The FIELD ARTILLERY JOURNAL

OCTOBER 1946

Artillery Rockets . . . Page 564

By Col. Thomas B. Hedekin, FA

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The FIELD ARTILLERY JOURNAL

"Contributes to the Good of Our Country"

VOL. 36 **OCTOBER 1946** **NO. 10**

● Cover: Although neither played a decisive role, the important new weapons of World War II were rocket missiles and atomic energy. The Signal Corps picture on the cover showy British antiaircraft rocket projectiles rooming through the sky.

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Published monthly by The United States Field Artillery Association. Publication office: 3110 Elm Avenue, Baltimore, Md. Editorial and executive offices: 1218 Connecticut Avenue, Washington 6, D. C. Address all communications to the Washington office. Entered as second class matter August 20, 1929, at the post office at Baltimore, Md. Accepted for mailing at the special rate of postage provided in Soc. 1103, Act of October 3, 1917. Subscription rates: $3.00 a year; foreign, $3.50; single copies, 35 cents; additional single copies to subscribers, 25 cents. The Field Artillery Journal does not accept paid advertising. It does pay for original articles accepted, but unsolicited manuscripts must be accompanied by return postage if they are to be returned.

STRATEGY OF THE WAR*

Allies sought to follow national policier even when engaged in fight for existence

UNTIL RUSSIA was attacked by Germany in June 1941, Russia's war effort was purely aggressive and political warfare in pursuit of an undisguised policy of aggrandizement, at the expense of Finland, the Baltic States and Poland. For two years thereafter, however, Russia was fighting for her existence and military considerations were paramount.

Great Britain, until the U. S. entered the war, was so hard pressed to stave off disaster that, in the last analysis, military considerations dominated her strategy. During this period, however, military and political strategy worked together in mutual support whenever possible. Britain's political efforts at this time were concentrated on gaining the full backing and military cooperation of the U. S. as soon as possible, on building up political resistance to the Axis in the Balkans and the Middle East, particularly in Turkey, and in maintaining the neutrality of Sweden, Portugal, Spain and Switzerland.

Except in the Balkans, which were overrun by German forces early in 1941, British political strategy in these fields was successful. As the U. S. came to realize the true character of the struggle in Europe and its ultimate implication as to the Western Hemisphere, the U. S. progressed by stages from a status of major supplier to one approaching full military collaboration with Great Britain. As a result, when Japan attacked Pearl Harbor the U. S. entry into the war was a natural step for which both nations were more or less prepared.

WAR'S FIRST OBJECTIVE

The basic strategic decision of the war actually was made early in 1941, at the so-called ABC Conference in Washington and later confirmed at the Arcadia Conference shortly after Pearl Harbor. In accordance with this decision, the first and major objective of the combined U. S. and British effort was the defeat of Germany. As a companion decision, it was agreed to operate on the defensive against Japan, until such time as the means available made it possible to take the offensive.

These decisions are generally considered to have been sound from the military point of view and well supported by considerations of political necessity. Germany was the head and front of the Axis coalition—the most powerful, most successful and most dangerous enemy. It was not certain that both Great Britain and Russia could wait for a decisive victory over Japan, and if either of them collapsed or made a settlement with Germany, the U. S. ultimately would face both Germany and Japan almost singlehandedly. On the other hand, providing Japan could be prevented from consolidating and developing her early conquest she could not long survive the united powers of the Allies which was pledged after the war in Europe had been won.

Questions of how these decisions were to be interpreted and applied arose early in the war and continued to the end. The most important and controversial question concerned the proportion in which available resources should be divided between the war in Europe and the war against Japan.

In this decision as to Europe vs. Japan as the primary war objective, we find the first major manifestations of how political factors were involved in the U. S.-British strategy of the war. Compared with her interests in the Far East Britain's interest in Europe and the Middle East was overwhelming. For Britain, psychologically, politically and traditionally, the war against Japan was a side show, as compared with the war in Europe. Furthermore, Britain must have sensed that the U. S. could and would handle Japan and do so without demanding a *quid pro quo* when the job was finished.

For the U. S., on the other hand, Japan as the primary objective was politically preferable to Germany. The U.S. had been disillusioned by the last war in Europe. She was traditionally against getting involved in Europe's quarrels, and, after all, Germany had not directly attacked the U.S. On the other hand, the U. S. had extensive interests in the Far East, a tradition of always helping China and a vague but long-standing expectation of war with Japan. Pearl Harbor added the element of outraged pride and revenge for the treachery.

As a result of these opposing political factors, there was a continuing divergence between the U. S. and Great Britain in interpreting the decision to finish Germany first. Britain consistently tended to de-emphasize the war against Japan and to build up the effort in Europe at the expense of the Pacific. The U. S., while more than meeting its commitments in Europe, insisted on what it considered to be adequate effort in the Pacific.

From the results obtained, it would appear, however, that an excellent balance was achieved in reconciling these conflicting points of view. In fact, it seems probable that, had either of the extreme views prevailed, final victory might have been delayed.

From the outset, the British strongly advocated entering Europe from the Mediterranean and getting at the so-called "soft underbelly" of Germany. Variations of this concept involved entering the Mediterranean directly or via North Africa and thereafter proceeding by way of Italy and either the North Balkans, or Greece, Turkey and the Danube.

On the other hand, the U. S. was convinced, and consistently

*Reprinted (slightly condensed) from *World Report*, an independent weekly magazine on world affairs published at Washington, D. C.

maintained and argued, that the soundest, surest and quickest plan for defeating Germany was a cross-Channel, full-scale invasion of France. In April 1942, the U. S. proposed such an invasion for April 1943, and plans herefor were initiated. But, in June, Mr. Churchill came to Washington and convinced the President that the U. S. proposal could not be accomplished on time and that the invasion of North Africa was possible in 1942.

The resulting campaigns across North Africa, the Mediterranean and in Italy are well known. Although contributing more than double its original commitments for these campaigns, in 1943 and early 1944, the U. S. argued and pressed for the invasion of France from Britain and with equal persistence opposed the British proposals for advance into Italy and thence into the Middle East or the Balkans.

COMPROMISE STRATEGY

In the resulting compromise plans, the U. S. accepted the conquest of Italy, refused flatly to be drawn into the Balkans or the Eastern Mediterranean and eventually obtained British cooperation and support in the Normandy invasion in June 1944.

The political influence underlying the British concept of defeating Germany via the Mediterranean was indicated by the fact that, in all the important arguments and discussions, Mr. Churchill "carried the ball." The British were undoubtedly fearful of the cost and possible failure of the cross-Channel operation, particularly if undertaken in 1943, and they probably were not averse to a considerable degree of mutual exhaustion as between Russia and Germany. But it is difficult to escape the conviction that their controlling reason was a strong desire to have the war end with Anglo-American, rather than Russian, forces firmly established in the Balkans and the Near East.

It is generally considered that, in this concept, the British allowed their political thinking to encroach on their military judgment and that, had the British plan been followed, the end of the war would have been delayed, with increased chances of armed clashes with Russia concerning the Balkans.

Another manifestation of the political factor in the war involved the different attitudes of the U. S. and the British as regards China and Southeast Asia. The U. S. policy was to support and build up China and her part in the war at almost any cost. This policy was based in part on the tradtional American attitude toward China, but also on the conviction that, if so supported, China would make a valuable contribution to the war and thereafter to the stability and security of the Far East. The U. S. considered the build-up of China far more important than the reconquest of South Burma and the Malay States. On the other hand, the British considered China relatively unimportant in the war and a doubtful investment of much needed Allied resources for either war or postwar purposes. They understandably favored using all available resources to reconquer Southern Burma and the Malay States.

In accordance with their respective views, the U. S., at fabulous cost and effort, supported and built up China, while the British consistently kept their China commitments to a minimum while always pressing for direct action looking to re-establishing the British position in Southeast Asia.

If one were to comment on these conflicting concepts in light of the present situation, it would seem that the British were perhaps more nearly right than the U. S. as regards China. Neither during the war nor since has China really "paid off." On the other hand, events have supported the U. S. idea that Burma and all other outlying areas would "die on the vine" when the attack was pressed home against the citadel of Japan.

While these factors were at work throughout the war, as regards the combined strategy of the U. S. and Britain, there were other political factors that concerned the strategic relationship of those powers with Russia. Nevertheless, not until Tehran, in December 1943, was there a meeting of the three heads of state and their chiefs of staff.

At this conference, Russia strongly supported the U. S. position as to the cross-Channel invasion, and in no small degree contributed to its adoption, with the resulting earlier fall of Germany. In doing this, Russia undoubtedly recognized not only sound military logic but the basic political objective of assuring that the end of the war would find Russian, and not Anglo-American, forces in the Balkans.

Russia's entrance into the war against Japan was almost entirely political strategy. Though long considered an overly important objective by the U. S. and Great Britain, her declaration of war came too late to have any considerable military effect.

On the other hand, it was of great political value to Russia, because it firmly established her position in the Far East in anticipation of the peace settlement.

UNCHANGING POLICIES

In broad outline, such was the pattern of major political strategy during the war. But the policies involved are important not only as matters of history but because they continue into the post-war period and constitute essential elements in the present world situation.

Great Britain is still primarily concerned with Europe, the Mediterranean and her connections through it to the Middle East. She is relatively uninterested in China and counts heavily on the U. S. to safeguard her essential interests in the Pacific and the Far East. The U. S. has accepted substantial commitments in Europe, but with considerable reluctance. More naturally and more easily the U. S. turns her face to the South, the Pacific, the Far East and China. Russia has firmly established her position in Central Europe, the Balkans and the Far East, but she still looks intently at the Eastern Mediterranean, the Middle East and Manchuria.

But there is one great difference between the political pattern of the war and of the present. During the war, military necessity compelled an integration of conflicting policies into a workable arrangement. Now, while common interests still reconcile divergencies between U. S. and British policies, Russia aggressively persists in transforming her wartime position as a great ally into a postwar status of potential opponent.

I—THE PROBLEM

NEW weapons are frequently conceived and born in wartime when the entire energy of nations is focused upon the business of war. Yet such new weapons rarely have a decisive influence upon the war then in progress. Being new, the weapon is imperfect and is imperfectly understood. During the peace that follows, the new weapon comes of age; one nation, at least, perfects it and masters its employment. Then, in the next war, the now mature weapon is drafted and wins its medals.

Consider World War I. Poison gas, the tank, and the airplane all made their appearance. None was decisive, and only poison gas played a major role. By the time World War II started, however, the airplane and the tank had come of age and were indispensable on the battlefield to the infantry-artillery team.

The important new weapons of World War II were rocket missiles and atomic energy. Neither played a decisive role. Yet, just as the infant airplanes and tanks of World War I grew to be the giants of World War II, so the infant rocket missiles and atomic energy of World War II are destined to be the giants of future warfare.

Unquestionably, any nation that enters a future war with a decided advantage in rocket missiles and atomic energy will gain initial victories. These victories may well prove decisive. Oceans and outposts cannot by themselves stop long-range guided missiles. And the atomic bomb is so tremendously destructive that our industrial potential might be irreparably damaged at war's outset. We cannot afford again to enter a war with inferior weapons or tactical doctrine.

Gifted with hindsight, we can now see that in 1920 we should have devoted our major effort to the development of the "new weapons" of World War I, the technique of their employment, and the defense against them. *Right now* is to World War II what 1920 was to World War I. We have brought the boys back home and demobilized them. We have had our rest and rehabilitation. Our post-war Army and the personnel of our officer corps are taking shape. It's time to get to work.

Rocket missiles and atomic energy really constitute one weapon. The rocket-propelled guided missile is the ideal vehicle for the atomic bomb. And there is a possibility that atomic energy will propel the long-range missiles of the future.

A rocket-propelled missile is essentially an artillery projectile.* That it is propelled by jet propulsion rather than from a cannon changes its artillery nature not in the slightest degree. It is launched from the ground against ground, airborne, or seaborne targets. The artillery arm of our post-war army will include field, antiaircraft, and seacoast artillery. Inevitably, these three components of the artillery arm will serve the three types of rocket-missiles. Artillery has suddenly acquired a weapon with greatly increased range and power. Obviously, artillerymen must develop new techniques of gunnery, fire direction, survey, and service of the piece. Signal communication will be vastly more difficult. Mechanical directors and computers will be essential. Tatics and technique will require radical alterations. But the essential nature of artillery is unchanged, though we use guided missiles instead of cannon balls.

II—PRINCIPLE OF ROCKET PROPULSION

Rocket (or Jet) propulsion is not new; and it is the simplest, in principle, of all types of propulsion. Yet it has been so little used that it is almost unknown to Americans who are generally familiar with the more complicated reciprocating engine. There are few well known examples of rocket propulsion: the water sprinkler that rotates through jet action, the squid that moves itself by expelling a liquid to the rear, and the fourth-of-July skyrocket come to mind.

The basic principle is the law of motion that every action has an equal and opposite reaction. In fact, rocket motors are sometimes called reaction motors.

When you fire a rifle from your shoulder, the bullet flying toward the target is the action. The recoil or "kick" of the rifle against your shoulder is the reaction. Mount a .30-caliber machine gun in a wheeled cart, fire the gun, and the recoil (reaction) gives your cart a forward push. Fire the gun rapidly enough to produce a forward movement, and you have a rocket-propelled vehicle.

Instead of bullets, rockets fire gases, using the recoil (reaction) for propulsion. (The gas does *not* propel the rocket by pushing against the air.) The thrust imparted to the rocket depends upon the mass of gas expelled to the rear and its velocity. Unfortunately, gases are very light. In compensation, their velocities can be very high.

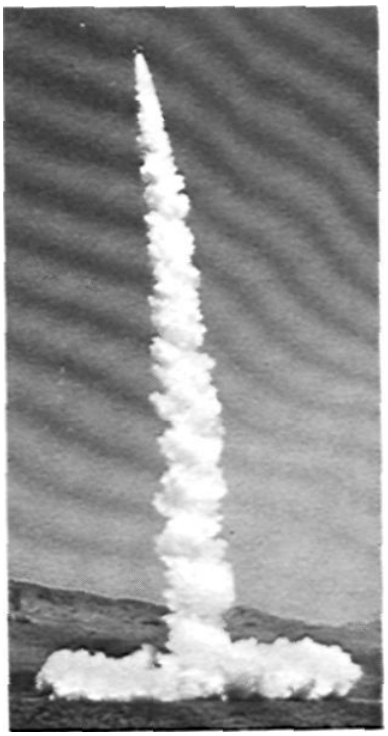
In addition to the reaction described above, rockets have one other source of thrust. After leaving the motor chamber (and after contributing its reaction to the thrust), the gas is still highly compressed. If the exhaust is in the shape of a venturi tube (Fig. 1), the outer expansion (1) of the hot discharge gases produces an additional forward thrust (2) much as the wind drives a sailboat. In this manner additional thrust is obtained. (See p. 566.)

A rocket motor consists essentially of a chamber in which the propellant is burned, a nozzle in the shape of venturi tube, and a means of introducing the propellant into the chamber. In its simplest form (the solid-propellant fireworks rocket) (Fig. 2) the propellant is carried in the combustion chamber. The simplest type of rocket motor has no moving parts--no pistons, no crank shaft, no gears. The simplicity of the rocket motor is illustrated by a design proposed by Isaac Newton (1680) for a steam rocket for the locomotion of a carriage (Fig. 3).

However, the Ordnance designer of a rocket-propelled missile does not have so easy a task as might appear. Unlike the ballistics of cannon, on which data have been accumulating for many centuries, the ballistics of rockets is new and its literature scanty. The size, shape, and contour of the chamber and nozzle are critical and vary with each propellant. The propellant gases operate at terrific pressures, temperatures, and velocities and pose most difficult problems of cooling and erosion. For example, erosion of the nozzle may change the direction of the jet and, consequently, the flight characteristics. Liquid fuels must be introduced into the combustion chamber in the proper amounts and proportions. The composition of the propellant is probably the most important item, and it involves a weighing of considerations of efficiency, ease of procurement, and safety in handling. A discussion of the detailed factors bearing on rocket design is beyond the scope of this article and is a matter of concern to the ordnance designer rather than to the artillery users. However, artillerymen should appreciate the major differences between rockets and shells shot from cannon.

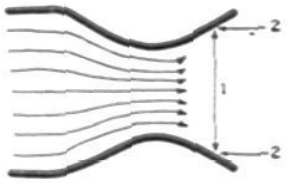
The launcher's sole use is to give initial direction to the rocket. It absorbs no recoil; the recoil is used to provide propulsion. So launchers are light, cheap, and mobile. With small rockets, multiple-tube launchers are practicable. Even a very large rocket can use a fairly light and mobile launcher; the launcher for the German V2 rocket of about 14-ton weight and 200-mile range is lighter than an 8-inch gun.

A rocket carries with it its motor and, at the start, its fuel. The rocket may be regarded as one assembly of both ammunition and weapon. This is as if an artillery shell had to carry its cannon with it in flight. So a rocket requires much more propellant to project a given payload a given distance than does a cannon or, for that matter, a



GAPA (Ground-to-Air Pilotless Aircraft) takes off for air target.

*Subsequent to the preparation of this article, the WD announced that the AAF would be charged with the development of guided missiles.—Ed.



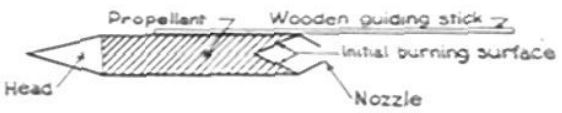


Figure 1. left: the principle of the venturi fube.
Figure 2. above: a fireworks rocket.

propeller-driven aircraft. This is particularly true at low speeds, where rockets are comparatively inefficient.

A rocket accelerates gradually and can continue to accelerate for a long time. (The German V2 accelerates for about 60 seconds.) Accordingly, a rocket can attain a much higher velocity than is practicable with a shell, and it attains this velocity gradually, without being subject to the severe stresses and strains of a shell. It is at these high speeds and high altitudes that the rocket motor is most efficient.

Present rockets do not attain stability until they reach fairly high speeds. Since a rocket is moving slowly at launching, it is unstable initially. Hence, unguided rockets are comparatively inaccurate at present. Rockets can be guided by vanes which operate either against the atmosphere or against the jet itself.

The above brief discussion of rocket versus cannon leads to the following tentative conclusions. The rocket is superior to the gun under the following circumstances:

1. When the recoil of the gun cannot be tolerated (aircraft, light naval craft).
2. When sudden, massed, area fires are required with economy of personnel and equipment (multiple-tube launchers).
3. When very large projectiles or very great speed and ranges are required. (For this type of mission, the rocket missile will probably have to be guided.)

III—ROCKETS IN THE PAST

The Chinese are generally credited with the first use of rockets, possibly even before the Christian era. Certainly, rockets have been used for many centuries, principally as fireworks but also as weapons of war. The first really successful use in war was by the British in the early 19th century. These rockets, developed by Sir William Congreve, were employed in the Napoleonic campaigns, as many as 20,000 being fired in one bombardment. Congreve rockets were also used by the British in the War of 1812. It is the Congreve rockets to which Francis Scott Key refers in the Star Spangled Banner, "And the rockets' red glate, the bombs bursting in air"; the occasion was the bombardment of Fort McHenry, near Baltimore, by a British fleet in 1814.

