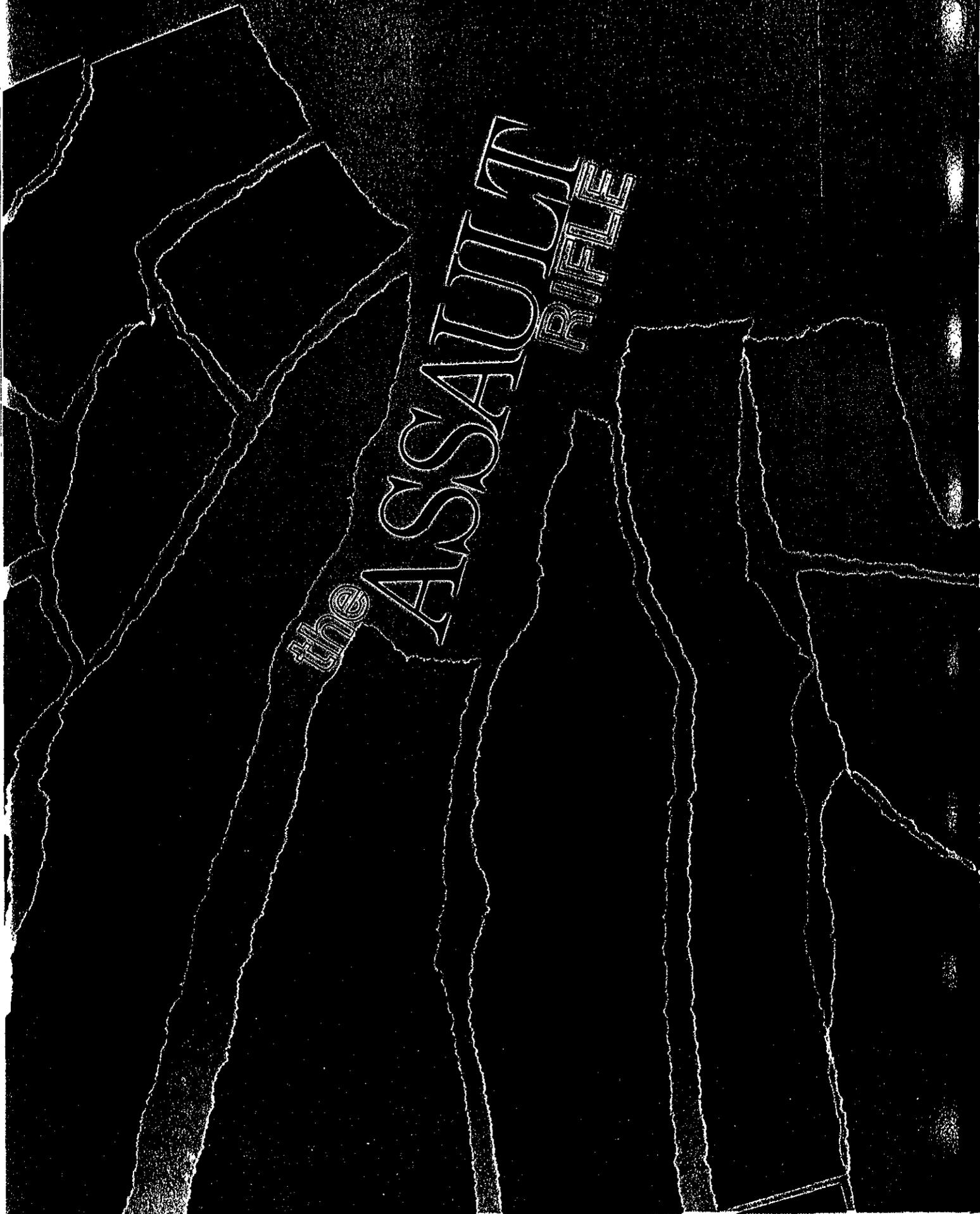


CAPTAIN NOYES B. LIVINGSTON III

the ASSAULT  
RIFLE



The United States Army considers the M16 one of the best assault rifles available today. While it is admittedly a good weapon that has hidden its origin and age well, it has not always been so popular. The fact that it is in service at all is simply an example of the urgency, the vagaries, and the compromises that have influenced many rifle and ammunition selections in the past.

The M16's story, like that of other assault rifles, starts with the beginning of modern warfare. Until the introduction of the rifled musket during the American Civil War, the infantry shared the battlefield with the cavalry and the artillery in a truly combined arms effort. Combat was usually close, brief, and violent for all three, and the final issue was often decided by personal contact with the enemy.

