displacing to a new position or defending his present one.

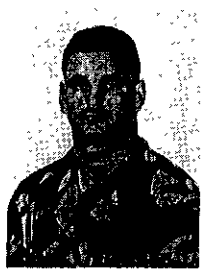
The BMO is also given some straightforward guidelines that establish vehicle repair priorities. On occasion, it may be necessary for him to "down" some vehicles to keep the battalion's mission-essential vehicles "up." The priority guidelines will vary depending on the type of battalion and the battalion's mission. A motor officer, h er, must be allowed to modify the established priority on the basis of what is damaged or destroyed. (In most cases, he knows the true status of combat power within the unit before the tacticians do.)

In general practice, the MRP and the combat trains will rarely be colocated because of the number of "customers" and vehicles associated with the combat trains. The addition of the MRP with its frequent "service calls" would only increase the signature of the combat trains and make its location a lucrative target. Depending on unit assets and the particular tactical scenario, though, it may be necessary to co-locate the two for security reasons during the hours of darkness.

The maintenance rally point must be highly mobile and self-supporting, and it must be able to defend itself initially. A major problem for any unit is preparing its maintenance personnel to conduct sustained combat operations over an extended time and distance. The soldiers in an MRP must be able to work and move over a considerable area, frequently for days at a time, with little or no rest and few personal comforts. Accordingly, careful plans must be made for rations, water, additional petroleum products, and crew-served weapons to ensure the continued health, high morale, and effectiveness of the soldiers who must man a maintenance rally point.

Using the "fix far forward" principle, the 1st Battalion, 5th Infantry, during Team Spirit '83 operated over considerable distances, but never had more than two vehicles down at any given time.

It should be noted, however, that the ultimate success of forward maintenance in a unit is dependent upon an effective unit maintenance program. Without one, there is no system that can solve a maintenance problem either in training or in combat.



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The Enfield Rifle:
Death of an Old Friend

CHARLES R. FISHER

The first time I ever saw an M1917 Enfield rifle was when the supply sergeant of Company E, 7th Battalion, Maryland State Guard handed me the weapon that was to be mine while serving in that unit during World War II. Until then my concept of a service rifle was either the M1903 Springfield or the then relatively new M1 Garand. I had never heard of the M1917 even though thousands of them had been in war reserve storage since the end of World War I.

When I asked the sergeant why the unit used Enfields rather than Springfields he replied, "Because we can get 'em." Until the sergeant enlightened me, it had never occurred to my 17-year-old mind that there could be such a thing as a shortage of standard service arms in a great nation such as the United States. Therefore, I was introduced that day not only to the M1917 rifle, but to the fact that even wealthy and powerful nations can be caught short of crucial war equipment.

Perhaps it was appropriate that my introduction to the Enfield should come under such circumstances — the weapon had been hastily adopted by the U.S. Army during World War I precisely *because* the nation had been caught short of enough Springfield rifles to arm its rapidly expanding forces. In any case, it was love at first sight, and I have been an admirer of the M1917 ever since.

Granted, the M1917 was a little on the heavy side (9.0 pounds, compared to 8.7 pounds for the Springfield) and a little long (the barrel was 26.0 inches long compared to 23.79 inches for the Springfield), but it had sleek, almost elegant lines for a military rifle and, with its swept-back bolt handle, had a racy, streamlined appearance that made it look years ahead of its time. Furthermore, it was strong, of high quality workmanship, and capable of handling the powerful .30-06 cartridge.

Soldiers of the 2d Battalion, 329th Infantry, during rapid fire portion of their Enfield rifle instruction, France, 1918.

A major disadvantage of the Enfield was a belt sleeve design that could permit hot gasses under pressure to traverse its length if a primer was punctured. These gasses could then escape through the rear of the bolt and do considerable damage to a shooter's eye. Although a punctured primer was relatively rare, some soldiers no doubt learned the hard way about this design idiosyncrasy.