Congreve was confident that rockets were the artillery of the future. However, cannon were greatly improved during the 19th century, and the superior range and accuracy of cannon caused the abandonment of rockets. The U. S. Army did organize several rocket batteries during the Mexican War, but soon after that period rockets disappeared from modern armies. In World War I rockets were used little if at all.

Just prior to, and early in, World War II the British, Germans, and Russians again took up the development of rocket projectiles, and very soon the Americans also developed successful rocket weapons for various purposes.

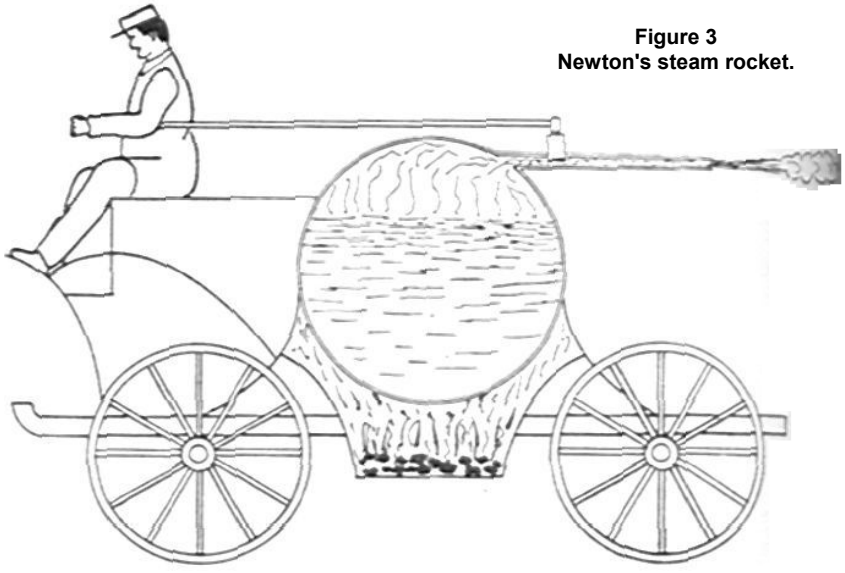
The Russians apparently concentrated on field artillery-type rockets using solid propellants. Their rockets had a short range and were used to provide concentrations of great density upon key areas. The Russians had many rocket units and employed them extensively and effectively. The Germans too, used solid-propellant artillery rockets. Their Nebelwerfer ("fog thrower"), originally designed to project smoke and other chemicals, was among the best of this type of rockets.

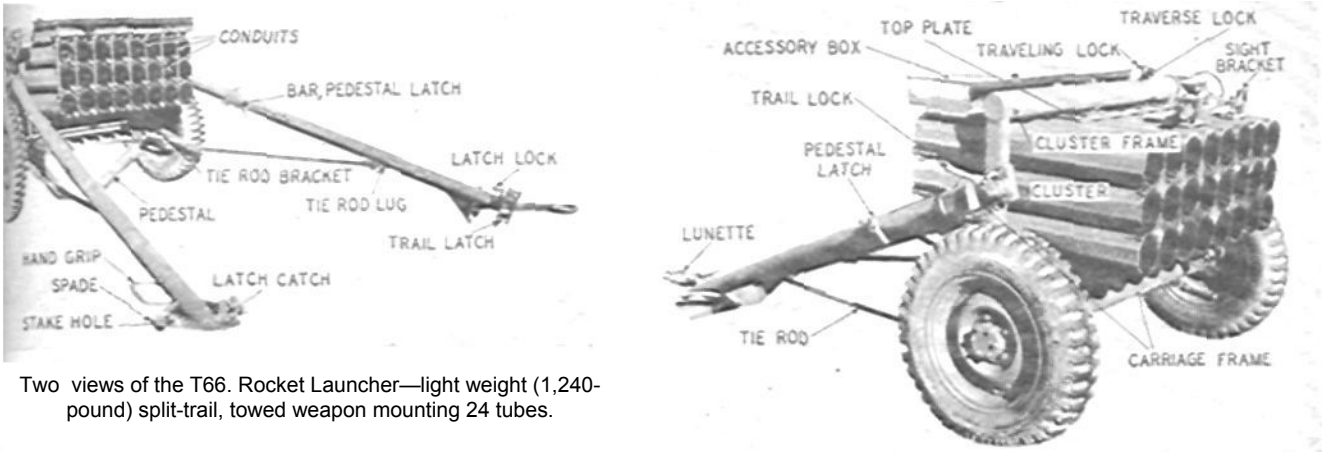
The British started serious rocket development about 1937. Their initial effort was to produce a solid-propellant antiaircraft rocket to supplement their then existing and inadequate antiaircraft defenses. Anyone who heard the rocket battery in Hyde Park, in London, fire a volley can testify that the sound was frightening, whatever the effect. When the United States started serious rocket development, about 1940 we took advantage of the British experience. Consequently our early rockets bear a family resemblance to the British rockets. The general British policy was to take advantage of the rocket's ability to fire a heavy barrage from light (and cheap) equipment with relatively small demands upon manpower.

Starting late, the United States made rapid progress. At the end of the war our solid-propellant rockets were probably superior to those of any other nation. Accordingly, our development are worthy of study.

Navy. In an amphibious assault landing, there is a short but critical phase when the fire of supporting cruisers and destroyers is masked by the leading wave of landing craft. The Navy early recognized the problem, and rockets offered a solution. Because of the lack of recoil and their light weight, numerous launchers could be

Figure 3
Newton's steam rocket.





Two views of the T66. Rocket Launcher—light weight (1,240-pound) split-trail, towed weapon mounting 24 tubes.

mounted on light craft whose shallow draft permitted them to approach close to shore. Rocket craft have a tremendous volume of fire, as long as their ammunition lasts, and their comparative inaccuracy is no handicap since the mission is to saturate an area (the beach) with fire. First used in Sicily and Anzio, rocket naval craft eventually became a separate class, these vessels playing an increasingly important role in the amphibious operations in the Pacific. The fact is the Japanese ceased to oppose our landings at their most vulnerable point—the beach. Navy rockets are entitled to at least some of the credit for this tactical success.

Air Force. The Army Air Force early recognized the need for a weapon that could fire a heavy projectile from an airplane against ground or air targets. Cannon were impractical because of their weight and recoil, characteristics not inherent to rocket launchers. By the end of the war, rocket-firing aircraft were operating with considerable success against both ground and air targets. The Naval air arm employed rockets successfully against surface craft and submarines. It is interesting to note that the fire power of a rocket-equipped fighter plane is the equivalent of a salvo from a destroyer.

Infantry-type Rockets. One of the most successful applications of the rocket principle is the "Bazooka," familiar to all ground forces. Here again full advantage is taken of the recoilless light launcher inherent to rockets. The portability and cheapness of rocket launchers suggested the use of heavier rockets as infantry weapons, especially in airborne operations and in difficult terrain. However, their inaccuracy and revealing blast at the launcher position have so far proved a great handicap.

Prime - mover Rockets. Rockets have many possibilities as "prime movers" to transport objects short distances over terrain that is difficult of access because of ruggedness or enemy action. Possible applications include: minefield clearance, short-range demolition, projection of chemicals, and wire laying. A similar type of employment is jet assisted take-off, which assists airplanes to take off from water and small fields.

Antiaircraft. Unlike England, the United States has shown little interest in antiaircraft rockets, because present solid-propellant rockets lack the essential accuracy and high muzzle velocity.

Tank-mounted Launchers. Tanks are occasionally called upon to perform a secondary mission as field artillery. The flat trajectory and small capacity of tank shells make them relatively ineffective in this role. With use, the high-velocity tank guns quickly lose velocity and penetrating power. Consequently, a tank-mounted rocket launcher was developed, but such a launcher has the disadvantages of any auxiliary weapon.

Field Artillery-type Rockets. An early development was a field artillery-type rocket, the M8 using launcher T27. The M8 rocket was fin stabilized, was highly inaccurate, and had a short range (4,100 yards). Its companion launcher was awkward and had a poor firing mechanism. Its considerable use in ETO, particularly by the 18th Field Artillery Battalion, was motivated principally by the shortage of artillery ammunition. The next development was the M16 rocket with launcher T66. The M16 rocket is spin stabilized, has much greater accuracy than the M8, and has 1,100 yards' greater range. The T66 launcher is also a great improvement over the T27. It mounts 24 tubes on a split-trail towed carriage and weighs about 1240 pounds. Several field artillery rocket battalions were organized and trained with this equipment. Two of these battalions reached the Pacific theater before VJ Day, but neither saw combat. One such battalion is currently stationed in the U. S.

The poor comparative range and accuracy of the rocket as compared to a gun and its additional disadvantage of revealing blast at the launcher position prompts the question, why do we have field artillery rockets?

One great advantage is that the light launcher carries numerous tubes. A rocket battalion can fire an 864-round volley, the equivalent of 72 *battalions* of 105-mm howitzers firing a one-volley TOT. And, while a single rocket launcher is less accurate than a single cannon, a battery rocket volley is about as accurate as a TOT fired by a number of cannon battalions.

For the past year Colonel Thomas B. Hedekin has been head of the Rocket Branch of the Field Artillery Service Test Section (AGF Board No. 1) at Fort Bragg. During the early part of the war he served as S-3 of the Field Artillery School. After completing the Army-Navy Staff College in December, 1943, Colonel Hedekin was assigned as Executive Officer in the Artillery Section. First Army Group (later Twelfth Army Group). He served in that capacity until November, 1944, when he became Artillery Officer, Twelfth Army Group, on which duty he remained until the end of the European Campaign. Col. Hedekin has been awarded the Legion of Merit, the Bronze Star Medal, and French and Luxembourg decorations.—Editor

The other great advantage is economy, both in materials and manpower. Germany, Russia, and Britain all entered World War II with insufficient artillery. The task of equipping sufficient new units with cannon while replacing the heavy wastage of war could not be met by their already overburdened industrial plants. Factories lacked the needed workers and strategic materials, and time as well was lacking. But rockets and launchers can be made quickly and easily with simple tools and unskilled workers and comparatively small demands for strategic materials. The United States did not have such pressing demands for economy; yet even we were scraping the bottom of the manpower barrel by the end of the war, and strategic materials were running short. Rockets were economical in operation too, with simple maintenance.

However, in all honesty, it must be admitted that our rocket developments were disappointing. Congreve, in the early 19th century, had a 42-pound rocket with a range of 3,000 yards; today our rockets weigh about the same and have not much greater range. True, the Congreve rockets were very inaccurate; there is even a report of their returning to strike a ship which launched them. But our present rocket, almost 150 years later, is still not sufficiently accurate for employment against point targets. It began to appear that rockets were destined to play only a small though important role in those limited situations where their favorable characteristics could be exploited; lightness and recoillessness; ability to saturate area targets with a few weapons; economy both in construction and operation.

IV—THE GERMAN V ROCKETS

On June 15, 1944, only a few days after the Normandy landings, the first V1 Rocket ("Buzz Bomb") fell in London. By VE Day, the Germans had launched more than 10,000 of these missiles at London, Antwerp and other targets. In September of 1944 the Germans started attacking the United Kingdom with V2 Rockets; according to *The Illustrated London News*, more than a thousand hit southern England. Although these missiles were unable to change the course of the war, their sensational possibilities were immediately apparent. As early as July of 1944, Major General J. F. C. Fuller of the British Army stated in *Newsweek:*

"It demands no great flight of the imagination to picture . . . rapid evolution of the flying bomb during the next 30 years.

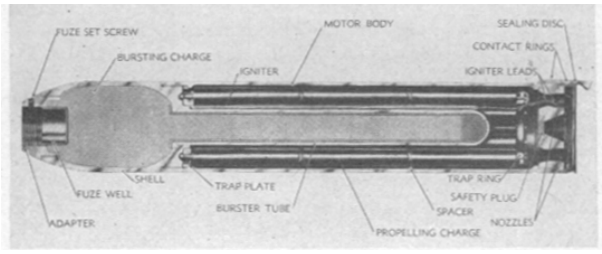
"It is self-evident that such a revolution carries with it the doom of the bomber as a piece of long-range artillery and probably also the doom of the cannon in most of its many forms."

Because of their revolutionary significance, it will pay to consider these two rockets missiles, especially the V2, at some length. A fairly complete description of the V2 Rocket is contained in *Army Ordnance* of March-April 1945 G. Edward Pendray, in his interesting and informative book "The Coming Age of Rocket Power," describes both the V1 and V2 rockets. The data that follow are extracted mainly from an article by Sir Alwyn Crow in *The Journal of the Royal Artillery* for July 1946.

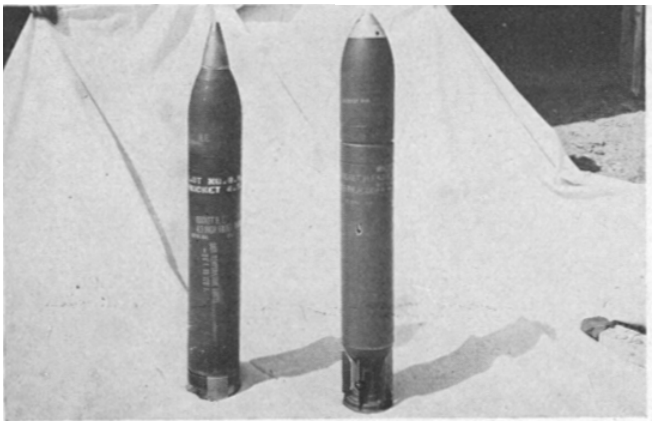
In Germany, interest in rocket developments started in the 1920's, largely on the part of a number of rocket societies. The German military authorities became actively interested in rocket development in 1930; and, shortly after Hitler's rise to power, established arocket research center at Peenemunde at an initial cost of about $75,000,000, prewar values. Eventually some 2,500 scientists and technicians were employed in rocket work at Peenemunde alone.

The early work leading up to the V2 began in 1933 with the A1 rocket of about 330 pounds. The A2, very similar, designed in 1934, developed a thrust of 660 pounds for 16 seconds and successfully reached a height of 6,500 feet. The A3 followed in 1938. It was an improved and larger version, weighing about 1,650 pounds.

Work on the final version, the A4, generally known as the V2, started in 1940. It was a scaled up version of A3. The first successful



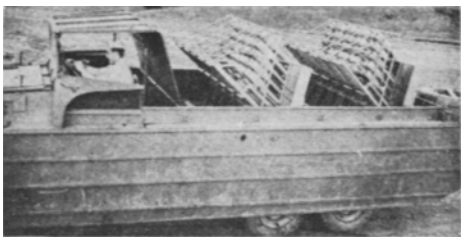
Cross-section of the 4.5″ standard rocket, M16.



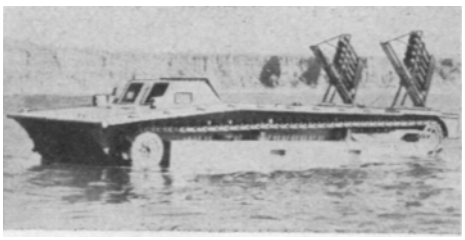
Spin-stabilized M16 rocket on the left and fin-stabilized M8 rocket on the right.

Another study of the two methods of stabilization as illustrated with the M16 and M8 rockets.

Multiple barrel launcher in a DUKW.



Navy automatic launcher in a DUKW.



Navy Mark VII launcher on LVT.

launching took place about October 1942, when one rocket is reported to have gone 170 miles. Quantity production started toward the end of 1942. The main characteristics of the V2 (A4) are approximately as shown below:

Overall length	46 feet
Diameter	5½ feet
Total loaded weight	14 tons
Weight of propellant	9 tons
Weight of warhead	1 ton
Weight of rocket, unloaded	4 tons
Thrust	26 tons
Time of burning	60 seconds
Speed at end of burning	3200 m.p.h.
Time of flight	5 minutes
Range	200 miles

Fuel—ethyl alcohol and water
Oxidizer—liquid oxygen

The alcohol and oxygen is forced into the combustion chamber by a turbine which, in turn, is driven by a gas generator using hydrogen peroxide and calcium permanganate. Control is by two set of vanes, one set operating internally in the jet stream and the other on the edges of stabilizing fins.

Control is exercised about as follows: The rocket is placed vertically on a small horizontal turntable. The turntable is rotated so that the pitch axis of the rocket is perpendicular to the plane containing the target. After launching, the rocket travels vertically upward for a short time. Then the two sets of control vanes, which are synchronized electrically, maintain the pitch axis in its original direction and rotate the rocket in pitch at a predetermined rate to an angle of about 45 degrees to the horizontal. A gyro-operated mechanism stabilizes the rocket in roll. A mechanism measures the rocket velocity in flight and cuts off the fuel at a point corresponding to the range desired. At the end of sixty seconds, when the fuel is almost completely consumed, the rocket has reached a height of about 22 miles. The trajectory becomes parabolic and reaches a maximum height of about 60 miles. (Recently a V2 fired vertically in New Mexico reached an altitude of 104 miles.)

The V1 is a flying bomb, or pilotless aircraft. It is about 25 feet long with a wing spread of 16 feet. Its range is approximately 150 miles, and it carries a one-ton warhead. Its gyro-controls are pre-set for direction and altitude and give signals to a servo mechanism, which is powered by compressed air. Its top speed is in the neighborhood of 400 miles per hour, and the Germans operated it at altitudes between 1,500 and 5,000 feet. It is less accurate than the V2.

The most interesting part of the V1 is its motor, which is a thermal jet of the type generally described as "intermittent duct." Unlike the V2, which carries both fuel and oxidizer, the V1 carries only fuel and obtains its oxygen from the air. In essence, the motor is a hollow tube with flutter valves at the front end. The valves are normally closed. The air is sucked into the combustion chamber by the vacuum created by exhaust of the previous cycle. Fuel is sprayed into the combustion chamber by pumps, and the resulting explosive mixture is detonated. The explosion closes the intake flutter valves and expels the compressed gasses through an exhaust to the rear; the reaction propels the missile. This cycle is repeated. (This type of propulsion has been carried one step farther in the "ram jet" motor, or athodyd. Here, the air is admitted in a continuous stream into the combustion chamber, and the burning is continuous. A recent news dispatch stated that the U. S. Navy had successfully flown a ram-jet rocket.)

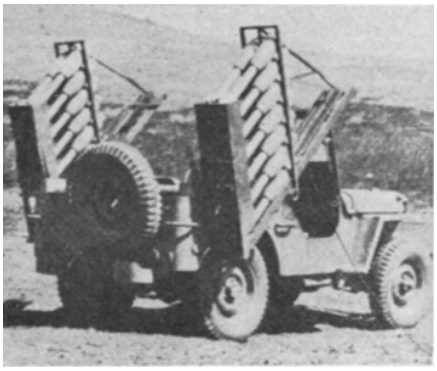
The obvious advantage of the thermal jet rocket is the saving in propellant weight resulting from utilization of the oxygen of the air. A second advantage is the possibility of using gasoline and other cheap, available fuels that present no difficult problems of handling and storage. One great disadvantage is that it must operate within the atmosphere and, consequently, within the range of antiaircraft artillery. (US and British AA artillery acquired an enviable record in knocking down V1 rockets.) Another disadvantage is that the thermal jet motor cannot operate until the rocket is moving swiftly enough to ram air into the combustion chamber. Consequently, the rocket must be launched by a catapult with sufficient speed to initiate combustion.