The rifled musket should have changed things quickly; an infantry unit could now deliver sustained point fire out to 500 meters and still remain behind cover. But until late in the war few commanders realized the difference, and their tactics remained the same. Eventually, though, as the shock of their infantry assaults were beaten off by defensive firepower, their losses became so great that their infantry had to back off and the cavalry and artillery turned to playing supporting roles.

The repeating rifles that came into use following that war did not do much to change the situation, although they improved the infantry's advantage by allowing rapid fire from the prone position. But the development of the smokeless bolt action rifle at the end of the 19th century did make the cavalry an anachronism and forced the artillery to catch up technologically.

At the beginning of World War I, armies still ran on the legs of their men and animals once they got off a train. But because weapons had improved faster than transportation, communications, and tactics, an attacking force could be immobilized at long range with rifle fire and broken up by light direct artillery fire. In the event the attackers managed to pass through those curtains of fire, they could be destroyed by the defender's machineguns, which were used in ever-increasing numbers.

Mobile heavy artillery and automatic weapons eventually doomed the rifleman during the Great War. Incapable of either operational or tactical movement, he dug into the earth to escape the inferno on its surface, and his rifle literally became a last ditch survival weapon. The infantryman was eventually saved only by the appearance of the tank and reliable motor vehicles; they gave him the protection and mobility he needed either to close with his enemy or to avoid him entirely.

The start of World War II found the combat arms and their weapons and tactics working in harmony, at least for the victors during the first battles. The rest had to learn fast. In the grand scheme of victorious combat the artillery disrupted the enemy, the armor broke through his positions to cause as much damage and confusion as possible, and the infantry safeguarded the breakthroughs. The mobility and cooperation of all three made it easier to destroy the enemy's capabilities instead of the

enemy himself. The offense was once again the key to winning.

The infantry was assigned the roles of protecting the other arms, of consolidating and defending the battle area, and when all else failed, of finishing up the dirty work. Infantrymen supported their squad and platoon automatic weapon crews with deliberate, well-aimed rifle fire and used those same weapons to provide covering fire for their own movement. Whether these infantrymen succeeded or failed as a unit, each man's rifle was still his personal weapon. It was heavy, durable, and accurate. If he was lucky, it was also semiautomatic.

As the war dragged on, strategies of annihilation ground down into battles of attrition. The elegance of the blitzkrieg gave way to the complexity of combined arms warfare. To keep from losing the firepower race, armies using bolt action rifles began to reassess their infantry weapons and tactics because their factories and trucks were delivering ammunition faster than the infantry could use it.

The Germans were the first to begin their reassessment. They came to believe that with a lighter, selective-fire assault weapon that fired a reduced power cartridge at a shorter effective range, their riflemen, because of its lessened recoil, could deliver more fire in less time at normal combat ranges. The machinegun would then complement the squad rather than being its main reason for existing. This reassessment became a reality when the StG44 family of assault rifles with its 7.92x33mm Kurz ammunition joined the fighting in 1942.

The Soviet Union, as a result of its experiences against the German StG44, adopted a 7.62x39mm intermediate cartridge in 1943 for its SKS semiautomatic carbine. This versatile round, frequently referred to as 7.62 Soviet or Pact, is in use today throughout the world in the AK, AKM, and RPK series of assault rifles and light machineguns, as well as in similar weapons used by many other countries.

## **BREAK**

World War II ended with the major powers divided into two camps on individual weapon design. The Soviet Union and other European countries wanted each of their riflemen to be a potential, intermediate-range machinegunner in the new fashion, capable of independent assault fire while moving, if necessary. This concept required a break with the rifles of the past.

The U.S. Army, on the other hand, with the best semiautomatic rifle of the war to its credit, thought that the traditional weapons and tactics were best. It still preferred a base of crew-served automatic weapons fire backed by individual marksmanship. Although the rifleman was not expected to fight the battle all by himself, a selective fire weapon would undoubtedly let him make a greater contribution. Consequently, the U.S. Army in 1946 began looking for a possible single replacement for its M1 rifle, M3 submachinegun, M1 carbine, and

Browning automatic rifle (BAR).

As far back as the 1920s and 1930s, the U.S. Army had considered switching to a .276 caliber round, but the Army Chief of Staff at that time, General Douglas MacArthur, insisted on chambering the M1 rifle in a .30-06 caliber, or what is now known as 7.62x63mm US, when it entered service in 1936.

The British took over the idea of a smaller round in 1947 and began working on a .280 caliber round and a very short rifle to shoot it, the EM2 Bull Pup, which had the receiver in the stock behind the pistol grip and trigger. But with the founding of NATO in 1949, both the United States and Britain agreed to cooperate on a standard weapon system that would feature interchangeable parts and ammunition, which would also improve supply.