Another slight disadvantage of the Enfield applied only to soldiers who had to drill with the weapon. Since there was no magazine cut-off on the rifle, the follower would pop up when the bolt was opened for the command "Inspection, Arms!" The bolt could not be closed until the follower was depressed — a movement not included in the manual of arms. A sheet steel device that could be inserted in the magazine to hold the follower down eliminated this problem, although the device had to be taken out of the piece before charging the magazine.

Among the many virtues of the M1917 was its great strength. Along with the Japanese *Arisaka,* it was one of the strongest rifles of its day. For this reason many M1917s were converted to magnum calibers when the rifles appeared on the surplus market after World War II. (Lamentably, this also guaranteed that relatively small numbers of them would survive to the present in their original military condition.)

The rear sight, although not adjustable for windage, used a large aperture mounted on the receiver bridge close to the shooter's eye. In fact, the M1917 was one of the first military rifles issued in large numbers that used a true aperture sight. The battle sight aperture was calibrated for four hundred yards. Therefore, soldiers using the Enfield had to learn to hold their aim under the target at shorter ranges. The leaf sight was scribed at intervals for ranges varying from 200 to 1,600 yards. From 200 to 900 it was graduated in intervals of 100 yards. From 900 to 1,600 yards the scribed lines represented changes of 50 yards. The leaf sight did not compensate for the drift of the bullet at long range.

Although its sight was not as sophisticated as the sight on the M1903 Springfield, the position of the Enfield's aperture was just right to make the sight one of the best combat rifle sights ever developed. (Fortunately, many newer weapons such as the M1903A3, M1, G3, M16 and others use the same rear sight location as the M1917.)

Other virtues included a sleek one-piece full length walnut stock, excellent materials (for the 1917-18 period), and an attractive finish. In terms of materials used in its manufacture, the M1917 was ahead of the M1903 Springfield. For example, all three manufacturers of the M1917 used nickel steel in the fabrication of the receiver whereas M1903 Springfield rifles produced at Rock Island Arsenal used heat treated carbon steel receivers until 1918 and Springfield Armory did not make the change to nickel steel until 1927.

My introduction to the M1917 came about as the result of a curious and complex set of circumstances. After the outbreak of World War II in December 1939, a nervous America kept a close watch on events in Europe and Asia. Although the U.S. was not yet involved in the struggle, Congress ordered the National Guard to active Federal service in September 1940. The National Guard units took their rifles with them, of course, when they reported for active duty. Congress, in October of the same year, then authorized those states that so wished to organize state forces for home defense. The War Department was ordered to help the states train and equip these state guard forces.

Part of the equipment made available to the states were M1917 rifles taken from war reserve stocks. An issue of these rifles was authorized at one rifle for each two National Guardsmen then on active Federal service. All told, 111,276 Enfields were earmarked for use by the 48 states. After the United States entered the war on 7 December 1941, the Army recalled the M1917s from the state forces but then began to re-issue them in 1944 when more modern military weapons became available in sufficient quantities for the active forces. My M1917 rifle was a part of this 1944 re-issue.

The actual conception and birth of the M1917 took place before World War I when the British government decided to replace the SMLE (Short Magazine Lee Enfield) .303 (later renamed the Rifle No. 1, Mark III) with a stronger Mauser-type rifle. It also decided to replace the aging .303 rimmed cartridge with a more powerful rimless round. In 1910 design work on the rifle commenced, and three years later the Pattern 1913 rifle and the powerful .276 (also referred to as .280) cartridge were officially accepted by the British.

The P13, as it was called, was almost identical to the later M1917 except for

its .280 caliber and its chambering, and it was a true product of its time. The swept-back bolt handle was intended to place the handle close to the trigger to facilitate rapid fire, because the British had observed the devastating effects of rapid rifle fire during their colonial wars of the 19th century. Winston Churchill, for instance, spoke of the "rifle storm" unleashed by the British infantry against the Mahdist forces at the battle of Omdurman in 1898.