The Germans had other rockets of various types under development at the end of the war. The most fantastic of these are described by *The Illustrated London News* of December 22, 1945. An A9 Rocket is pictured. Apparently it is very similar to the A4, but with wings. It is launched by a booster rocket, the A10, 60 feet in length and 11 feet in diameter. It is stated that this combination would have a top speed of 8,000 miles per hour and a range of 3,000 miles. Its purpose was to bomb America.

At this point it would be well to come down from the stratosphere and plant both feet firmly on the ground. After all, the German V rockets failed to affect materially the course of the war in spite of their sensational performance. What were their capabilities and limitations, and what are the prospects for removal of these limitations?

V—ARTILLERY OF THE SKIES

In 1918 the Germans amazed the world with their "Paris gun," which shelled Paris from a distance of about 75 miles. The shell was small with a



Navy automatic launcher.

Navy 10-rail launcher on a jeep.

This T-32 launcher fires 7.2″ rockets.

high-explosive filler of only 15 pounds. The V2 rocket of 1944 increased that range to about 200 miles, and the projectile had a high-explosive filler of about one ton. With its tremendous velocity, the V2 rocket is no more vulnerable to present antiaircraft or fighter planes than is the shell. The improvement in capabilities is apparent, but what of the limitations?

The first limitation is that of range and destructive effect. The one-ton warhead is impressive, but is much smaller than the projectiles dropped by heavy bombers, just as its range is less. The V2, with a payload of only 1 ton, had a gross weight of 14 tons; the ratio of 1 to 14 is disappointingly small. To increase either the warhead or the range, we must increase the size of the rocket or its operating efficiency, or both. Undoubtedly, better propellants and more efficient motors will be developed, but the payload-gross weight ratio of 1 to 14 in a 200-mile missile should sober those who talk glibly about trans-ocean rockets.

Accuracy is another important problem. As previously explained, a rocket is unstable at the moment of launching and acquires stability only at fairly high speeds. Eventually, we may learn how to correct this instability at low speeds. However, while the accuracy of rockets is being constantly improved, there is no immediate hope that *unguided* rockets can approach the accuracy of cannon projectiles. The V2 rocket was guided, but the guidance was not very efficient. Sir Alwyn Crow estimates that the average deviation for range was not better than 1%. Now, even 1% of 200 miles is a very considerable distance. The V1 was even less accurate. This brings us to the subject of control of guided missiles. Control systems may be classified generally as pre-set, remote, automatic homing, or a combination.

Pre-set Controls. The V1 and V2 missiles had pre-set controls. The launching crews computed what is essentially map data corrected for meteorological conditions. These data were set on the auto-pilots that controlled the missiles. After launching, the missiles received no intelligence of the target, either directly or indirectly. The accuracy depended, then, upon the accuracy of the initial data and the accuracy of the pilot mechanism.

Remote Control. A bomber airplane is guided by a human pilot, who navigates the airplane to the target and releases the bomb. In a one-way missile, such control is not possible—except with Japanese suicide pilots. However, the pilot's eyes could be replaced by a television set broadcasting to a ground operator who guides the missile by remote radio control. Likewise, the plane could be tracked by radar and its course plotted on a chart. The fire-direction center could then compute the necessary corrections to make the trajectory of the missile intercept the target. The necessary signals could be sent to the pilot mechanism by radio, and the missile would thus be guided by remote control. Because of the missile's speed, computation of corrections would have to be done mechanically. Television, radar, radio remote-control of airplanes, and mechanical computers are all practical devices in general use today; undoubtedly, they can be combined into a practical guidance system. However, all these devices have their limitations; and the problem of combining them for the control of a supersonic missile, especially a long-range one, is not to be dismissed with a wave of the hand.

Automatic-homing Control. By use of elctronic devices, such as radar, television and the like, it is possible at least theoretically to equip a missile with a device which seeks, or homes on a target. Though not incapable of solution the design and engineering problems of such a device are obviously tremendous.

Combined Control. The control system may require a combination of the above systems. For example, a missile may be guided to the general vicinity of a target by pre-set control, after which the homing device takes over.

Any control system will have weight and bulk. If, to secure great accuracy, we mount a ton of control device in a V2, what happens to our payload? However, we know that the weight of the VT fuse, a very complicated electronic device, was measured in ounces.

Another limitation of guided missiles is cost. Dr. Malina, writing in *Army Ordnance*, estimates that it costs $75,000 to fire a V2, with prices going up Larger and more complicated missiles may cost considerably more. However, bombing aircraft are even more costly besides being comparatively slow and vulnerable.

Also, the most efficient rocket propellants are highly dangerous explosives, difficult to store, handle, and transport. For some time to come, rocket missiles will be dangerous, temperamental, and erratic. (Dr. Malina states that 30% of all V2's launched by the Germans failed to perform satisfactorily.) The

day may come when it is possible to slap a guided rocket missile in a launcher extract the necessary settings from a simple firing table, set a few hand-wheels, pull the lanyard, and be confident that the mechanical director will guide the missile to the target with the accuracy of an 8-inch howitzer. But that day is not near. For some time to come the gunners who serve the missiles will have to be experts in every sense of the word and in every phase of operation.

In summary, rocket missiles have provided us with artillery of the skies. This artillery can do many things that it was never able to do before. But alone it cannot win wars. Its mission is still to support the infantry, though even more effectively than before. It will have limitations as well as capabilities. In theory, rockets of any desired size, range, and accuracy are possible. In practice, the problems are of staggering magnitude. The problems will be solved. How soon? One year? Five years? Fifty years? Who knows?

One last word—or rather two words: atomic energy. A supersonic guided rocket of V2 type flying in the stratosphere at terrific speed is difficult, almost impossible to intercept; it is the ideal vehicle for the atomic bomb. If a B29 can carry an atomic bomb, a rocket can be built to carry one. And if energy can be used to propel rockets, the present unfavorable weight ratio of warhead to propellant will be solved. Of course, that is a big "if." Such a missile would certainly play a definite role in any war, perhaps *the* decisive role.

VI—FUTURE TRENDS

No guided missiles are as yet available for artillery units. You cannot fight a war with blueprints, and you should not base your training on the assumption that blueprints will become weapons before the next war. But it is an equally bad mistake to assume that the blueprints will never become weapons and that we will fight a next war with the last war's weapons. Very well then, what rocket weapons may artillerymen reasonably expect to have within the foreseeable future—the next few years?

In attempting to answer this question, I want to make clear that the answers are guesses and are mine alone. I have no inside information. My guesses may be wide of the mark. My sole purpose in estimating future trends is to stimulate thought and provoke discussion, no matter how violent.

For convenience in discussion I divide field artillery rockets into three classifications according to range: short, medium, and long. This division is purely personal and entirely arbitrary.

SHORT-RANGE ARTILLERY ROCKETS

For this discussion I define short-range field artillery rockets as those with ranges up to 25,000 yards, the limit of our present 155-mm gun and 240-mm howitzer. Now, a new weapon should be adopted only if it can do a job that existing weapons cannot do, or if it can do the same job better or more cheaply. Existing field artillery weapons provide us with excellent coverage up to 25,000 yards.

Guided missiles, even if extremely accurate, could improve only slightly upon the performance of existing field artillery weapons. But accurately guided missiles are costly and require costly control apparatus. They are difficult to maintain and supply. They require highly skilled operators. For the next few years at least, the cost and complexity of guided missiles rule them out as replacements for existing field artillery.

Unguided rockets, using solid propellants and similar to our present standard rocket, can be made cheaply, and they are simple to operate. But their present accuracy is sufficient only for extra fires. Without considerable improvement in accuracy, unguided rockets cannot replace existing field artillery weapons. But our present rockets do provide a most useful supplement to present weapons, and the improved rockets expected soon will be still more useful.

The general tactical uses of present artillery rockets are discussed in War Department Training Circular No. 19, 25 April 1945.

It seems to me that, on the offensive, the main value of short-range free rockets is in "set-piece" offensives against strongly held positions. Such offensives require tremendous artillery support. The emplacement of the requisite masses of artillery, equipment and personnel, is most difficult to conceal from the enemy, and surprise is almost an essential to success. As rocket launchers are small and require only a few serving personnel, they can be emplaced secretly with comparative ease. Yet a single rocket battalion with its 864 tubes can deliver a staggering volume of surprise

Night firing by T34 launcher on M4 tank.

M17 launcher fires 7.2″ rockets.

fired. The revealing blast at the launcher position will require frequent displacement to avoid counterbattery fire. But it is an easy task to displace the mobile materiel to previously prepared alternate positions, where ammunition can be stacked in advance.

On the defense, the short range of our present rockets restricts their tactical flexibility. Yet if batteries, or even platoons, are emplaced to cover critical avenues of approach and these units remain silent until the enemy attack gets under way, their intensive surprise fires may well prove decisive. In static defenses, such as the defense of a shore line or a river line, single launchers may be employed as auxiliary weapons. Once emplaced, concealed, dug in and provided with ammunition, a launcher can be loaded and fired by two men. Its 24 tubes can fire the equivalent of two volleys by a battalion of 105-mm howitzers, whereupon the cheap launcher can be abandoned as expendable.

If the field artillery requires projectiles much larger than those of the 240-mm howitzer, rockets may prove more practicable than very large howitzers or mortars. This is especially true if extreme accuracy is not required.

In summary, existing field artillery weapons provide excellent coverage up to 25,000 yards. For the immediate future, guided missiles will probably be too costly and complicated to provide a satisfactory replacement. Unguided, solid-propellant rockets are cheap and simple to operate, but they are inaccurate. Unless their accuracy can be improved considerably they will remain a supplementary weapon with important but limited tactical uses. For the immediate future, short-range guided field artillery rockets will not replace existing weapons.

MEDIUM-RANGE FIELD ARTILLERY ROCKETS

For this discussion I define mediumrange field artillery rockets as those with ranges up to 200 miles, the approximate range of the German V2 rocket. Beyond 25,000 yards we now have the 8-inch gun and the Tactical Air Force.

The 8-inch gun is hardly satisfactory in this field. Its range is only 35,000 yards, its dispersion is large, its projectile is small, its tube has a short life, and it is heavy and immobile. Without major improvements in the science of gun and ammunition design we are unlikely to get a *mobile* gun with much better range and accuracy than the 8-inch gun.

The Tactical Air Force in the last war supplied the Ground Forces with excellent support up to ranges of 200 miles and more. Yet the Tactical Air Force has its limitations. Its accuracy is not always of the highest, and its operations are limited by darkness and bad weather. The front-line ground commander has difficulty in getting aerial fire support where he wants it when he wants it, since the airplanes are based on distant fields. The Tactical Air Force requires large amounts of very expensive equipment and large numbers of highly trained personnel. The tactical air support of ground forces showed tremendous improvement during the war. Since the war, Army Ground Forces and the Air Tactical Command have continued to work in the closest cooperation, and there is every reason to expect even better air support in the future. On the other hand, improvements in antiaircraft artillery, including proximity fuzes and, probably, antiaircraft guided missiles, may make tactical air support prohibitively costly.

A medium-range artillery guided missile, the German V2, is already in existence. It should not prove very difficult, or a very long-term project, to develop an improved guided missile with the desired accuracy and range. Such a weapon appears within the foreseeable future. Field artillery battalions equipped with medium-range guided missiles would probably have the following capabilities and limitations:

Capabilities.

1. Provide accurate fire with heavy destructive effect both in close support of infantry (armor) and deep within enemy lines.
2. Operate independently of darkness and bad visibility.
3. Provide higher commanders with an immediate reserve to reinforce wide sectors of the front with massed fires of tremendous power.
4. Undertake distant destruction, interdiction, and harassing missions.
5. Provide continuous support with infrequent need to displace launching equipment.
6. Make use of existing artillery target-gathering, liaison, observing, and communication facilities.

Limitations.

1. High cost of both missiles and fire-control equipment.
2. Necessity to emplace launchers well behind front lines, because of elaborate equipment, blast at launcher position, and supply problems.
3. Difficulty of maintaining elaborate, delicate equipment; danger in handling explosive propellants.
4. Necessity for elaborate and extensive communication facilities to tie in with existing artillery communications.
5. Necessity for forward installations to take over control and guidance of missiles as they approach front lines.

In summary, fire support within the range of a medium-range (200-mile) guided missile is now limited to the 8-inch gun and the tactical air force. The 8-inch gun does not satisfactorily cover this field and there is little prospect of any *greatly* improved cannon. The tactical air force operates efficiently within this field, though it suffers from several serious limitations. These limitations may be overcome by improved techniques, but this is by no means certain in the face of improved antiaircraft fire. A guided 200-mile rocket projectile—the German V2—has been produced. Development of a greatly improved medium-range guides missile is probable within the next few years. The expected capabilities and limitations of such a rocket are such as to make it a valuable supplement to the tactical air force, and even, possibly, a substitute.

LONG-RANGE FIELD ARTILLERY ROCKETS

For this discussion I define long-range field artillery rockets as those with ranges in excess of 200 miles—perhaps with ranges up to several thousand miles.

Since the 200-mile V2 rocket had a payload of only one ton in a gross weight of 14 tons, it is unlikely that satisfactory long-range rockets will be developed within the next few years. Other factors, such as accurate guidance at long ranges, also hinder development. Certainly, medium-range guided rockets can be developed before long-range ones. We will thus have the opportunity to master medium-range artillery rockets before we are faced with the more difficult problem posed by long-range rockets; we can learn to walk before we have to run. General Groves writes in the *Coast Artillery Journal,* "The most significant development which might occur in connection with the atomic bomb appears to be that of the guided, pilotless missile. In the past, the bombs were carried by conventional aircraft; in the future, as pointed out by the former Commanding General of the Army Air Forces, General of the Army Arnold, improvements in aerodynamics, propulsion, and electronic control may enable unmanned devices to carry atomic and other explosives to targets at distances up to many thousands of miles." With regard to the use of atomic energy as a propellant, General Groves says, "if this energy could be utilized in that fashion for propulsion, a large guided missile could be sent entirely around the world with only a few ounces of atomic fuel. However, the day of atomic-propulsion is not yet at hand, and no valid predictions can be made as to when it will be, if ever."

We may conclude, then, that "fantastic" long-range guided rockets carrying atomic watheads will *not* be available within the next few years, although they are an almost certain eventual development.

ANTIAIRCRAFT AND SEACOAST ARTILLERY ROCKETS

In view of the projected consolidation of the three artillery branches into a single artillery arm, a brief estimate of rocket trends as they affect antiaircraft and seacoast artillery is apropos.

The increasing speeds of all military aircraft and their higher operational ceilings pose a very difficult problem for antiaircraft artillery. It is doubtful if *mobile* antiaircraft cannon can be developed with greatly increased muzzle velocity and range. However, a supersonic, guided antiaircraft rocket with the necessary range appears to be entirely practicable. Lt. Col. Weinnig writes in the *Coast Artillery Journal:* "The antiaircraft weapon of the future is the ground-to-air guided missile. . . . The increased speeds of aircraft and the phenomenal speeds of rockets make an impossible problem of prediction for a projectile of unalterable trajectory. It is evident that the antiaircraft projectile of the future must be capable of guidance in flight."

A medium-range missile capable of accurate guidance would make all existing seacoast artillery obsolete. The greatly increased range and mobility would provide seacoast artillery with a truly formidable weapon. Could the V2 rocket be provided with accurate guidance, it would constitute such a weapon; its development should not be too remote.

SUMMARY OF FUTURE TRENDS

There is no immediate requirement for a short-range guided artillery rocket, since the field is covered excellently by existing cannon and improved free rockets. Development of a medium-range artillery rocket is possible within the next few years, and such a rocket will greatly increase the capabilities of field artillery. Fantastic long-range artillery rockets will undoubtedly be a slower development, but a perfected long-range rocket carrying an atomic warhead would be a major weapon, perhaps a decisive one. Guided rocket missiles would greatly increase the effectiveness of both antiaircraft and seacoast artillery, and the development of such missiles at a reasonably early date appears feasible.

VII—THE IMMEDIATE PROBLEM

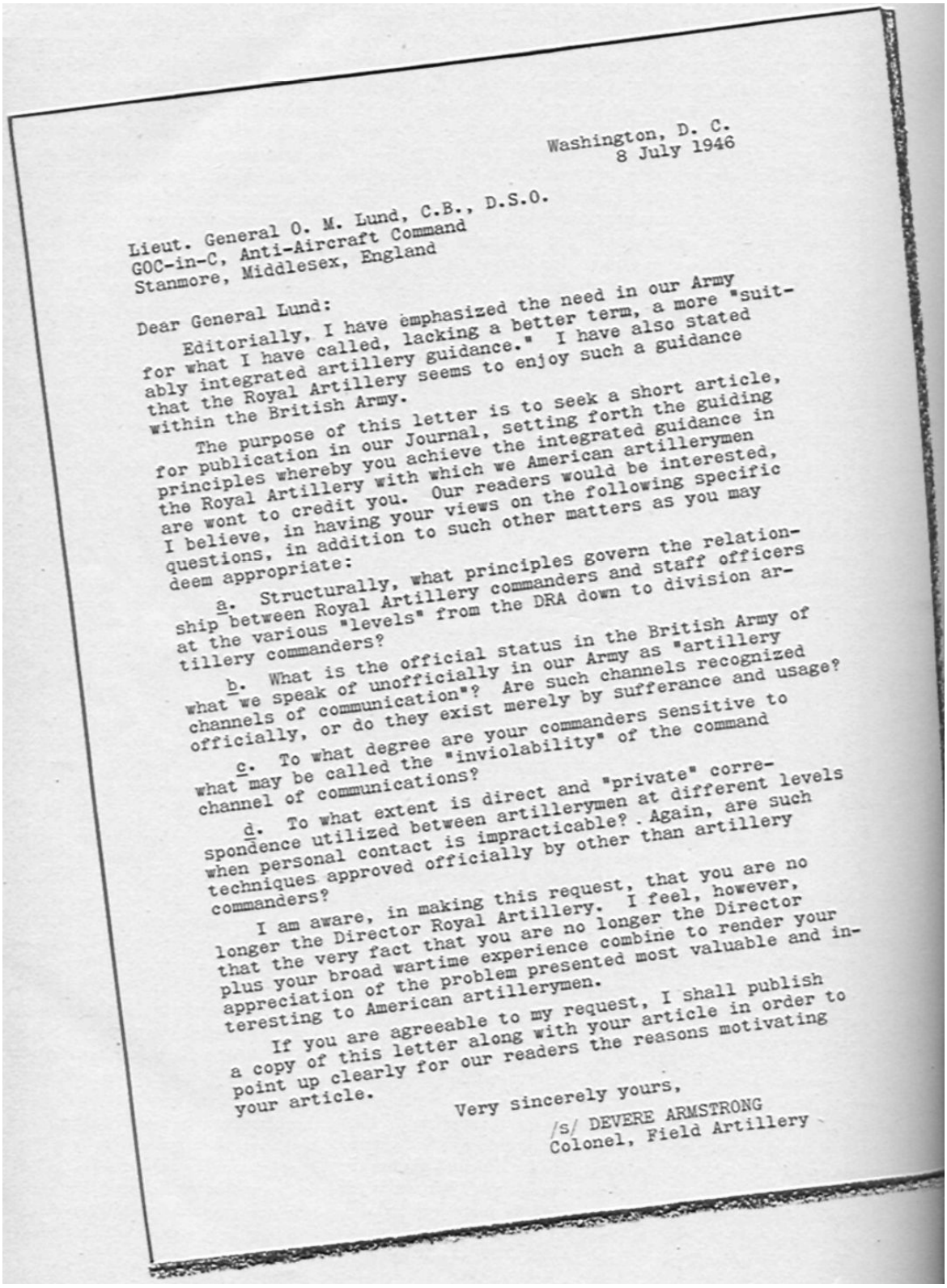
So far I have stated the general problem and summarized the important facts bearing on the problem. I have gazed into the crystal ball and guessed at future trends. This brings us to the immediate problem: What action, if any, must we take as artillerymen within the next few years?

