge will hug the inside of the MLOK slot, holding the attachment in place. This added feature will help reduce the swinging and swaying motion of the bipod talked about earlier Douglas (2021), talks about the 6.8 LMG "Sig Sauer claims that its new LMG platform weighs 40 percent less than its predecessors. Recoil is also said to be "dramatically" reduced in the new platform" (para #). Even though this weapon shoots a bigger caliber and weighs significantly less than the M249, it is still able to have less recoil. The reason behind this is the reciprocating barrel that Sig Sauer has added. This means that the barrel can move with each shot, absorbing the majority of the recoil. This weapon is like the gift that keeps on giving, it also features a special magazine that is held in at the bottom and holds a belt of rounds that feeds into the side versus the top. This makes for faster reloads than before and makes it easier to carry around with a more compact magazine size.

There are still tests being run to challenge these rifles to see who comes out on top. According to Todd South, in his article on Army Times, the official winner between the two Next Generation Squad Weapons will be decided sometime between August and October of 2022. It is predicted that these new rifles should start to be pushed out to active-duty soldiers starting late 2022 to early 2023.

Artillery

For many years now, the United States has been putting efforts into laser weapons. They are not indefinite as to be incorporated into the military as of yet. Could laser weapons be right

around the corner? Could we be close to being in the "Star Wars" age? Or is this a reality not achievable? Extance (2015) , goes into explanation of laser weapons in further detail.

The laser gun "Boeing" was first demonstrated in 1960. This is incredible due to many of us not even being born yet. Computers and technology during this time period was not even close to being what it is today. The gun itself was small enough to transport but still a huge gun. That being said, it would more than likely be something that would replace current artillery guns. Let's talk about computers for a second. Sense most technology is run by computers, especially electronic devices. Computers for one, used to be gigantic. Five Gigabytes of storage took up almost an entire room. Nowadays we have 500 Gigabyte storage devices that are smaller than modern-day cell phones. The sheer size was only the first issue with this weapon technology.

The second issue was that "Boeing" was a "chemical oxygen iodine laser," also known as COIL. It was fired using a chemical reaction. This type of system required a lot of fuel. " ' It needed remote mixing units and chemicals weighing tens of thousands of pounds,' says Paul Shattuck, head of directed-energy systems for Lockheed Martin Space Systems, which provided the project's beam-control technology" (Extance, 2015, p. 408). This brings everything right back around to weight and size. Not only was it big but it also needed fuel that was extremely heavy and storing it would take up a lot of space.

Thirdly, the laser was not very effective at long range. "Sprangle explains, 'the atmosphere absorbed laser light, heating the air and causing the laser beam to spread out'. That spreading, in turn, dissipated the laser's energy" (Extance, 2015, p. 409). Picture a flashlight being shined on a wall. The closer you are to the wall the brighter and more condensed the light beam is. As you move further away from the wall the more spread out the beam of light becomes. Now think of the same thing but this time with something in the way of the beam

completely hitting the wall. You are still able to see the light hitting the way, but it is not as effective as when nothing is in the way. This is essentially what the atmosphere does to the beam of light when traveling to the target. The further it travels, the more spread out and less condensed it becomes, making this weapon hard to use in long range combat.

We have moved away from the old COIL lasers and onto new technology using fibre lasers. Fibre lasers are not necessarily new but they have improved so much on technology that they have become more reliable and powerful. The most amazing part is the cost. "An inexpensive missile is \$100,000 and that's one shot," says David DeYoung, Boeing's director of directed-energy systems. "To shoot a laser-weapon system once is less than \$10" (Extance, 2015, p. 409). Less is more. Considering how much less money is required to fuel these incredible machines it appears that using them for defensive purposes is becoming more ideal. In 2010, Shattuck was requested to make defense against incoming drones and rockets. He then designed the ADAM system which was able to disable these types of weapons. Since we would not have to use as much money on fueling and training with these weapons, we can use that extra money spent on other things such as equipment and even other training purposes.

Technology has improved vastly over the years, and it is quite spectacular to see how far we've come since 1960. Technology has gotten smaller and able to hold more capacity. The cost of firing such weapons has become cheaper and easier. The amount of fuel needed to run such equipment has been reduced significantly as well. At the end of the Article "Scharre claims that fibre-laser weapons could find a niche in US military defense in 5–10 years" (Extance, 2015, p. 410). Maybe there is a possibility that this type of weaponry is seen amongst the United States military in the near future.

Conclusion

The United States was first established in 1776. The military was using weaponry that was unreliable and took what seems like forever to reload on the battlefield. If one reads through this, they can depict that war shapes an army's use of weapons and tactics to suit the needs of the battlefield.

First the United States military made loading easier and faster. Then made the rifles they used more reliable. Soon after that, rifles became more accurate just by changing the barrel and bullet design. Before one realizes it, they will be reading about what a modern small arms weapon is like and functions like.

The development of technology is quite amazing. When it comes to war, the one that has the best equipment and weaponry suited for the given task will typically come out on top. This is the reason the United States military has been so successful. The United States has the ability to adapt and to make sure that they have the weaponry to overpower their enemies in any circumstance.

The United States has come so far since it was first established during the 18th century. We first started with muskets that took approximately one minute to fire one time. Now the United States can put hundreds of rounds down range in a matter of seconds. To think that the United States was using muskets as their standard issue weapons just over a hundred years ago is quite amazing. Once one sees on paper how close this time period was, it definitely proves how fast the military has grown in such a short period of time.

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