Most primitive enemies cooperated magnificently with the British by deploying *en masse,* thereby presenting a target six feet high multiplied by the width of the enemy formation (at Omdurman, the Khalifa's army presented a front nearly three miles wide.) Even a mediocre rifleman could place nearly every bullet in a target such as this. The fact that a future European enemy might wear *feldgrau* uniforms, fight from trenches, and use machineguns to provide its volume of fire did not diminish the British desire for a weapon that could deliver a great volume of rapid fire. And the P13 could do that.

Another feature of the P13 was its firing mechanism, which completed most of the cocking action on the closing stroke of the bolt. The Mauser, from which the P13 was largely copied, used the opening action of the bolt to cock the piece. The British apparently felt that the full force of the opening stroke should be reserved for extracting the fired cartridge case. This would be especially true when firing in gritty or sandy conditions. Again, the British experience in Africa, India, and the Sudan seems to have influenced this design feature of the P13.

Before many P13 rifles could be manufactured, though, the British entered World War I in August 1914. Since the overwhelming bulk of the British armed forces carried the older SMLEs in .303 caliber, the British ordnance people wisely decided that it would be best to keep both the .303 round and the SMLE in production. They also decided to continue production of the P13 but in .303 rather than .280 caliber to simplify ammunition supply. This new combination of rifle and cartridge became the P14.

Most of the P14 rifles were manufactured by contractors in the United States, the largest of which were the Remington Arms Company of Illion, New York; the Winchester Repeating Arms Company, New Haven, Connecticut; and the Midvale Steel and Ordnance Company of Eddystone, Pennsylvania. In theory, the three plants could produce a total of about 11,000 rifles per day, although they never reached this figure while working under the British contracts. The contracts themselves were terminated between 1 June and 21 July 1917, and this proved fortunate for the United States, since we had declared war on Germany in April 1917 and were in desperate need of weapons.

WAR EMERGENCY

The war emergency required the rapid enlargement of the U.S. armed forces. By November 1918 nearly five million men were in these forces with about four million of them in the Army.

There were about 600,000 M1903 Springfield rifles on hand in April 1917, not enough to arm the gigantic force contemplated, and the Springfield Armory and the Rock Island Arsenal could not begin to meet the demand. American industry no doubt could have produced enough Springfields if they had had enough tooling time. But in 1917 little lead time was required for Remington, Eddystone, and Winchester to begin making Enfield rifles — their plants were already tooled and equipped for the manufacture of the P14. Therefore, the caliber of the P14 was changed to .30-06, the necessary minor adjustments were made, and a new rifle was born — the U.S. Rifle, Caliber .30, Model of 1917, or, as the soldiers called it, simply "the Enfield." ("Enfield" comes, of course, from the rifle's British heritage — many British weapons were made in Enfield, England.)

Since there were many thousands of Springfield rifles on hand (and Springfield production continued during the war adding more thousands), the War Department decided to issue Springfield rifles to Regular Army and National Guard units but Enfield rifles to the National Army. The latter consisted of some 17 divisions that had been created out of nothing after April 1917. Many (but not all) of the men who enlisted or were drafted after the outbreak of hostilities were assigned to National Army units.

During World War I, Remington produced 545,541 Enfields at its Illion works, Eddystone built 1,181,908, and Winchester made 465,980 more. During the height of its manufacture, M1917 output reached nearly 10,000 rifles a day. This compared with production rates for the M1903 Springfield of 1,200 a day at the Springfield Armory and 400 a day at the Rock Island Arsenal. In fact, the manufacture of M1917s actually exceeded the promised rate of production.

Enfields poured off of the production lines in such numbers that by 1 January 1918 there were enough in each National Army camp to equip every man authorized to carry a rifle. Because of the shortage of M1903 Springfields, four camps of National Guardsmen were not equipped with Springfields and presumably received Enfields instead.