The course of development of a weapon in the U. S. Army is well established. The user service states the military characteristics it desires. The technical services then attempt to meet these military characteristics. After technical tests, the weapon goes to one of the Army Ground Forces Boards for service test, from the user point of view. After the new weapon passes this service test, and after including any necessary modifications, several development models are produced and issued to field units for extended service tests. Thereafter the weapon is standardized and produced in quantity. This procedure has proved sound over a period of years.

The first step, then, in the development of artillery guided rockets will be a statement of desired military characteristics. And this statement should be made by the artillerymen who will use the rocket. However, the artillerymen who draw up the military characteristics must understand the capabilities and limitations of guided rockets. We must ask for the best obtainable rocket without asking for the impossible. Then we must be prepared to test the pilot model and, later, conduct extended field tests. By the time the rocket is standardized we must have at least tentative ideas of its technique and tactics.

We artillerymen can do our part in the development of artillery guided rockets only if we start *now* to study the problem. This does not mean that we should go completely "Buck Rogers." Until the new artillery rockets are available we must continue to use conventional weapons. Even after the new rockets are standardized and in production we will continue to use weapons of conventional types. But we must become rocket conscious. All artillerymen—field, antiaircraft, and seacoast—must learn at least the general principles that govern guided rockets. Some of us must become highly proficient. We must all think seriously about guided rockets; our schools and service publications must stimulate such thought. For the day is coming, perhaps soon, when guided rockets will be a major artillery weapon. When that day comes we must be ready to take over our new responsibilities and uphold our long and honorable artillery traditions.

THE REQUEST



Washington, D. C.
8 July 1946

Lieut. General O. M. Lund, C.B., D.S.O.
GOC-in-C, Anti-Aircraft Command
Stanmore, Middlesex, England

Dear General Lund:

Editorially, I have emphasized the need in our Army for what I have called, lacking a better term, a more "suitably integrated artillery guidance." I have also stated that the Royal Artillery seems to enjoy such a guidance within the British Army.

The purpose of this letter is to seek a short article, for publication in our Journal, setting forth the guiding principles whereby you achieve the integrated guidance in the Royal Artillery with which we American artillerymen are wont to credit you. Our readers would be interested, I believe, in having your views on the following specific questions, in addition to such other matters as you may deem appropriate:

a. Structurally, what principles govern the relationship between Royal Artillery commanders and staff officers at the various "levels" from the DRA down to division artillery commanders?

b. What is the official status in the British Army of what we speak of unofficially in our Army as "artillery channels of communication"? Are such channels recognized officially, or do they exist merely by sufferance and usage?

c. To what degree are your commanders sensitive to what may be called the "inviolability" of the command channel of communications?

d. To what extent is direct and "private" correspondence utilized between artillerymen at different levels when personal contact is impracticable? Again, are such techniques approved officially by other than artillery commanders?

I am aware, in making this request, that you are no longer the Director Royal Artillery. I feel, however, that the very fact that you are no longer the Director plus your broad wartime experience combine to render your appreciation of the problem presented most valuable and interesting to American artillerymen.

If you are agreeable to my request, I shall publish a copy of this letter along with your article in order to point up clearly for our readers the reasons motivating your article.

Very sincerely yours,

/s/ DEVERE ARMSTRONG
Colonel, Field Artillery

"THE GUNNER NET"

By Lieut.-Gen. O. M. Lund, C. B., D. S. O.

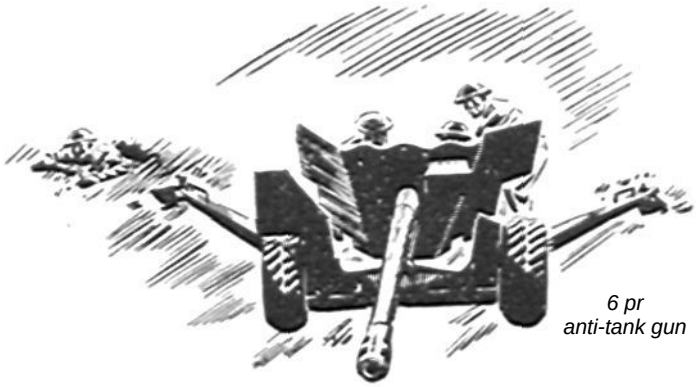
THE ANSWER

Written in response to the request that is reproduced on the opposite page. General Lund's article will interest senior American commanders as well as artillerymen. The Director Royal Artillery during World War II, General Lund needs no further introduction to American artillerymen. He was recently assigned as GOC-in-C, Anti-Aircraft Command. — Editor.

DURING THE LAST WAR, artillery technique for producing massed artillery fire was made possible by the use of wireless. It was a great adance tactically being able to switch the fire of great numbers of guns. It was not long, however, before the "Gunner Net," at first applied to wireless, soon was used by artillerymen in a wider sense. It represented the channel which was not the command channel, but still had official recognition, and I think perhaps covers what your Editor means by the need for a suitably integrated artillery guidance. For a start it is necessary to be quite clear in our minds as to what comes under the heading of Command or Control and what under Guidance.

The control for all arms in any formation must be in the hands of its Commander since it is on his plan that the battle is fought. The senior artillery officer in the formation either commands the artillery of the formation or acts as the artillery adviser: his first loyalty is to his formation commander whatever his status. A commander may be able to use artillery brilliantly without necessarily having a profound technical knowledge of artillery matters. Moreover he may know what improvements he requires in the fire of his guns but may be thankful for the advice of his Gunner as to how this might be obtained; it may involve modifications to existing equipments or the development of new ones. Such matters, I suggest, come under the heading of Guidance. In this connection I consider that any commander should only have to deal with one Gunner. It is neither necessary nor desirable that there should be separate artillery advisers or commanders for the different natures of artillery. The artillery view in its broadest sense should be given by one authoritative mouth. If we keep this principle of a single artillery commander or adviser in any formation and the simple difference between Command and Advice in front of us the whole time, then we shall appreciate how the purely Gunner channels can and do work in harmony with the organization for command.

It is the building up of the commander's fire plan which is of such great interest to the Gunner and in which he plays so prominent a part—whether as commander or adviser. The basis of any fire plan concerns the actual targets shot at by the guns and to be certain of choosing the right ones the information must, in the first place, come from the front where the troops are in contact with the enemy. Those are the men who are likely to know best where enemy resistance will be found. The Divisional Artillery Commander will build up the divisional fire plan from the information he gets from his Lt. Colonels who are operating close to



6 pr anti-tank gun

assaulting armored and infantry brigades and from all other available sources. He may have to smooth out differences of opinion that occur on different brigade fronts and if he should want more artillery assistance than is available from his divisional resources he must see that it is demanded. All artillerymen are well aware of the many aspects of his responsibilities. Much will be capable of easy solution if the divisional artillery commander can on purely technical matters discuss the questions that arise, with his colleague at Corps Headquarters, the Commander of the Corps Royal Artillery (CCRA): an officer of the same rank as himself and entirely conversant with the Corps plan. Both will thus implement their commanders' plans and by dealing with the purely artillery aspect prevent the command channels being over-burdened and save time.

In the British Army the Corps Commander may place under the command of his CCRA all the artillery in the Corps for a specific operation. If the Corps Commander is the formation commander responsible for the plan, he will use all his artillery resources to the best advantage. While he may be well advised to let divisional commanders select detailed targets, he must see that the artillery fire is coordinated, that the timings along his whole front are the same and that a correct balance of his guns is allotted to Bombardment and Counter Battery tasks. I believe that the use of a CCRA as a commander

of all the artillery in a corps is not so readily accepted in the American Army as it is with us. The British Corps Commander will often use his CCRA in a set piece battle in this manner and will decide for what phases of the battle this centralized control is necessary. He is in command and none of his subordinates has "rights" over their artillery which might hinder success.

The senior artillery officer at the headquarters of an Army or Army Group has, generally, more to do with the allotment of the available artillery resources and the ammunition which can be expended, than with fire plans. In a large set-piece operation he will, however, be required to coordinate the Army fire plan in all its aspects, in a manner similar to the CCRA in respect of a Corps' operation. He will coordinate all the technical lessons and requirements and give his Commander guidance on matters which affect policy.

What does the artillery do through official command channels (or as we would call it the General Staff) and what can it do on the "Gunner Net" in harmony with the command channels so as to save the latter being swamped in detail? I suggest there is only one guiding principle: policy and planning is in the orbit of command channels and anything which touches on that must use these channels. However, the technical matters can with advantage be dealt with officially to and from the War Office through Gunner channels.

We have not always been so fortunate as to have recognized heads of artillery at every level culminating in the Director Royal Artillery in the War Office and have experienced with you the sensitiveness as to the inviolability of command channels. When the difference between Control and Guidance is understood the suspicious commander who may have been sensitive becomes merely thankful. I have found that very often they get so sure of the qualities and capabilities of their Gunner that it is very difficult to get them to change the individual when he is wanted elsewhere.

What does the Director Royal Artillery in the War Office want to know? He requires the firm requirements of the Commander-in-Chief of Theaters and he will get them through the Command chanels. However, through the "Gunner Net" he gets a "warning order": he knows what is in the air, however unofficial it may be. This enables much to be done in preparation and he will be ready to implement the official demand expeditiously. This may cover technical training (as he runs the artillery schools), specifications for weapon development, modifications to equipments, advice on the raising of new units or revised establishments of existing ones. The other aspect of this "Gunner Net" is that it works downwards as well as upwards. The various senior artillery officers overseas and at home can be kept informed as to what recommendations are being made and so enable commanders to obtain reliable artillery information.

Needless to say the Director Royal Artillery does not get all he asks for without considerable scrutiny being made of his demands. He may be an accepted head of the Royal Regiment and his word may go a long way on the "Gunner Net," but he has to make a case when he gets off the net. He has to obtain the agreement of those who coordinate and give priorities to his demands in competition with the general needs of the other arms and the army as a whole.

In addition he also deals in an advisory capacity in the matter of personnel; their promotion and posting, and quite apart from these official duties he is now regarded as serving head of the Royal Regiment of Artillery and influences the numerous unofficial artillery interests such as the Regimental funds, charities, publications and clubs. It has become by sufferance and usage a very important part of his job that everything that affects the artillery is his concern. Every Gunner, I believe, feels that he can bring his own personal affairs or his professional views unofficially to the Director and as a result, he knows there is someone who will give very careful consideration to matters which are often so close to his heart. Perhaps that may help towards that coordinated cooperation which General Devers mentioned as being so necessary, at your Field Artillery Conference at Fort Sill last March.

SEVEN - UP

By Major A. A. Anderson, FA-Res.

IN POSITION BEFORE LORIENT, France, the 212th Armd FA Bn conducted the most unique adjustment that ever cleared through its FDC. The S-3 received a telephone call from an infantry observer, high in a tree, to the effect that he had just observed seven Germans and that artillery fire was desired.

Having turned down several previous requests from the same outpost for fire on single Germans observed, the S-3 decided that seven Germans warranted the attention of one gun. In reply to his query whether an artillery observer was present at the outpost to conduct the adjustment, the outpost replied in the negative but added that they were capable of conducting an adjustment and to go ahead. Accordingly, the S-3 directed Battery A to drop a round at the coordinate location furnished and then the following adjustment ensued:

S-3: "On the way."
Observer: "That was about 100 yards to the right and too short."
S-3: "How short?"
Observer: "About 300 yards."
S-3: "On the way."
Observer: "To far over."
S-3: "How far over?"
Observer: "300 over."
S-3: "On the way."
Observer: "That's about 300 to the right."
S-3: "On the way."
Observer: "Still too far right."
S-3: "How far to the right?"
Observer: "About 300."
S-3: "On the way."
Observer: "Now it's too far left."
S-3: (wearily): "How much?"
Observer: "300."
S-3: "Look, that takes us back where we started. Let's split the difference and make it 200 left."
Observer: "OK."
S-3: "On the way."
Observer (with wonder in his voice): "Oh boy, that one hit the house!"
S-3: "Yes, but where the hell are the Germans in relation to the house?"
Observer: "About 500 right."
S-3: "On the way."
Observer: "That's too far right."
S-3 (patience exhausted): "Look, Bud, that's seven rounds for seven Boche—d'ya think we're getting anywhere? I say the hell with 'em."
Observer: "OK, the hell with 'em—they're out of sight now anyway. But this shooting sure is a lot of fun. Me for the artillery in the next war. OK?"
S-3: "No harm tryin', Bud."

For Heroism and Service

DISTINGUISHED SERVICE MEDAL

Major General ARCHIBALD V. ARNOLD, for distinguished service in the Southwest Pacific Area from October 1944 to July 1945, as Commanding General of the 7th Infantry Division. After participating in the assault landing on Leyte, the division pressed rapidly inland and quickly captured four enemy airfields and routed or destroyed a well entrenched and stubborn foe. Subsequently his division, within two days of its landing, cut the vitally strategic island of Okinawa in two and then turned south, out-flanked the well-defended Shuri position, and in spite of heavily-concentrated enemy artillery fire, continued uninterruptedly forward until the island was secured. General Arnold contributed in great measure to the success of two important campaigns in the war against Japan.

Major General ROBERT W. HASBROUCK, for exceptionally meritorious service as Commanding General, 7th Armored Division, from December 1944 to April 1945. He led his division in its valiant stand against enemy attacks in the Ardennes and later in the recapture of St. Vith. In subsequent engagements, his forces spearheaded the breakout from the Remagen bridgehead and helped encircle the German troops in the Ruhr pocket. His outstanding leadership was in greatest measure responsible for his division's many successes.

Major General JAMES A. LESTER. He performed distinguished service in the Pacific Area from March 1942 to March 1945. As Commanding General of the 24th Division Artillery in Hawaii he greatly strengthened the artillery defenses of the north sector of Oahu. He expertly coordinated the artillery of the Tanahmerah landing force during the Hollandia-Tanahmerah operation. Later, as Commanding General of the XIV Corps Artillery, he provided superior artillery support for the initial landings on Luzon, for the rapid advance of the Corps through the central plains and for the final assault on the strongly fortified City of Manila. General Lester made a distinct contribution to the success of these operations.

Brigadier General HARWOOD C. BOWMAN. As Commanding General, United States Forces, II Army Group Command, Chinese Combat Command, he performed distinguished service from January to September 1945. His inspiring leadership instilled a fighting spirit in a large Chinese force, which, despite a lack of American arms and equipment in substantial amounts, advanced deep into enemy-held territory and was threatening a port on the China coast at the conclusion of hostilities.

Brigadier General HOMER W. KIEFER. He distinguished himself in the Southwest Pacific Area from June 1944 to September 1945 as Artillery Officer, Headquarters Sixth Army. He planned and coordinated the employment of artillery during operations in the Philippines and directed his troops in the mountain and jungle fighting.

Brigadier General ROLAND P. SHUGG. He performed exceptionally meritorious services from November 19, 1944, to May 8, 1945, in the highly responsible position of Commanding General XIII Corps Artillery. With unusual professional knowledge, superior ability and untiring energy, he planned, coordinated and executed the artillery employment which contributed materially to the completion of the Corps' missions. In the drive from the Roer to the Rhine he skillfully applied aggressive tactics, grouping and regrouping his units, to crush and bewilder the enemy. Distegarding personal safety, he directed artillery fires from the forward fire direction center, inspiring his subordinates with his courage and sound technique. Throughout the Corps' drive to the Elbe River, he gave close support to infantry units and helped keep casualties at a minimum by quickly neutralizing and overcoming pockets of resistance in the wake of the armored spearheads.

Brigadier General JOHN M. WILLEMS, for meritorious and distinguished service in Italy from June 1944 to May 1945. As Chief of Staff, II Corps, he maintained within the various staff sections of the headquarters the highest standards of operational efficiency, fusing their talents so as to develop a closely cooperating and smoothly functioning command unit capable of swift action and sustained planning. He manifested a high order of leadership during two extremely difficult campaigns against a fanatical enemy, making a notable contribution to the victorious operations of the Allied armies in Italy.