In 1951, the British seriously thought about placing the EM2 in service, but for the sake of progress agreed to drop their cartridge in favor of the one preferred by the United States, the .308 T65. This 7.62x51mm round was a compact version of the .30-06 and one that took advantage of an improved powder. It was lighter than the .30-06, but it used a similar bullet to produce almost the same power and ballistics. The T65 became the 7.62mm NATO standard round in 1956 and a variety of rifles were chambered for it in an attempt to find one that was suitable for use by all of the NATO armies.

Despite the fact that the 7.62mm NATO round was not an intermediate cartridge, the rifles tested with it at Fort Benning, Georgia, were generally modern weapons using assault rifle technology. They were all capable of selective fire and many had pistol grips and semi-straightline stocks. The British dropped their Bull Pup rifle, because they thought it was too clumsy, but they favored an equally sophisticated design from Belgium, the FN-FAL. Meanwhile, the United States introduced an improved version of the M1 rifle that used a magazine instead of clips, the T44, which was rugged and reliable and which was based on a proven weapon. From 1952 to 1957 the FN-FAL and the T44 were put through punishing trials, but the final decision was determined more by psychology and politics than by mechanics.

## GOOD WEAPONS

In 1957, the United States, suspicious of straightline stocks, adopted the T44 (as the M14) because it was a strong, familiar rifle suited for American soldiers. The fact that it was an American design gave it an additional edge. The British and about 50 other nations eventually chose the FN-FAL. Although both were good weapons, they were uncontrollable when fired automatically. Thus, the only thing NATO received from the competition was an updated, full-power rifle round at a time when several of its member countries were looking for something smaller.

Although the M14 was capable of firing automatically, it entered service primarily as a semiautomatic rifle. A version equipped with a bipod was also produced to give

the rifle squad a compatible weapon that was capable of more accurate automatic fire. As a result, the U.S. Army entered the Vietnam War in the early 1960s with a rifle and automatic rifle combination that was not much different from the M1 and BAR team of a war two decades earlier.

Another competitor had been on the market during the NATO trials, the most advanced rifle of all. But it had been submitted in 1956, too late, unfortunately, to be a serious contender. It was the Armalite AR-10. Built to fire the 7.62mm NATO round, it looked like a longer model of the present M16. It was unique in that the propellant gas travelled down a tube above its barrel to unlock the bolt and blow it rearward instead of working against a piston and actuating rod as in most automatic rifles.

Armalite had joined with Fairchild Corporation in 1954 and now began to market the rifle in developing nations. With the constraint of having to chamber its rifle in 7.62 NATO caliber eliminated, Armalite turned to smaller ammunition to make better use of its rifle's features. In 1957, Armalite scaled down the AR-10 to fire Remington .222 high-velocity small game ammunition and started additional developments. After experiencing overheating problems with the rifle, Armalite settled on an improved version of the interim Remington .223 Magnum round for a new rifle, the AR-15.

The AR-15 and its new .223, or '5.56x45mm, ammunition found quick acceptance from foreign customers who needed a handy and inexpensive weapon. In 1958, the U.S. Army Infantry Board recommended that the rifle be adopted to replace the M14, and a year later, in 1959, the Colt Firearms Company took over the manufacturing rights from Armalite to fill the steadily increasing orders.

The U.S. Navy bought a few AR-15s to arm its SEAL teams, the U.S. Air Force ordered a large quantity for its security police at overseas airbases, and in 1962 the U.S. Army purchased some for its Special Forces and other selected units. The AR-15's compact size and low recoil, along with the 5.56 round's flat trajectory, made it an ideal choice for such jobs.

As the conflict in Southeast Asia widened, the M14 and its heavy ammunition became a bother to the American soldier and a burden to his South Vietnamese counterpart. The big rifle was not designed for jungle patrols, close ambushes, or firefights, and its production was stopped in 1963. The only replacement that was readily available was the AR-15. The U.S. Army added a bolt forward assist and a closed flash suppressor to it and renamed the rifle the M16. By 1966, more than 500,000 of the substitute weapons had been rushed into service. The number reached four million by 1976.

The M16 was not an ideal weapon for the conditions under which it had to operate, but it was good enough at the time. The powder in its ammunition had to be changed to reduce fouling, and the rifle's action and barrel had to be kept scrupulously clean and correctly lubricated. Even though the M16's bore and chamber were chrome plated and a new buffer was installed to improve

its performance, the innovative rifle required the same care and maintenance that any other high velocity small-bore weapon would. Unfortunately, combat was not the place for that kind of care and maintenance.