With the coming of peace in November 1918, most of the M1917s went into storage as war reserve arms. The Army toyed briefly with the idea of adopting the M1917 as its official rifle, but this concept never got very far.

The cosmoline-coated Enfields reposed in storage for the next 20 years waiting for a new war and a new generation of soldiers to clean out the preserative grease and put them to deadly use again. But since the Army adopted the semi-automatic M1 in 1936, the M1917 was considered obsolescent by the time World War II started. Thus, it was relegated to training and state guard use during the war years. Some Enfields did see combat with the Philippine Army and other allied forces, but for the most part the sturdy old rifles contributed to victory as training devices instead of as weapons. After World

War II, thousands were sold by the Director of Civilian Marksmanship to National Rifle Association members.

My first affair with the M1917 was entirely too brief. After a few months I was drafted out of the Maryland State Guard and into the Active Army, and I had to turn in my beloved Enfield before leaving for active duty. Since I had drilled with my M1917 each week and had fired both ball and blank ammunition in it on several occasions, parting with this rifle was difficult.

After entering the Active Army, I had many opportunities to use the M1 Carbine, the M3 "grease gun," and the legendary M1 rifle. Today, as a member of the Maryland National Guard, I qualify each year with the M16A1 rifle. All are good weapons and certainly of a more modern design than the M1917. But I never see an Enfield without slipping back in memory to the state guard and night maneuvers on the upper Potomac near White's Ferry (of Civil War fame) or hearing the ghostly crackle of musketry and smelling smokeless powder as we blazed away with our Enfields on the Fort Meade rifle range.

Other more modern and efficient military weapons have replaced this now elderly World War I weapon. As far as I know none are left in the Army's inventory except a few specimens in post museums. As with all first loves, however, I'll never forget the M1917. To me, the sleek, graceful rifle will always be alluring and elegant.

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Philosophy, Technology, and Tactics

CAPTAIN THOMAS P. KRATMAN

There seems to be a widely held belief in the U.S. Army today that "technology drives tactics and tactics drive technology" and that this has always been true. At its most extreme, this belief leads to an overly mechanistic, falsely scientific view of warfare in which the heaviest artillery is always seen as a sure winner. But history shows, I believe, that technology — instead of driving tactics — drives techniques and other technology. Indeed, any number of other factors may act singly or in combination to create or change tactics. A short explanation of tactical changes from pre-Biblical times to the recent past can demonstrate this point.

It is useful first, though, to define some of the key terms in this discussion. *Tactics* is the art (and sometimes science) of pitting strength against weakness. Much of what goes by the name of tactics in the U.S. Army (and others) should be called *techniques* that support tactics. Thus, the way a machinegunner lays his gun along an FPL is a technique. But the way a platoon's weapons and fortifications are tied in to allow small arms to engage dismounted Infantry and separate it from armor (leaving the armor vulnerable to antitank weapons) is tactics. Similarly, camouflaging preparations for offensive action in one sector while drawing attention to another sector involves techniques if they are taken individually, but these things constitute tactics if they are taken together. Put more simply, techniques are a science and tactics an art.

Technology, as used here, refers to *new* technology, specifically to manufactured devices of recent invention. The difference is that centuries-old technological devices that have only recently found military application involve not science but wisdom, a new way of looking at things.

In the ancient world, swords, spears, bows, arrows, slings, and suits of armor — all technological innovations in their times — were around for thousands of years without influencing tactics. The heroes of Homer's *Iliad*, armored like turtles in some cases, went forth to do battle without a thought for tactics. No different from neolithic village champions, these "high-tech" warriors of the past fought and either conquered or died singly.

Three successive ideas, however, were to have a decisive influence on warfare for some centuries. These were that men who were trained to march and fight in close order could form units of almost unbreakable density; that this would allow a frequent, organized relief-in-place of the rapidly fatigued front rank; and that men organized in such units and drawing physical and moral support from their fellows would willingly advance to close with and to physically and