OAK LEAF CLUSTER TO DISTINGUISHED SERVICE MEDAL

Major General HUGH J. GAFFEY (posthumously)
Major General JOHN P. LUCAS

SILVER STAR

Colonel GEORGE A. HUTCHINSON

LEGION OF MERIT

Maj. Gen. DONALD C. CUBBISON
Maj. Gen. CORTLAND PARKER
Maj. Gen. ARTHUR R. WILSON
Brig. Gen. WALDO C. POTTER
Brig. Gen. DAVID L. RUFFNER
Col. STUART A. BECKLEY
Col. HOWARD T. BYLES
Col. BRECKINRIDGE A. DAY
Col. JESSE J. FRANCE
Col. WILLIAM C. HUGGINS
Col. JESSE B. MATLACK
Col. JOHN W. MORGAN
Col. WILLIAM E. ROBERTS
Col. WILLIAM E. SHEPHERD
Col. JOHN A. STEWART
Col. JAMES G. WATKINS
Col. EVERETT C. WILLIAMS
Col. JOHN R. YOUNG
Lt. Col. DAVID S. BABCOCK (posthumously)
Lt. Col. BERNARD J. RAUCH
Lt. Col. RICHARD G. STEWART
Lt. Col. ARTHUR V. SWEDBERG
Maj. DOUGLAS GORMAN, JR.
Maj. HUGH deN. WYNNE

OAK LEAF CLUSTER TO LEGION OF MERIT

Brig. Gen. KENNETH P. LORD
Brig. Gen. ROBERT V. MARAIST
Brig. Gen. DAVID L. RUFFNER
Col. ARTHUR P. MOORE
Col. JOHN B. WARDEN

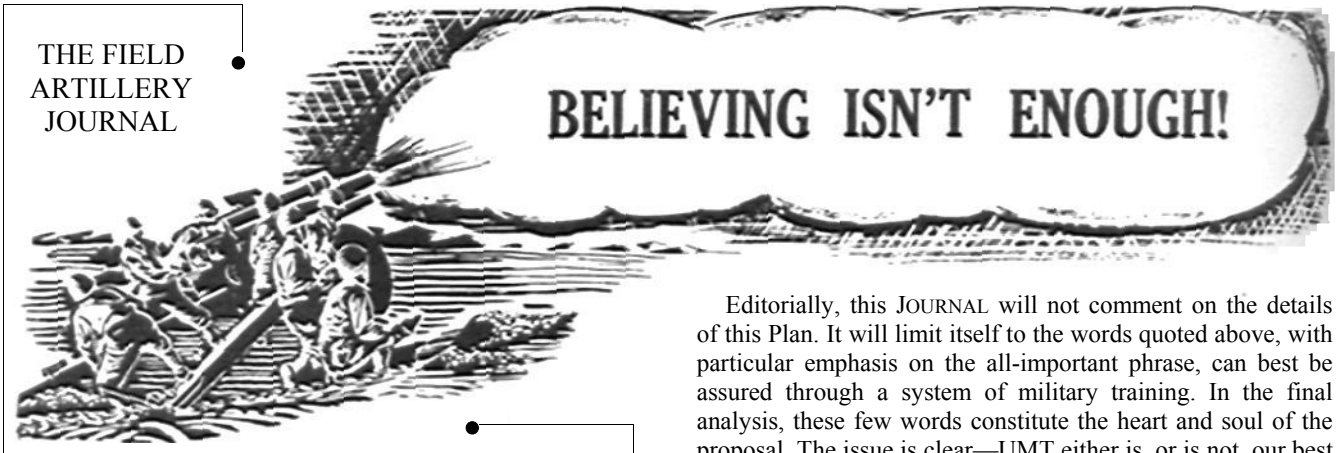
BRONZE STAR

Col. NICOLL F. GALBRAITH
Lt. Col. HENRY L. MILLER
Lt. PAUL D. PHILLIPS
Lt. Col. ALLAN E. SMITH (posthumously)
Maj. JOHN F. SUTHERLAND
Maj. LUNDY L. ZIEGLER
Capt. WILLIAM B. BRUNTON (posthumously)
1st Lt. LEONARD J. NEELEMAN
1st Lt. WILLIAM R. SLONE
Staff Sgt. DEBS MYERS

OAK LEAF CLUSTER TO BRONZE STAR

1st Sgt. MATTHEW DIXON

THE FIELD ARTILLERY JOURNAL



BELIEVING ISN'T ENOUGH!

PUBLISHED MONTHLY BY THE UNITED STATES FIELD ARTILLERY ASSOCIATION WHICH WAS FOUNDED IN 1910 WITH THE FOLLOWING OBJECTS — AS WORTHY NOW AS THEN

The objects of the Association shall be the promotion of the efficiency of the Field Artillery by maintaining its best traditions; the publishing of a Journal for disseminating professional knowledge and furnishing information as to the field artillery's progress, development and best use in campaign; to cultivate, with the other arms, a common understanding of the powers and limitations of each; to foster a feeling of interdependence among the different arms and of hearty cooperation by all; and to promote understanding between the regular and militia forces by a closer bond; all of which objects are worthy and contribute to the good of our country.

★

The
UNITED STATES FIELD ARTILLERY ASSOCIATION
Organised June 7, 1910

Honorary President
HARRY S. TRUMAN
President of the United States

LIEUTENANT GENERAL RAYMOND S. McLAIN, President
MAJOR GENERAL CLIFT ANDRUS, Vice-President
COLONEL DEVERE ARMSTRONG, Secretary-Editor and Treasurer

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Lieutenant Colonel F. Gorham Brigham, Jr.

It is a sound and democratic principle that each physically and mentally fit male citizen and alien residing in the United States owes an obligation to this country to under-go training which will fit him to protect it in an emergency; that adequate preparedness will prevent aggressive wars against this country and the needless sacrifices of human life; that a well-trained citizenry is the keystone of preparedness; and that such preparedness can best be assured through a system of military training for the youth of the Nation.

A glance at the opposite page shows that the foregoing is the opening paragraph of the War Department Plan for Universal Military Training recently advanced for full and free discussion by our people and for ultimate decision, in the American way, by the Congress of the United States.

Editorially, this JOURNAL will not comment on the details of this Plan. It will limit itself to the words quoted above, with particular emphasis on the all-important phrase, can best be assured through a system of military training. In the final analysis, these few words constitute the heart and soul of the proposal. The issue is clear—UMT either is, or is not, our best assurance for national security. The decision will rest with the 80th Congress. If the answer is affirmative, competent hands can and will arrange the working details of the UMT plan in due course and without serious difficulty.

As public and Congressional discussion is resumed, proponents of military training must not rest content in mere apathetic approval. Believing in UMT isn't enough! More than all else, apathy by a "jellyfish" majority (opinion polls consistently show that a solid majority of our people favor such training) works a deadening influence on legislative initiative on Capitol Hill. The majority must speak, since we may rest assured that the disbelieving minority will not be apathetic in their disbelief. They will grow progressively more cohesive and articulate as debate tension mounts, confusing and confounding the discussion by arguments generally eccentric to the fundamental issue—that is, the relative essentiality of UMT to our future security.

In weighing the relative essentiality of UMT, attention should focus clearly on the competence of those agencies, both public and private, that set themselves as judges. It strikes this JOURNAL as profoundly significant that the *executive agencies directly responsible for the security of our Nation*—namely, the President and the State, War and Navy Departments—are solidly behind it. Audacious indeed is the individual or agency that claims a greater competence of judgment.

Incidentally, although it is obvious that a great many disbelievers are intellectually honest in their disapproval, it is well to note that the motives stimulating certain groups of disbelievers will not withstand close scrutiny. Either un-Americanism or pure selfish interest is more than apt to be present.

It is most gratifying to know that the Secretary of War is recommending that the President appoint a commission of outstanding private citizens to evaluate the need. The indorsement of Universal Military Training by such a commission should help eliminate lingering doubts.

Believing deeply, as it does, that adequate preparedness "can best be assured through a system of military training for the youth of the Nation," this JOURNAL urges that every member of our Association appoint himself an *active* supporter.

Believing in UMT isn't enough!

Universal Military Training

*Selected extracts from the War department Plan for Universal Military Training, prepared for explanation to the public and to serve as the basis for further and more detailed planning pending approval by the Congress.**

IT IS A SOUND AND DEMOcratic principle that each physically and mentally fit male citizen and alien residing in the United States owes an obligation to this country to undergo training which will fit him to protect it in an emergency; that adequate preparedness will prevent aggressive wars against this country and the needless sacrifices of human life; that a well-trained citizenry is the keystone of preparedness; and that such preparedness can best be assured through a system of military training for the youth of the Nation.

PURPOSE OF THE PROGRAM

The purpose of the Universal Military Training Program is to promote the national defense of the country by providing a large reservoir of men trained as individual specialists and as members of teams in order that:

a. Mobilization and training of the Nation's wartime Army can be completed rapidly in an emergency.

b. The readiness of the Regular Army, the National Guard, and the Organized Reserve Corps can be maintained at the highest level during peace due to prior intensive training of enlistees.

Men will be trained as specialists and as members of teams for voluntary enlistment in the National Guard and Organized Reserve Corps.

c. Qualities of leadership can be developed and outstanding leaders can be selected for further training, on a voluntary basis, as commissioned and noncommissioned officers in the Regular Army, the National Guard, and the Organized Reserve Corps. A substantial basis of military knowledge and experience on which to build officer training will be provided.

d. Aptitudes can be established and classified and special skills required in modern war can be developed to the highest degree.

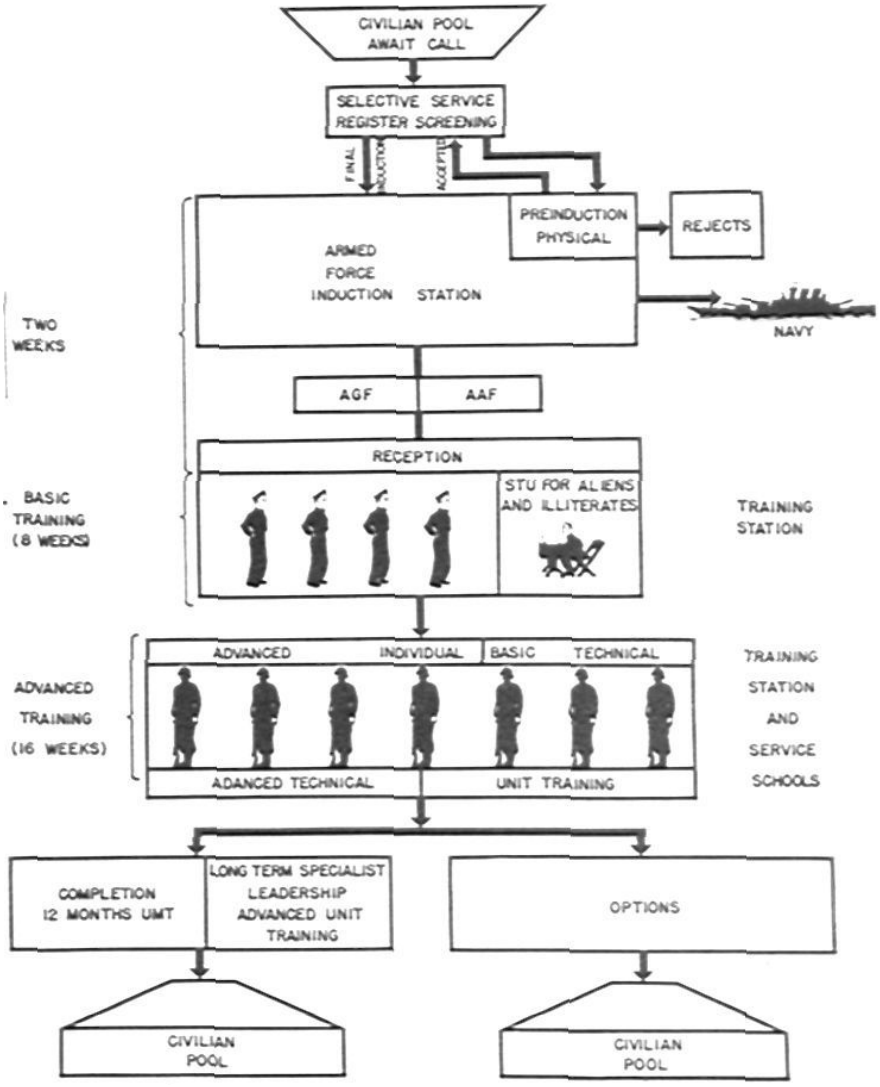
e. Each civilian community throughout the country can be composed in part of men who have received intensive training in the latest methods of scientific warfare and who would be able to defend and assist the community in the event of local disasters resulting from initial enemy action, which may be expected in the early stages of a war of the future.

f. Although not a primary purpose of Universal Military Training, an important result will be that the welfare of the Nation can be improved because:

(1) Opportunity will be provided for the raising of the standard of education for the Nation's young manhood.

(2) The physical well-being of all trainees will be improved to the maximum

UNIVERSAL MILITARY TRAINING FLOW OF TRAINEES



*It should be noted that this plan pertains only to the training of men under this program by the Army and does not include details of training by the Navy.

extent by means of athletics, adequate medical care, and physical conditioning.

STATUS OF TRAINEES

Young men will enter the Universal Military Training Corps for training only. They will not be available for combat or other operational requirements which may arise during peace and upon completion of training except for those who voluntarily enlist in one of the reserve components for training and service they will revert to full civilian status.

Extent of Military Control. Trainees will not be subject to the Articles of War, but will be governed by a specially drawn Code of Conduct, adapted to their youth and circumstances, administered by specially provided trainee tribunals for misdemeanors and by civil courts for more serious offenses. The War Department will be responsible for the determination and execution of all policies affecting their military training under the Army as well as for development and maintenance of the proper standards of military conduct and discipline.

Civilian Advisory Board. A civilian advisory board appointed by the President will be established which will be charged with furnishing advice and counsel to the President on the formulation of policies pertaining to Code of Conduct, recreation, moral and spiritual welfare, and certain non-military phases pertaining to trainees while undergoing Universal Military Training.

CROUPS INVOLVED

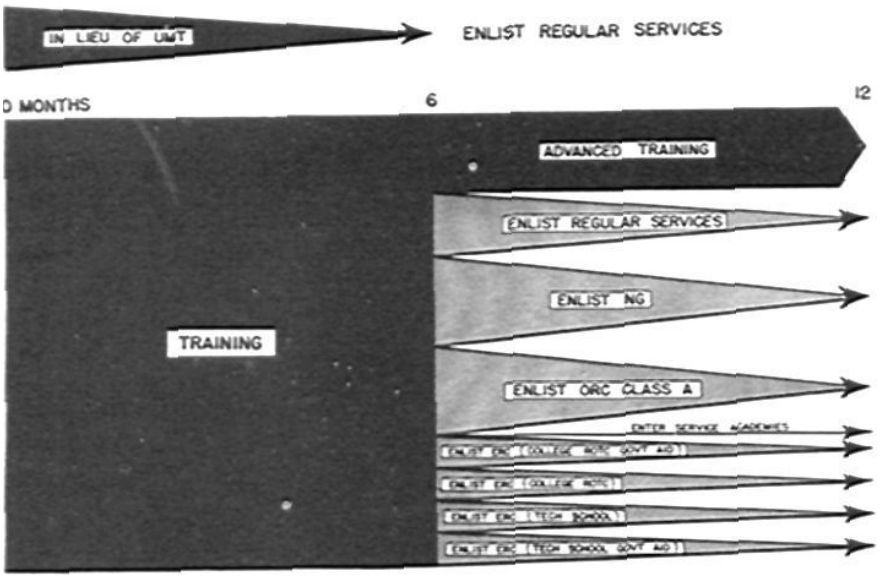
Every male citizen who has attained his 17th birthday and has not attained his 20th birthday will be required to register for military training on the date fixed for the first registrations. Thereafter, each male citizen will register on attaining his 17th birthday. All registrants will enter training upon reaching the age of 18 years, or upon graduation from secondary school, whichever occurs later, but will be subject to induction for training prior to attaining their 20th birthday. Young men who graduate from secondary school before attaining their 18th birthday can, with parental consent, enter training after attaining their 17th birthday. During the first year of Universal Military Training operation, it may be necessary to confine initial inductions to selected age groups due to limitations of available military personnel and facilities.

Numbers Involved. It is estimated that approximately 726,000 mentally and physically fit trainees would be available for training by the Army annually under the Universal Military Training Program. The balance of the mentally and physically fit young men would be trained by the other Services.

There will be no exemptions from training, except for personnel who are unfit for military training and those men who are serving or have served honorably in the Armed Forces for an adequate period of time.

Choice of Service. Inductees will be allowed to choose the service and arm which they desire to enter to the maximum degree consistent with established quotas and other military requirements. In the assignment of trainees to the Navy and the Army, proportionate numbers of each educational group and each physical profile group will be assigned to each of the services. A similar policy will be followed in the assignment of trainees to major commands within the Army.

OPTIONS UNDER UNIVERSAL MILITARY TRAINING PROGRAM



TRAINING PERIOD—STATUS THEREAFTER

The period of training shall be for one year, divided into two equal parts. The first six months will be devoted to such phases of training as may be required by regulations to be given to all trainees in the Ground and Air components of the Program. The second six months, subject to quota limitations and standards of qualification, will be devoted to the *completion of one year's continuous training in the Program* or to one of the following alternative programs:

(1) Enlistment in any of the Regular services.

(2) Enlistment in the National Guard.

(3) Enlistment in the Enlisted Reserve Corps and assignment to a fully organized unit.

(4) Entrance into one of the service academies.

(5) Enlistment in the Enlisted Reserve Corps and entrance into a college course approved by the War Department with such Government aid as may hereafter be provided including ROTC training, accompanied by an agreement on the part of the trainee to accept a Reserve commission (if offered) at the completion of the course and to perform active duty as a Reserve officer for a period of one year or more, as the President may direct.

(6) Enlistment in the Enlisted Reserve Corps and entrance into a college course including ROTC training, and an agreement to accept a Reserve commission if offered upon completion of the course.

(7) Enlistment in the Enlisted Reserve Corps and the pursuance of a course of advanced technical training in such school as may be approved by the War Department.

(8) Enlistment in the Enlisted Reserve Corps and the pursuance of a course of advanced technical training approved by the War Department and with such Government aid as may hereafter be provided and to perform such service in one of the components of the Army as the President may direct.

The period of service in each of the alternative programs mentioned above shall be as prescribed by the President by regulations in order to insure completion of training equivalent to the second six months of one year's continuous training in the Corps, and to provide appropriate annual quotas under each of the alternative programs. Upon completion of the period of training selected, each trainee shall be furnished with a certificate of training.

INDUCTION

Trainees will be inducted in approximately equal increments on quarterly induction dates.

Civilian Agencies. Registration, preliminary examination, and selection of trainees will be handled by a civilian agency known as the Universal Military Training Selective System. Additional processing prior to induction will be accomplished where practicable.

These agencies will determine the date of induction in each individual case and notify each individual when he is to report to his induction station to start training. In determining induction dates, local boards will give due consideration to individual circumstances and preferences insofar as requirements of the military program will allow, so as to effect the minimum disruption with normal educational and economic processes consistent with efficient administration of the program.

Standards for acceptance of trainees will be the same for both the Army and the Navy.

Military Agencies. Induction will be accomplished at Armed Forces induction stations, manned by personnel provided in proportionate numbers by the Ground Army, the Air Forces and the Navy. Physical examination, to include the recording of the physical profile serial, allocation to a service, assignment to training stations, and minimum necessary induction processing will be accomplished. In order to provide for maximum economy and full utilization of medical personnel, pre-induction physical examinations will be accomplished.

Reception and Separation Centers will not be used. The reception and separation processing will be accomplished at the training stations.

MISCELLANEOUS ITEMS

Trainer Personnel. Personnel of the Armed Forces, including the civilian components and necessary civilians will be used to instruct and train the members and organizations of the Corps and to provide the administration, supply, and medical service for trainees.

The proposed authorizations for Universal Military Training trainers and overhead are separate from, and in addition to, the normal requirements of the peacetime Regular Army. Personnel of the Army detailed to duty with the Corps will be in addition to the normal requirements of the strength of the Army provided for its normal peacetime mission. Maximum practicable use will be made of available personnel of the civilian components in filling training cadres.

Negro Personnel. The training of Negro personnel will not be conducted at separate installations. Units composed of Negro personnel will be trained as a part of composite organizations.

Special Groups. Personnel possessing bona fide religious scruples (conscientious objectors) will be assigned to service units of non-combatant type for training.

Illiterates will receive special instruction which is designed to offer them the equivalent of a fourth grade common school education. This instruction will be given in Special Training Units.

In special cases of hardship among families of trainees as a result of their separation while in training, dependency benefits will be provided.

Uniforms. The uniform for personnel trained under Universal Military Training will consist of a uniform similar to that authorized for the Regular Army enlisted personnel. Either the entire uniform or certain portions may be of a different color or distinctive insignia may be worn so that the trainees may be clearly distinguished as members of the Universal Military Training Corps.