Because of its uncertainty about the best weapon to use in future conflicts, the U.S. Army began seeking, through a series of studies on special purpose flechette individual weapons (SPIW), small arms weapons systems (SAWS), and short range volume fire effects (SALVO), a weapon system to replace the M16 and the rifle squad's M60 machinegun. This new family of selective fire weapons was to have been built, theoretically, around a common action and a high-velocity round. Although the M60 and its 7.62 NATO ammunition was to be retained in the rifle platoon, the squads and the individual riflemen would be capable of fire and movement on their own.

Many weapons were evaluated in these programs, including a heavy barreled M16 that used three magazines attached together like a fan. Eugene Stoner, a noted weapon designer, developed a magazine- and belt-fed gun system that could be tailored to fit a weapon's task, and Armalite offered its AR-18 to fill the need for a new rifle. No replacement for the M16 was found at the time that was worth the cost of completely changing rifles. More recently, however, as a result of its squad automatic weapon (SAW) project, the U.S. Army has adopted a Belgian 5.56mm light machinegun, the M249, which uses both ammunition belts and magazines.

Meanwhile, other nations had also been searching for an ideal individual weapon and cartridge. In fact, countries as diverse as Finland and Israel had embraced and improved upon the AK design in both intermediate and high velocity calibers. (It is estimated that more than 40 million AK derivatives have been made.) But most NATO countries have decided to keep the 7.62 round for their crew-served machineguns only and to use the U.S. 5.56 cartridge with a heavier bullet for any future assault rifles. The Soviet Union is also changing to a smaller cartridge — a high velocity 5.45x39mm round for use with its new AK-74 and RPK-74 weapon series.

Today, the U.S. Army is considering following the lead of the U.S. Marine Corps in adopting the M16A2 rifle when it begins withdrawing worn out M16A1s from service. The A2 incorporates modifications that make it possible to fire the heavier and more powerful 5.56 NATO cartridge accurately at longer ranges and steadily at shorter ones. (See *INFANTRY*, July-August 1983, page 3.)

The M16A2 will be more robust and easier to handle, and it will have more killing power than the rifle it will replace. But it does not represent a real technical advancement in assault rifle development. Rather, the present trend is toward such exotic and ergonomic designs as the Austrian STG 77, the French MAS, and the Swedish MKS, which are better suited for mounted combat or special operations.

West Germany is pioneering the next generation of assault rifles with its futuristic G-II. This small Bull Pup rifle fires caseless ammunition and holds 59 rounds of

closely packed cartridges in a loading device that fits in the stock behind the pistol grip. Because the sealed receiver has no exposed moving parts or ejection system, the G-II will function in conditions that would cause conventional rifles to jam.

What the future holds for the M16 and similar assault rifles is uncertain. Progress in laser technology, particle beam weapons, and body armor construction, and continuing changes in the nature of warfare itself, may force the world's major armies to re-evaluate their philosophies about individual weapons for their soldiers. It is possible, of course, that the small caliber or intermediate range ammunition that is so popular today may come up short on the expanding battlefield of tomorrow.

The employment of thermal imagery, night vision devices, ground surveillance radar, and intrusion warning systems is rapidly stripping away the advantages that limited visibility, concealment, and surprise have always given an attacker. At the same time, defending armor, artillery, and dug-in infantry have the potential to bring down a virtual storm of destructive fire out to the practical limits of observation. Automatic grenade launchers are appearing to beef up the defense, and the extravagant use of long-range machineguns will continue as tracked vehicles help haul them around.

On a larger scale, radiation nuclear weapons may briefly dominate the battlefield as opposing forces mass to break through or to counterattack. Finally, the desert theaters, thought of up to now in terms of naval operations, add an unrealized space-like dimension to modern warfare. The effect of these factors will be to spread out and delay an attacker so that the defender can engage him even earlier at longer ranges. Command, control, communication, and support will become more difficult as small battle groups fight it out in near isolation.

This distant and lonely combat may bring the era of the M16 and the assault rifle as we know it to an end, because the infantry, to survive, will need more powerful ammunition. Future rifles, therefore, may become larger and heavier to support image intensifying and improved image sighting devices and to deliver accurate point fire at greater ranges. But marksmanship training and individual fighting techniques may still be needed to deliver deliberate semiautomatic fire to eliminate enemy armored vehicle commanders, troop leaders, artillery observers, crew-served weapon members, antiarmor missile controllers, and individual soldiers. In fact, as it has on past battlefields, well-aimed, steady rifle fire may just be a major suppressive weapon on tomorrow's battlefield.



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