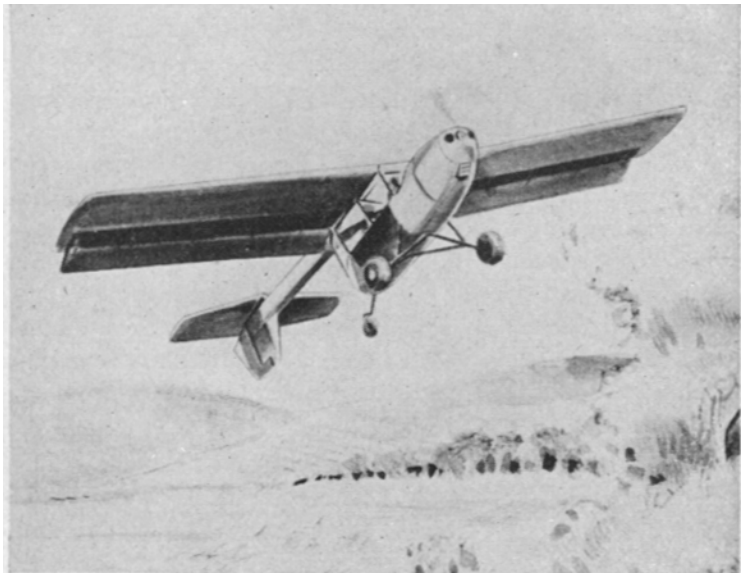
Organization for Training. Universal Military Training will be conducted by the major commands and technical and administrative services within the current organizational structure of the Army. New or special units will be authorized by the War Department only when necessary in order to carry out the Universal Military Training Program objectives.

All training will be conducted under policies prescribed by the War Department. Doctrine, tactics and technique will conform to those currently prescribed by pertinent War Department field manuals, training circulars and technical manuals. The War Department is continuing scientific research and development and military studies to keep its training programs, policies and equipment abreast of the latest developments in military science and tactics. The trainees in the UMT Corps will undergo training in the newest and latest methods and tactics of warfare evolved up to the time of their training.

The Commanding Generals of the Major Commands and Chiefs of Administrative and Technical Services are charged with the preparation of detailed training programs and the conduct of training under plans and policies issued by the War Department.

In general, no separate headquarters, or separate chain of responsibility, for the conduct of the program, will be established above the training station level.

Trainees will be trained in combat-type units and service units whose essential operating techniques are peculiar to the Army and cannot be acquired in civilian life. *They will not be trained in pure labor type units*.



The OLD and the NEW

ARTILLERYMEN and others are agreed that the exploitation of the capabilities of the Air OP was one of the outstanding developments of World War II. Obvious too is the fact that unless and until our modern artillery assumes some entirely new shape and form, improved Air OP equipment and techniques will retain a very high priority in the scheme of artillery post-war developments.

Several articles and items concerning the Air OP follow hereinafter. Of particular interest are the sketches and data on pages 584 and 585 concerning the new Boeing observation airplane, Model 451, which has been approved as a type. Now known as the XL15, this airplane is not yet available in other than mock-up form. When built, the initial models will of course be subjected to further extensive tests before quantity production is started.

Above, an artist's drawing of the new Army Ground Forces Observation Airplane, XL15. Below, a flight of AGFATS students warming up for take-off at Post Field.

A. G. F. LIGHT AVIATION

Prepared by the Staff of the Army Ground Forces Air Training School, Fort Sill, Oklahoma. Forward looking, this staff is confident that light aviation—one of the outstanding developments of World War II—faces a bright future

ALTHOUGH THE ROAR OF artillery and the sound of "fire mission, fire mission," coming from the observer in an artillery airplane has died away, the final "mission accomplished" cannot yet be given Army Ground Forces light aviation. Today Army Ground Forces air sections are playing as important a role in occupational activities as they did in combat.

Although 2,900 artillery pilots and 2,500 airplane and engine mechanics have been trained to date, the vast majority of these have now returned to civil life, and the Army Ground Eorces Air Training School at Fort Sill, Oklahoma, is still busy turning out pilots and mechanics, not only for artillery units but also for infantry, engineer, cavalry and armored units as well. The need of arms other than Field Artillery for organic light aviation was proven in combat, and among the first changes made in Tables of Organization after V-J day were those authorizing organic air sections for the several arms.

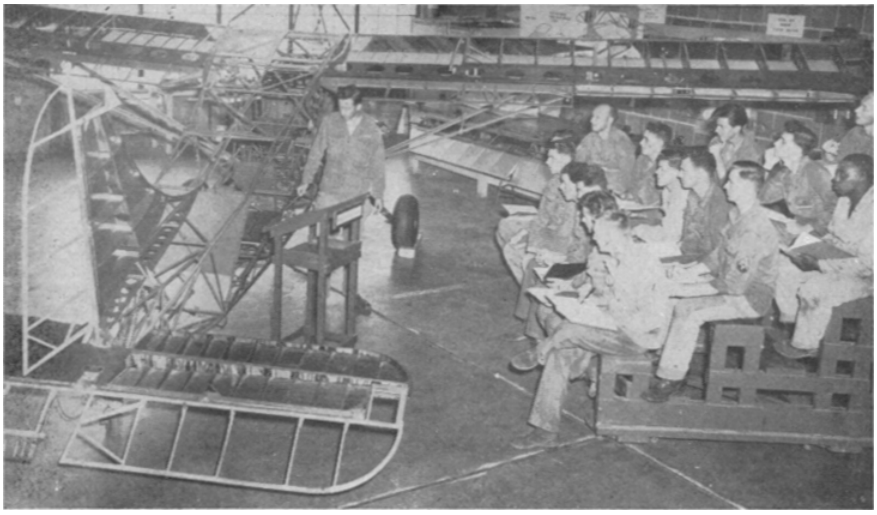
Fundamentally, the missions of organic aviation in all ground arms will be the same, although technique will vary in order to meet particular requirements of each branch. At the Army Ground Forces Air Training School all pilots are given the same mechanical and flight training course, and the same basic tactical training in adjustment of fire, reconnaissance, selection, development and operation of air strips, aerial route reconnaissance, aerial photography, and map reading. Pilots then receive special training in communications and those subjects and missions which are peculiar to their individual arms. Pilot training commences at the Army Air Forces Liaison Pilot School at San Marcos, Texas, where the students are taught elementary flying, some instrument flying, and basic ground school subjects. This course lasts 16 weeks. Pilots then proceed to Fort Sill, Oklahoma, for a second 16-weeks' course at the Army Ground Forces Air Training School.

At this school they are given instruction in advanced flying to improve their technique and accuracy, particularly in short field landings and take-offs. Since Ground Force pilots must be able to maintain their aircraft, the Air Training School has an Engineering Department which conducts instruction in engine theory, carburetion, ignition system, engine disassembly, engine assembly and trouble shooting. At the same time the students are instructed in the construction of liaison airplanes, airplane maintenance, fabric repairs, rib repairs, patching and sewing, plastic repairs, structural repair, rigging, and the installation of radio, pontoons and Brodie hook. Approximately 15 hours of night flying is included in the course for each student pilot, consisting of dark field landings, flare path landings, short field take-offs and landings, and extended cross-country night flights using night navigational aids.

Pilot instruction on road landings.

The Tactics Department receives the students after they have completed their flying and maintenance training and during the last three weeks of the pilot course, teaches them how to employ their flying skills in the field. Pilots of all branches are taught the tactical employment of their aircraft with ground force units, adjustment of artillery fire, aerial photography, communications, advanced map and aerial photograph reading, combat intelligence, and special operations such as emergency supply, use of aircraft flares, adjustment of artillery fire at night, night reconnaissance and operations under extreme climatic conditions.

The tactical training is practically the same for all arms except that only the Field Artillery students have night service practice, during which they fire from the air using illuminating shell. Students from other arms receive a total of 11 hours of classroom instruction in conduct of fire from the air and shoot one or more problems during each of eight service practices. When they leave the Air Training School they are well versed in Field Artillery firing procedures and are experienced in adjustment of fire. Officer instructors of each arm authorized light aviation give individual instruction in problems peculiar to that arm. For example, radio communication is taught using the radio issued to the pilot's own arm. Engineer and Field Artillery pilot students are given intensive instruction in aerial photography. Cavalry and Armored Force students are given extra problems in aerial reconnaissance and cooperation with spearheads and reconnaissance parties. The course is climaxed by a



Student mechanics learning aircraft nomenclature.

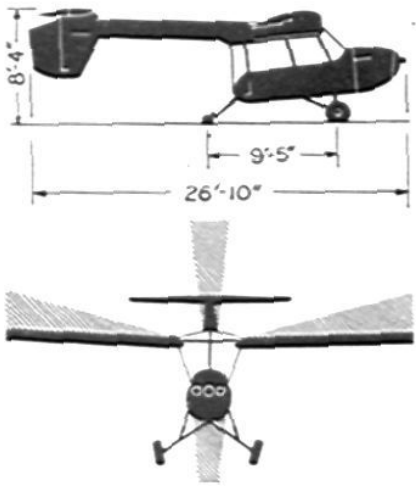
two-day overnight field problem involving a tactical situation into which all phases of the course have been incorporated to give student pilots practical experience.

Upon assignment to a field unit the pilot is technically trained and fully qualified to carry out his duties as liaison pilot. However, he finds that after eight months of very closely supervised training he now has considerably more freedom. The period during the pilots' first few months of field duty has proven to be the most dangerous; the accident potential is much higher during the readjustment period. This has proven a serious problem to unit commanders, the only feasible solution being that the unit air officer must closely supervise and further train the new pilots in his air section. Accident prevention in the field cannot be overemphasized. Army Ground Forces light aviation has an enviable safety record. Only close supervision and constant adherence to all safety rules and regulations will uphold this fine record.

Field Manual 6-150, Organic Field Artillery Air Observation, was prepared to aid in guiding the organization of Army Ground Forces light aviation during its infancy. The test of battle and the resulting discovery of many missions for light aviation not envisioned at the time FM 6-150 was written has now necessitated the rewriting of this manual. Field Manual 20-100, Light Aviation (Ground Units) is now awaiting final approval by the War Department. It is the result of months of study, research, battle and field tests covering completely the whole field of light aviation. This manual should prove to be of inestimable aid to unit commanders and unit air officers.

It is generally agreed that the Piper L-4 and the Stinson L-5 performed admirably in the war just past, yet they left many things to be desired. Most pilots would like a slower take-off and landing speed, better flotation, increased visibility, a faster rate of climb, longer endurance in the air, faster cruising speed, a greater service load, simplified maintenance and enough armor plate to protect the crew against small arms and antiaircraft fire. Military characteristics for an improved Ground Force airplane have been drawn up by the War Department and the Piper, Consolidated Vultee, Boeing, Ludington Griswold and Bellanca aircraft companies have designed aircraft to meet these specifications.* Several of these models offer promise and it is expected that the Army Air Forces will soon release contracts for the construction of sample aircraft of one of these designs. Detailed study and planning for an improved light aircraft for the Ground Forces are continuing, with several Ground Forces agencies conducting tests and studies on this subject. There are many reasons to believe that in the not too distant future the Ground Forces will have a light aircraft far superior to any that have been used in the

*This article was written prior to the decision to adopt the Boeing Model 451, now known as the AGF Observation Airplane, XL15.—Ed.



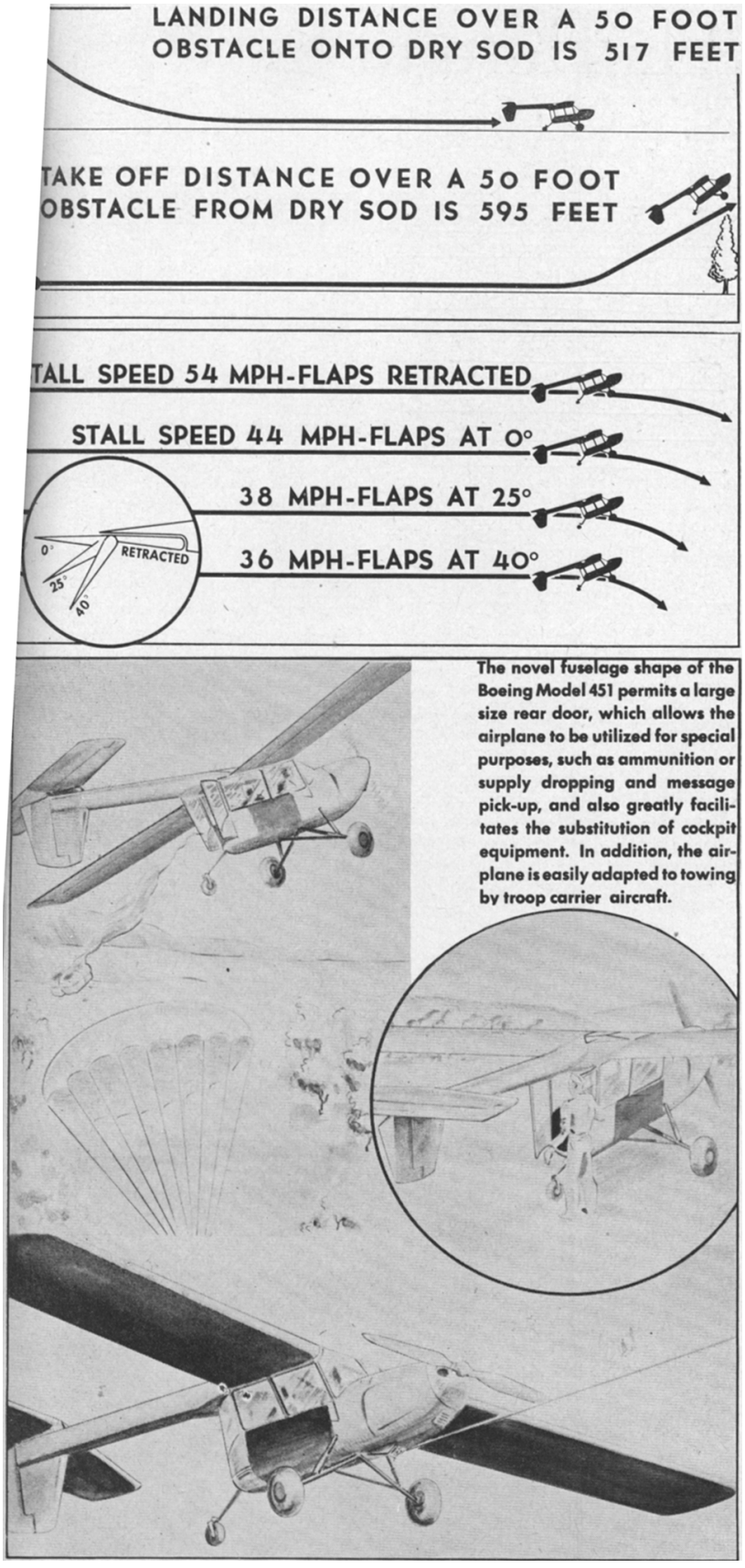
AGF OBSERVATION AIRPLANE, XL15

Design gross weight ..... 2,050 lbs.
Wing area ..... 200 sq. ft.
Full span Fowler type flaps with a scoop-and-stub aileron.
Horizontal tail area ..... 40 sq. ft.
Power plant ..... Lycoming 125 HP. Engine with a Sensonich two-position propeller.

Inverted vertical tail assembly serves to reduce space requirements, to dampen spins, and to facilitate stabilizer maintenance.

Maximum visibility as afforded both by design and by the full swiveling observer's seat provided.

See opposite page for additional date and sketches.



past. Along with this the helicopter is being eyed.

Other problems which clamor for solution are the provision of Ground Force aviation facilities for the Organized Reserve and National Guard and settlement of the career question for pilots in all components. While no official policy has yet been announced, it may be supposed that some measure will be taken to provide training for pilots in Reserve and National Guard units. Initially, this will probably look toward the maintenance of proficiency of at least a portion of the 2,000 or so Ground Force pilots who have returned to civil life. Eventually this plan must include the training of new pilots for these components if they are to maintain their position in Ground Force aviation. In addition, it must be decided just how far a pilot will be allowed to proceed in the specialized channel of Ground Force aviation. The view is held by many that after a few years of this specialty the career officer at least should revert to general duty in his chosen arm. Ground Force aviation does not offer a complete career, so in the interest of flier and government alike some rotation seems to be in order. Official policy on this has not been announced.

As for the future, the outlook of the Army Ground Forces light aviation is very bright. This was one of the outstanding developments of World War II and it should prove to be even more important as better aircraft are designed, and more experience is gained in their employment. Many have believed that there is no place for light aviation in wars of the future because of the development of atomic power and the forecast use of guided missiles. However, since the beginning of recorded war history it has been proven time and again that regardless of the type of weapon used, a defeated nation must be occupied by ground forces before a conclusive victory can be obtained. There is no reason to believe that a nation can be defeated in the future without the use of an active, aggressive ground force, and as long as this axiom is true there will always be a need for and an important place in the scheme of things for Army Ground Forces light aviation.

Air OP Is Here to Stay

By Maj. Delbert L. Bristol, F.A.

IN DECEMBER 1941 THE WAR Department ordered a test of the feasibility of using organic aircraft in the held artillery to provide short range air observation for adjustment of fire. By 1 March 1942 a group of volunteer pilots and mechanics had completed a short course of instruction at the Field Artillery School followed by a series of practical tests conducted in conjunction with the 2nd Infantry Division Artillery at Fort Sam Houston and the 13th Field Artillery Brigade at Fort Bragg. The board reports recommended the establishment of organic aviation in field artillery units, and the War Department approved this recommendation in June of that year. Within a short period of time, courses of instruction for both pilots and mechanics were being conducted at the Field Artillery School, utilizing the personnel of the original test group and qualified civilians as instructors. In September the first pilots and mechanics were graduated and either assigned as instructors at the school or assigned to units then preparing for the invasion of North Africa.

Air OP's first participated in combat when our forces invaded North West Africa in November 1942. Shortly thereafter, they joined units fighting in Tunisia and before the end of the Tunisian campaign were operating effectively as a secondary means of observation. Air OP's moved into Sicily in July 1943 with the invading forces and it was during this operation that they really won recognition as a dependable observing agency for the field artillery. In September 1943 the Air OP's accompanied the assaulting forces to Italy and there became extremely popular with the American doughboys and highly unpopular with the Germans. Later, in June 1944, the Air OP's landed in Normandy and were the only effective means available to the artillery for locating targets and adjusting fire in the "hedge-row" country.

There is probably no Artillery Air Officer with more diversified combat experience than Major Bristol. He served with the II Corps in North Africa and Sicily prior to becoming the first Army Artillery Air Officer in the fall of 1943—a post that he held throughout the entire period of First Army operations in Europe. Below is a statistical summary of the Air operations supervised by him during this period. Major Bristol was integrated into the Regular Army last July.—Editor.

From this time on, the Air OP's played a vital role in all phases of combat operations as a *primary* means of observation. In Europe alone, it may be said that Air OP's accounted for better than 75% of all of the observed fire adjustments conducted.

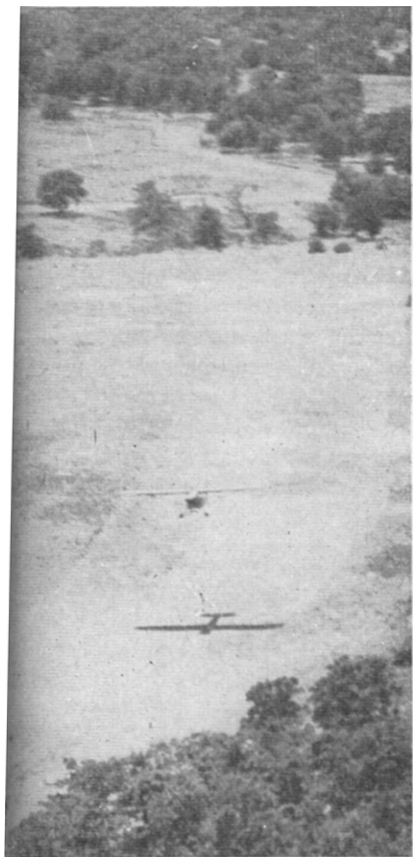
To the surprise of many combat losses both in aircraft and personnel were surprisingly low. This was not attributable to the fact that the enemy did not endeavor to liquidate the Air OP's, but because a well prepared Air OP has more fire power than any enemy antiaircraft battery, and can easily evade the enemy aircraft which is very vulnerable to being shot down by our own AAA. Although there are no statistics on the subject, it is probable that the enemy lost an average of at least two aircraft for each attempt to destroy one Air OP. This was largely due to the effectiveness of our own AAA fire, and Air Force fighter cover.

FIRST U. S. ARMY AIR OP OPERATIONS

First Army field artillery Air OP's flew more than 78,000 operational hours from June 1944 to May 1945. During this period a total of 56,488 combat missions were flown. Of these, 34.4% were adjustment of fire, 56.1% reconnaissance, and 9.5% other combat missions. In addition to the combat missions a total of 4,392 training and 13,733 administrative missions were flown. An average of 232 aircraft were operational with the Army during this period. The following table is an analysis of Air Op reports received from First Army units for the period.

Throughout the entire period of combat on the continent of Europe eighty-one pilots of First Army units were reported missing, killed or seriously injured. These losses represent an average monthly attrition of 2.72%. During the same period a total of 176 liaison aircraft were missing or actually salvaged, representing an average monthly attrition of 6.9%.

	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Aircraft, Operational	261	243	191	216	203	240	237	213	248	252	253
Pilots, Operational	289	264	214	247	246	276	281	264	299	301	289
Aircraft Lost	36	13	10	9	24	14	30	9	4	7	20
Pilots Lost	20	14	8	6	5	2	4	2	2	7	11
Total Flying Hours	4,960	9,851	7,982	9,169	4,677	4,610	6,303	3,598	6,160	10,332	11,023
Average Hours/Aircraft	19	40.5	41.7	42.4	23.1	19.2	26.6	16.9	24.9	41.2	43.6
Average Hours/Pilot	17.2	37.1	37.1	37.1	19.0	16.7	22.4	13.2	22.1	36.9	38.1
Average Hours/Inf Div Arty Pilot	24.4	40.0	42.8	39.2	19.2	17.9	20.3	13.6	24.0	38.8	45.3
Average Hours/Armd Div Arty Pilot	23.6	37.0	59.8	49.0	19.8	19.7	33.9	19.6	20.9	44.3	44.0
Average Hours/Corps Arty Pilot	17.8	36.8	29.8	24.7	19	15.8	21.8	14.5	15.5	30.1	36.5
Average Hours/Army Arty Pilot	15.8	21.5	34.6	32.6	18.0	12.4	18.1	8.9	17.8	26.4	30.9



Student pilot taking off from fight tactical strip.

From the outset of the organic aviation program in 1942 to the present date, the principal aircraft for use as Air OP's has been the L4, better known as Piper Cub. Practically all units overseas were equipped with this aircraft until very late in the war when a limited number of the L5 type (Stinson Sentinel) were made available to artillery units. Experience in all theaters indicated that there was a definite requirement for an aircraft with better observation and performance qualities than provided by the L4 type. On the other hand, the L5 did not prove entirely satisfactory because of its greater weight and increased maintenance in comparison with the L4. Just prior to the end of the war, military characteristics for an observation aircraft were established based on combat experience in both the European and Pacific Theaters.

The Army Air Forces were directed to develop an aircraft based upon these characteristics, with a view to standardization for the field artillery. With regard to personnel, it was originally planned that the bulk of the Air OP pilots would be enlisted men. However, it was soon realized that officer pilots were required who were qualified not only to fly but also to serve on battalion and higher staffs as advisors to commanders on matters pertaining to air observation. This fact naturally resulted in a change of concept. It is a matter of passing interest to note that, although several thousand field artillery pilots were trained during the war, less than twelve were Regular Army officers.

No one can challenge the success of the Air OP during the recent conflict. It established itself as a "must" and is here to stay. In spite of their exemplary performance, much can be done to improve the effectiveness and versatility of Air OP's of the future. I feel that the following are of prime importance:

1. The training of the maximum number of junior field artillery officers as field artillery pilots.

2. Training of the maximum number of field artillery officers and enlisted men in the duties of air observer.

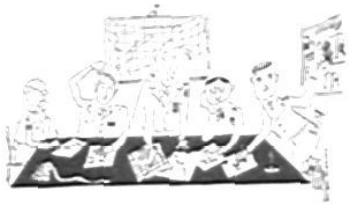
3. Training of all field artillery pilots in the non-flying duties of field artillery officers of the same grade.

4. Establish a policy of 3 years as the maximum tour of primary duty as pilot, after which field artillery pilots must serve at least 3 years in another assignment before again becoming eligible for primary duty as a pilot.

5. Development of a combination VHF and FM multiple-channel radio installation, which can be carried in the observation aircraft in order to insure flexibility of communication.

6. Establish a Ground Aircraft Service Test Section at Wright Field with the mission of overall technical supervision of Army Ground Forces' organic aviation, to include responsibilities in connection with new developments, dissemination of technical information, compliation of technical and supply statistics, preparation of technical bulletins and liaison with the Army Air Forces Air Technical Service Command.

The adoption of the major portion of the above program will insure that the Air OP's of the future maintain a position abreast of all elements of our modernized post-war Army.



OF MORE THAN PASSING INTEREST

Happy Birthday. Antiaircraft Artillery was 29 years old on 10 Oct 46.

Citizen-Soldier. A salute herewith to General Omar Bradley for his ringing charge to American veterans to remember, above all, that the primary obligations of citizenship transcend other organizational loyalties.

Opens. Hq AGF opened officially at Ft. Monroe, Va., on 1 Oct 46.

Closes. The Replacement and School Command will be inactivated 1 Nov 46.

Fellow Travelers. A bow and best wishes to *Signals* (Journal of the Army Signal Association) and to the *Chemical Corps Journal* (Journal of the Chemical Warfare Association) whose first issues appeared this month. They give added strength and breadth to the family of Service Associations which contribute steadily to the good of our Army and Nation.

Merging Artillery. Signposts on the straight-away road to a single Artillery arm: the meeting this month of the Consolidation Board at Fort Sill relative to the merging of all artillery schools; the assignment of one-time Field Artilleryman, Brig. Gen. R. M. Montague, as Assistant Commandant of the AAA School at Fort Bliss.

Milestone. Long remembered, in man's continuing efforts to bring order out of chaos in our world society, will be the prominent legal milestone this month at Nuernberg of the conviction and sentencing of high Nazi officials for instigating aggressive war against mankind.

Vets and Congress. The 79th Congress provided over $12.5 billions for veterans, or nearly $1,000 for every soldier discharged since V-E Day. Over 80 veterans have been nominated for election to the 80th Congress.

Former Editor. Noted, with segret, was the death on 6 Oct of Brig. Gen. Clarence Deems, Rtd., a former editor (1917) of THE FIELD ARTILLERY JOURNAL.

*Air OP Operations in the Third U. S. Army**

Flight Altitudes. With the German Air Force operating as it did during the European campaign, Air OPs discarded the original doctrine of flying at not over 600 feet altitude and in the general locality of the battery positions. Air OPs continue to fly with relative impunity over the front lines and at times even well into enemy territory at 2,500 to 3,500 feet altitude in order to get better observation on difficult targets.

Air OP Missions. Artillery Air OPs provided a most important means of observation to the field artillery. A coordinated patrol over the division front from dawn to dusk is of great value in locating targets of opportunity and discouraging enemy artillery activity. Certain conditions of poor weather, such as low ceilings and restricted visibility have proven very hazardous to Air OP operation. Spearheading of armored columns with an Air OP very greatly accelerates the progress of the column. The Cub, flying as far as two or three miles ahead, finds road blocks, condition of bridges, enemy dispositions, etc. This type of operation is very costly in aircraft as it is necessary to use unreconnoitered landing strips in the immediate vicinity of the column for security purposes. Counterflak operations have been very successful in that losses to Army Air Force aircraft on bombardment and close support missions were greatly reduced, as flak was kept to a minimum.

Communications for Air OPs. Air communications required additional facilities at airstrips in order to implement flexible operational procedures and adequate hostile aircraft warning system. Use of an SCR-608 radio as a base set of all corps, division artillery, and group airstrips was found necessary to supplement wire communication with command posts, for local traffic control, and for emergency communications to any group or division artillery plane in the air. An SCR-593 radio at the same airstrips to monitor the antiaircraft warning net eliminates all but one relay of enemy aircraft warnings to Air OPs in flight. Each battalion should have a third SCR-610 radio to use as a base set on operations wherein the battalion air section is operating separately and to use as a spare in case of failure of one of the SCR-610s installed in the aircraft.

Centralized Airstrips. Centralization of control of air sections consists of all battalions of the group or division artillery operating from one base field under the supervision of the Air Officer. This system facilitates supply, maintenance, communication and messing, and allows the Air Officer to run his patrol mission so that the maximum efficiency in use of aircraft and pilots is obtained. However, this centralization does not mean that any battalion can not call upon its own aircraft for special missions as it chooses. When necessary and desirable, battalion planes can be operated from their own strips. The control exercised is merely to facilitate missions which must be participated in and divided among all the aircraft of the units. When all sections are operating separately the Air Officer is not able to exercise as much supervision of actual flying in many cases, when fields are scarce, poorer strips will be used with consequent increase in accident rates. A certain degree of centralization under the group or division artillery Air Officer is generally found most satisfactory.

Location of Airstrips. Airstrips should be selected with high priority considerations being given to operational safety of the field. They should not be located within 500 yards of friendly battery positions, important crossroads, towns or villages, as these points usually draw enemy fire. A number of aircraft damages resulted from ranging rounds of such fire falling on or near airstrips.

Causes of Accidents. The most general cause of accidents to aircraft was pilot error. The ratio of operation losses to actual battle losses over an eight-month period was approximately two to one. Of these pilot error accidents, the primary cause was airstrips obstructions. Next came artillery shells landing on or near aircraft. Next were weather conditions such as ice, snow and frost on wings (causing take-off accidents), and mid-air collisions.

A continuous program for focusing attention of pilots on the fact that errors in judgment cause most of the accidents in which aircraft sustain damage and injury to personnel is warranted.

Night Flying. Except on special rare occasions, night flying, as such, was not warranted on the Continent. Antiaircraft artillery in the area must be issued a hold-fire order during the period of flights and gun flashes are impossible to locate on a map except on exceptionally clear nights of full moon when there is no haze. Dusk patrols may be profitable and warrant the effort and hazard involved.

Immediate Use of Reinforcement Pilots. Reinforcement pilots arrived on the Continent without having had any flying time for periods ranging from one to three months. While in the reinforcement system they received no flight training, and not until actually arriving at an artillery unit did they have such opportunity. Excess reinforcement pilots should be assigned for training to units which are doing the greatest amount of flying. This provides operational experience and relief for as-

*Extracted from a Third U. S. Army operational report.

signed pilots of the organization and results in filling vacancies as they turn up with seasoned personnel.

Landing Mats. In operations on the type of soil generally found in northwest Europe, aircraft of the weight of a Cub will tear up turf and quickly often the ground beyond usability in as little as one day's operations. Use of L-5 aircraft is either impossible from the start or even more quickly becomes so because of its greater weight. Landing mats are essential for the majority of airstrips during the rainy season. Landing mats should be provided for future operations in sufficient quantity to supply strips of at least 900 feet in length and twenty feet in width if the terrain is such that muddy conditions can be anticipated. Use of the mat insures continuous aircraft operation and reduces operation accidents.

Dropping Supplies. Supply dropping to isolated units was found to be feasible but hazardous. In several instances all types of supplies, including medical supplies, ammunition, radios, batteries, food and other equipment, were dropped to bridgehead or surrounded units thereby enabling them to continue fighting and later be reunited with friendly troops. This was accomplished by tree-top height flight covered by other Air OPs which were prepared to take enemy flak positions under fire. Small arms fire, however, did inflict considerable damage to aircraft.

MAINTENANCE, REPAIR AND TECHNICAL SUPPLY

The 43d Mobile Reclamation and Repair Squadron, which operated with this command as the higher echelon maintenance and supply agency for all field artillery aircraft, was an Air Force organization, neither assigned nor attached to Army Headquarters. This resulted in difficulties in obtaining supply, rations, services, etc. Such an agency should be assigned to the army and under direct supervision of the Army Artillery Officer.

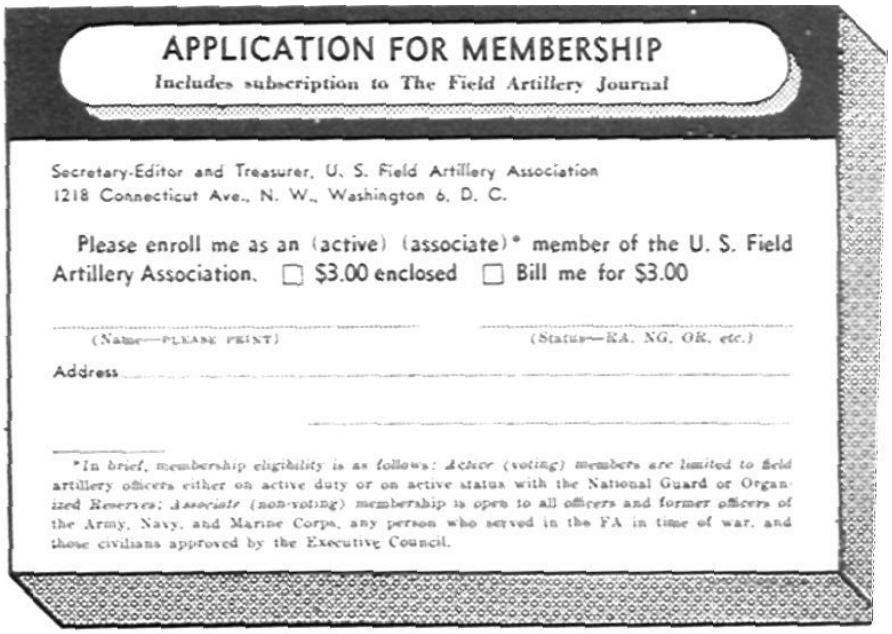
Employment of M.R.&.R. Squadron. Throughout the campaigns of Normandy, France and Germany, the Mobile Reclamation and Repair Squadron, consisting of 187 enlisted men and nine officers, was split in two echelons, each self-sufficient. These two units—identical in capacity for type and volume of maintenance and repair work—operated at times as much as two hundred miles apart, and were moved so that one echelon was operational during the period required for displacement of the other. In fast moving, mobile situations such as prevailed after the breakthrough at AVRANCHES the two echelons were leap frogged. In static situations such as prevailed prior to 16 December 1944 the two echelons were placed as far forward as possible, each supporting the units in its half of the Army front. This resulted in continuous service available to units at shorter distances than would have otherwise been possible, thus making crash pick-up quicker and accessibility of supplies greater enabling units to turn in bulky wing parts, spare engines, etc.

Supply Procedure. All parts which were recoverable were issued on an exchange basis. Expendable supplies were issued on stores charges. Table of Equipment items and critical items of supply were requisitioned through and issue controlled by the Army Artillery Air Officer. Restrictions were issued by Air Force service command to Army Air Force supply agencies higher than the mobile reclamation and repair squadron to prevent field artillery units from drawing equipment out of channels and thereby upsetting priorities on procurement and issue of critical items.

Fuels and Lubricants. Proper grade of fuel and oil should be available. Motor vehicle fuels and lubricants should not be used. It was found that the 80-octane motor transport fuel originally provided for use in aircraft resulted in very drastic increases in maintenance difficulties and engine overhauls causing a severe shortage of certain parts such as valves, rings, spark plugs, etc. Engines had to be overhauled on an average of every forty hours of operation with this gasoline while in similar operation with 73-octane aviation gasoline for which this engine was designed, over-hauls were necessary only every 125-150 hours.

NOTICE OF ANNUAL MEETING

In compliance with Section 1, Article VII, of the Constitution, notice is given that the annual meeting of the U. S. Field Artillery Association will take place at 5:30 P. M., Monday, December 16, 1946, at the Army and Navy Club, 1627 Eye St., N. W., Washington, D. C.



APPLICATION FOR MEMBERSHIP

Includes subscription to The Field Artillery Journal

Secretary-Editor and Treasurer, U. S. Field Artillery Association
1218 Connecticut Ave., N. W., Washington 6, D. C.

Please enroll me as an (active) (associate)* member of the U. S. Field Artillery Association. ☐ $3.00 enclosed ☐ Bill me for $3.00

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*In brief, membership eligibility is as follows: Active (voting) members are limited to field artillery officers either on active duty or on active status with the National Guard or Organized Reserves; Associate (non-voting) membership is open to all officers and former officers of the Army, Navy, and Marine Corps, any person who served in the FA in time of war, and those civilians approved by the Executive Council.

PERIMETERS in PARAGRAPHS

By Col. Conrad H. Lanza, FA, Ret.

COMMUNISM

THE MILITARY SITUATION at date of writing is materially affected by two important states—Russia and China. The former is completely controlled by Communism, and the latter is partially so controlled. The national policies of those two states are influenced profoundly by principles of Communism. What these are is here briefly discussed, and will apply to succeeding sections on Russia and China.

The founder of modern communism is Henry K. Marx, better known as Karl Marx. He was a well educated and intelligent student and teacher, with radical ideas on social questions. The results of his extensive researches and deductions are embodied in a book called *Capital*, the first parts of which appeared in 1867. This book is the ideological basis for modern communism. It is an involved and difficult book to read and understand. Some parts are brilliant while others are demonstrably incorrect. It is impossible to believe that, when Communism started in Russia in 1917 the great masses of Russians either knew this book or any substantial part of it. It is improbable that they know it today. It is impossible to believe that the hundreds of millions of illiterate Chinese have any conception of what Karl Marx really taught.

Communism in Russia. Marx lived and wrote principally in England 80 to 100 years ago. He was influenced by conditions about him, particularly the low standard of living of the workers. He came to the conclusion that this undesirable condition could only be corrected by abolishing capital and destroying religion. Capital in England was represented by large land owners, whose lands Marx proposed to confiscate and divide among humble people. According to him the church's only mission was to dope the people to accept actual conditions, so they too were scheduled for destruction.

In Russia, when Communism started at the end of World War I, there were large landed estates just as there had been in England in Marx's time. If the Russian people could not understand Marx's difficult theories, they could appreciate having land distributed free to workers. As the Russian church owned considerable property the idea to destroy the church and appropriate its land holdings was successfully presented and adopted. The distribution of land was later followed by confiscation of other property. All capital in Russia is now monopolized by the state, which is organized as an atheistic government.

Communism in Russia having been established, it has since been necessary to maintain it. Greatest difficulty is that the theory that it would lead to superior standards of living in respect to non-communist countries has not been realized. Just the contrary has taken place. Russian soldiers brought into contact with other nations during World War II have been convinced conclusively that living conditions in Russia are worse than elsewhere. This presents a major problem to the Russian Government.

The solution has been to represent that the old enemies of communism—capital and religion—are combining to overthrow what would be an Utopian state in Russia if it were not necessary to prepare for a coming attack. Russian "fears" of capitalism focuses principally on the United States and the British Empire, whereas religious criticism centers mainly on the Catholic Church, which is the only church which is international as a going concern and is openly anti-communist.

It follows that the strategical mission for Russia, according to their concept, is to prepare for war to save their country from future aggression. To date no expressions of friendship by American and British statesmen and no amount of disclaiming that the two great democratic nations have the slightest intention or desire to attack Russia, either now or at any future time, has had any effect. If it did have, Russia would accept the friendship of the western Powers, the logical result would be to abolish Communism in Russia and revert to a free democracy. Unfortunately nothing like this is in sight.

Communism in China. Here the situation is not exactly the same as in Russia. Some authorities claim that the Chinese Communists are not real communists, as little if any evidence could be found by investigators that the Chinese people believed in communism. This is perfectly true. This writer, however, agrees with Edgar Snow, who has lived extensively within Communist China. That experienced investigator stated plainly in his article in the *Saturday Evening Post*, 12 May, 1945, that the High Command of Communist

China did believe in Marx and was desirous of following the path laid down by Soviet Russia.

Nevertheless the arguments which induced Russians to accept communism haven't worked so well in China. In China there has been no wealthy class of landed gentry such as existed in England in Marx's time, or in Russia in Lenin's time. Absentee land ownership is not unknown in China, but it is limited and in that part of China held by the Communists appears to be negligible. Consequently there is no great inducement to join the Communists under promise of receiving a part of capitalistic lands. The nearest approach is to sieze and divide land holdings of those peasants who have somewhat more than the average. This has been done but is not a material factor.

Neither is religion a factor. China has no church. For a long time the Buddhist temples have been visited principally by tourists. Real adherents to what used to be the religion of the country have all but disappeared. Christian missionaries have converted probably less than 1% of the population. Consequently talks about religion being the opium of the people are meaning-less to Chinese, as the masses have no religion.

It has been necessary for Chinese Communists to find other sales talk than the two main arguments of Marx and Soviet Russia. This has been found in social improvements. In general Communist government is strict but compared with non-Communist China, taxation is lower and government comparatively honest whereas it is notoriously corrupt in non-Communist China. Schools have been established, and elections held. The latter are somewhat on the Russian model, having but one ticket. In contrast, no elections at all are held in the rest of China.

Whereas in Russia Communism is maintained by appeals to prepare against foreign aggressions, in China the Communists' appeal is against interior conditions, alleged to be intolerable. Consequently they are preparing for war, not against foreign Powers but for civil war. Communists are against foreign Powers only in so far as they aid non-Communist China.

Conclusion. The difference between Russian Communism and Chinese Communism is material. One is oriented outwardly and the other inwardly. Both Chinese and Russian Communist leaders have similar ideas, and look forward to ultimately organizing classless states where living conditions will be ideal. There is sympathy between the two sets of leaders, but as yet not between the two races.

Strategically the Russian conception calls for strengthening their military forces to the greatest extent possible. The Chinese conception is not particularly concerned with foreign nations, and demands strength only in so far as to cope with Kuomintang China.

THE SITUATION IN EUROPE

CERMANY

The German people are in a position of waiting. They cannot determine their own fate. But they can influence it. The open offer of Russia calling for a unified Germany under a central government is considered a bid for Germany's support of Russia and Communism. It is improbable that Germany desires an alliance with Communist Russia, but it is very probable that she would accept it if no better offer was made to her. Thus far there has been no better offer.*

Unilateral Determinations. Action upon the Russian bid was reported as having been decided upon in August by certain Germans at Berlin and within the Russian occupied zone. Reportedly, the determination was to approach Russia for a definition of the frontier between Germany and its puppet state of Poland. The suggested frontier was: *Kolberg* (Rus)—*Belgard* (Rus)—*Neustettin* (Rus)—*Schneidemuehl* (Ger)—*Kreuz* (Ger)—*Zbaszyn* (Rus)—*Glogau* (Ger)—*Oder River—Neisse River to Czechoslovakia*. This line is 50 to 60 miles east of the present line extending from Stettin south past Frankfurt and Goerlitz, now assumed as the west boundary of Poland.

Whether Russia would recognize some body of Germans as representative and whether Russia would seek to negotiate unilaterally on a proposed frontier remains to be seen. It is certain that Poland would not agree. The frontier indicated would leave to Poland only about one half of Silesia, including the valuable coal mines and much of the heavy industrial area. But it would not leave all. In addition, Poland would lose Stettin, the first good port west of Gdynia. If Russia accepts the German offer a closed agreement may come.

Germany is hoping that Poland will become an insoluble problem to Russia. The Poles detest Russians as much or more than they do Germans. Before World War II Poland refused alliance offers from both Russia and Germany, not wanting to be tied up with either. Underground Poland is operating against Russia and has a high nuisance value. Germany hopes that Russia will become disgusted with the Poles, just as the Germans had been, and will agree to another partition of that unhappy state, and possible extermination of the Polish people.

Western Policy. In the meantime the Western Powers do not agree as to what to do with Germany.* The Potsdam agreement prescribed that Germany was to be organized into a single economic unit. Based upon that principle it was prescribed that that part of German industry created for war and in excess of peace time demands should be turned over to the victorious Allies as reparations.

Under that program the occupying Power in each of the four zones has removed many German plants, which according to the Potsdam agreement was to speed up recovery and strengthen

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*This account written just prior to Secretary Byrnes' policy statement at Stuttgart on 6 September.

devastated Allied countries. These plants have been distributed to include Allies other than the occupying states, for example Belgium and Holland.

It is claimed that the removal of German plants was to be limited to surplus war plants and was not to include plants needed by Germany for its own economic survival. This brings up the question of what plants are surplus and which are not. It is evident that if each zine is considered as a separate economic unit, it must have every kind of plant. If on the other hand Germany is to be considered as a single economic unit the number of plants left to Germany can be materially reduced.

Pending agreement between the occupying Powers, each zone commander is obliged to consider his zone by itself. This results in leaving to Germany a large number of plants that might enable a renuited Germany to have a substantial industrial surplus available for production of war materiel.

Of course Germany may never be reunited. The occupying Powers believe that if that should occur Germany would find a way to reestablish herself as a Power, and might enter World War III against any one of them. The Russians seem willing to take this chance, believing chat they can bring Germany into their orbit; the Western Powers are not willing to take this chance.

The immediate result is that each of the occupying Powers is tending to organize its share of Germany as a more or less permanently occupied zone, to be incorporated into its own military and economic system.

While not the most desirable, such a solution might be satisfactory to France as it would ensure her control of the valuable Saar industrial and mining area, and other valuable sectors. It might be satisfactory to Great Britain which would thus maintain control of the important Ruhr area, which is the greatest and best equipped mining and industrial part of Europe. It might even satisfy Russia, which has in its zone valuable agricultural areas, the extensive Silesian industrial and mining district, and the industrial districts of Saxony and Thuringia. This would not be as good as control of all of Germany but it would be control of a substantial part of it.

The disagreement among the Powers on Germany has been increased by numerous reports that Russia is maintaining extensive war industries within its zone. The Western Powers claim that it was understood at Potsdam that Germany was to be permanently disarmed and its war plants either moved to Allied countries or else destroyed. The operation of war plants within Germany, although for the benefit of the occupying Power, is considered a violation of the agreement.

Mention is made later herein of the Russian operation of the German experimental Proving Grounds east of Stettin for testing guided missiles. It is understood that this Proving Ground is largely operated by German personnel who are responsible for Russian instruction pamphlets and bulletins which have come to note at Berlin.

Reports from Saxony indicate that German plants are working on heavy orders for both land and sea mines; on armor plate, presumably for tanks or warships; on airplane engines; on electrical devices, including electronic equipment, searchlights, etc. Advertisements have been noted in German papers notifying designated German personnel including air pilots and various kinds of technical men to report for duty with the zone authorities.

Some German POWs have returned from slave labor in Russia. Their estimated number is 120,000 out of about 4,000,000. The greater part of the released men were unfit for work; the others had completed a course on Communism and were returned for political jobs under the Russian authorities Some of these POWs after recovery were seized and returned to Russia for another tour of slave duty. These POWs reported that the POW ration was 20 ounces of black bread and a thin soup. That kind of diet resulted in malnutrition diseases and heavy death lists. This does not agree with the Moscow radio which from time to time claims that the POWs have only light work, receive good food, and have free entertainments.

German reports claim that about 1,000 youths are seized monthly by the Russians and taken to Russia for a forced course in Communism. The Russian radio has acknowledged seizing youths without giving the number, but claimed that they had been arrested for subversive activities.

Considering all available reports, it appears that Russian occupied Germany is already partly integrated into the Russian military and economic sphere.

The United States benefits the least from a policy of each Power holding on to its zone in Germany. The American occupied zone does not contain any particularly valuable agricultural or industrial areas. It is a liability rather than an asset, in that the United States must import food, which might not be the case if food from the Russian zone, which normally raises a surplus, was available. Besides the United States has no desire permanently to occupy a European dependency. From a military point of view the American zone is encircled by countries not under American control. Best connection with America is through the base established at Bremen within the British zone. If the American and British zones are considered as one, the Bremen base is at the north extremity, 240 miles from the Russian advanced line, and 250 to 450 miles from where the United States troops are posted.

RUSSIA (Including Associated States)

INTERNAL CONDITIONS

Private correspondence from inside Russia disclosed that in July demobilized soldiers were receiving only two days' terminal leave, at least at the places from which the letters came. Upon completion of this very short leave, the men were redeployed with the Civil Authorities for duty under the

provisions of the current 5-Year Plan. It was stated that there was discontent at the limited time that men long absent from their homes were allowed to spend with their families.

Food and Clothing. According to Jewish reports based upon statements of refugees who escaped from Russia and which were published in *Vorwaerts* in New York, the Jews were not specially oppressed but fled on account of the extreme poverty and widespread lack of food and clothing. This condition had led to a general system of petty thieving, in which small articles such as thread and needles, clothing, food, and household articles were constantly disappearing.

British reports indicate that the harvest this year in Russia is below standard in the Ukraine and just about standard in the Volga region. This is a normal condition in Russia on an average of two years out of five, but it makes a difficult situation coming right after the war years during which surpluses could not be accumulated. It forces a reduce ration upon the population at the very time when it should be improved.

Industry. It is now known that former Russian reports claiming that at the time of the German invasion in 1941 they had succeeded in moving the greater part of their industrial establishments to the Ural Mountain area and Siberia were sheer propaganda. Only some of the lighter tools were removed, and much of the heavy tool industries fell unharmed into German hands. This the Germans thoroughly destroyed when they were driven out of Russia.

New industries were organized in the Ural region, but they were equipped with Lease-Lend machines furnished by the United States and the British Empire. Since the Lease-Lend has stopped the efficiency of the new works has deteriorated. At the same time it has been found difficult to restore the industrial plants which were recovered in a generally burnt-out condition from the German occupation.

As a result the Russian army has had to depend upon supplies accumulated during the war and which were not expended.

Reports from Sweden based upon statements of refugees who escaped from the Baltic States are that the liquidation of Letts, Estonians and Lithuanians has progressed to the extent that only an estimated one third of the original civil population remains. The places of the disappeared people are being taken by Russians who are being moved in and settled upon the land.

Railroads. It now appears that the permission given to Romania about May last to change back their railroad guage from the Russian wide gauge to normal gauge was because this would release a certain amount of rolling stock to Russia. A considerable quantity of standard gauge equipment was captured in Germany and other occupied countries. It has been found impracticable with existing facilities to transform this to the wide Russian gauge. Consequently earlier ideas to have railroads within the Russian lines of the same gauge have been abandoned at least for a time, in order to utilize all possible materiel on hand. Had it been possible to provide a uniform gauge it would have been a military factor of value, but industrial conditions prevent this. It is now necessary for military trains to be unloaded at the frontier of occupied territories and then reloaded into standard gauge trains for occupied areas.

Plan's Progress. Information as to the progress of the current 5-Year Plan is limited to isolated items. Most of these relate to removal of Russian officials who have failed to carry out their part of the Plan. For example in housing, only 3% of the prescribed program was carried out. The officials claimed to be responsible have been punished, but the reason why the Plan failed was not explained. The Russian officials in the Crimea have been relieved again for alleged incompetence. This area is occupied by new settlers who replaced the original inhabitants who welcomed the Germans when they arrived and all of whom—about a million, it is claimed—have already been liquidated.

In general the meager information available indicates that the 5-Year Plan is not working satisfactorily. For this reason Russia desires to import as much goods as she can arrange for. Even quantities amounting to $100,000,000 which for the United States would be a negligible sum are important to Russia. For that reason a loan for that amount has been obtained from Sweden, which has excellent industrial plants, and a reparation claim for an equal amount has been made against Italy and has been most strongly insisted upon.

The General Impression. The items noted are only fragmentary They seem to be representative as no evidence to the contrary has been noted. The general impression is that the internal conditions within Russia have deteriorated and are on the down grade, due to dissatisfaction of the people and the government's inability to produce essential products in suitable quantities.

THE PRESENT RUSSIAN POLICY

The internal conditions are such that the foreign policy of Russia should be directed to avoiding a major war. There is considerable evidence that this is exactly what Russia desires at this time, notwithstanding continuing provocation of the Western Powers which has appeared quite unnecessary and often unreasonable to Americans. An examination of Russian provocative moves brings out the following facts.

The basic Russian policy seems to remain unchanged from that expressed by Premier Stalin in his speech of 9 February last. On that occasion he reaffirmed the Marxist conviction that the capitalist system conceals within itself the elements of crisis and war, which from time to time leads to attempts to change the relative position of capitalist countries in their favor by means of armed force.

Upon that theory[1] he announced that Russia, allegedly menaced by the "capitalist" countries, needed to establish a greatly extended industrial system to be

[1]The error in this theory is in assuming that the Western Powers are capitalist states and that Russia is not. The Western Powers do use capital, but it is free among them. Russia also uses capital but it is a government monopoly and not free. The nations which do not employ capital are those which are poor and sub-standard. China might be included in this class. Ethiopia belongs to it, and so do the Eskimos and similar poor races.

completed in three successive 5-Year Plans. A great military force was to be established and maintained.

Enough time has elapsed to show that Russia's capacity to complete the first 5-Year Plan is questionable. The dissatisfaction of at least part of the people raises doubt as to the reliability of the troops, or some of them, should war come. It has become necessary to strengthen Russia's military position.

The most important step was the bid made at the Paris Conference on 11 July by Foreign Minister Molotov when he recommended that Germany be organized into a practically free industrial state. The inference placed upon that was that Russia hoped to secure Germany as an ally and to utilize her extensive industrial plants to make up Russian deficiencies. Being an obvious step there is little likelihood that the Western Powers will permit a strong German state to be set up, regardless of whether or not it is officially "unarmed."

Be this as it may, Russia is in a position to absorb a substantial slice of Germany and in time may be able to orgazine it as a major military asset. For that mission some say that the consolidated Socialist-Communist Party has been organized in Russian occupied Germany.

As far as this writer has noted, there never has been any Russian pronouncement against Naziism. German Naziism and Russian Communism are startlingly similar. They are not inconsistent with each other. Between 1939 and 1941 Russia had a lot of nice things to say about Naziism. After war arose between Russia and Germany, Marshal Stalin in his speeches said he was friendly to the German people. What Russia was fighting, and what Russian propaganda was directed against, was *Hitlerite* Germany. *Nazi* Germany was never mentioned. Now that Hitler has eliminated himself and *Hitlerite* staffs have been destroyed, there is nothing to prevent a Nazi becoming a Communist and working with Russia. The invitation to do so is out and progress has been made. Ultimate success would greatly increase Russian military strength.

There has been an increasing amount of criticism of the Western Powers in the controlled Russian press. This seems to be largely for home consumption, in an effort to make the people believe that Russia is seriously threatened by an Anglo-American combination determined to destroy the Russian people, Russian interests and Communism. For example, articles appear periodically charging that the United States has a double motive in seeking to dominate China—to destroy Communism and at the same time to secure bases from which to attack Asiatic Russia. In spite of that line of talk, Russia has been careful not to give any assistance known of to the Chinese Communists which might lead to a clash between Americans and Russians in the Far East. Similarly Russia has made objections to our administration in Japan, but has refrained from acts. By constantly representing alleged dangers to Russia, an effort is made to convince the home front that existing low standards of life are the consequence of the policies of the Western Powers, rather than due to short-comings of the Moscow Government or the Communist system.

Time is much needed by Russia to establish herself under post-war conditions. Whether the Polit Bureau, which directs Russian policies, really believes the Western Powers may attack Russia is uncertain. It may be so, or the present Russian policy may be exclusively directed to quiet public criticism at home. Perhaps the Polit Bureau is divided.

RUSSIA'S DEMANDS ON TURKEY

Early in August Russia delivered a note to Turkey demanding that the Istanbul Straits be closed to all warships other than those of Black Sea Powers to whom they were to be always open, and that the Straits be defended by joint Russian and Turkish forces.

Passage of ships through the Istanbul Straits is now regulated by the Montreux Convention of 20 July 1936. This gave Turkey the right to fortify the Straits which had been previously forbidden by the Treaty of Lausanne of 24 July 1923. Turkey immediately took advantage of the permission and fortified the Straits. During World War II she closed them to warships of all belligerents.

If granted the Russian demands would permit its warships to sally out into the Mediaterranean at will during war and to withdraw whenever desirable. Her fortification of the Strait would ensure that no outside Power could send its ships into the Black Sea which would become for military purposes a Russian inland lake of refuge.

Turkey does not object to passage of warships as may be agreed upon by the Powers, but she does not desire to grant Russia garrisons along the Straits. However, Turkey is not in a position to wage war alone against Russia. Turkey has large ground forces, but they are divided between an east and west frontier with inferior lines of communication between them. Either or both of these frontiers are open to attack by Russia, who in both cases has superior lines of communication to the frontier. All of Turkey's Black Sea coast is open to Russian amphibious attacks as Turkey has no navy except a few insignificant vessels. Neither has she an air force worth mentioning, nor heavy artillery or armor other than a few models.

Turkey has a Military Pact with Great Britain and France made in October, 1939. This has been secret and it is not known whether or not it provides for Turkey's receiving aid from those two nations in case of war with Russia.

On 19 August, the United States advised Russia by letter that it could not consent to garrisons other than Turkish along the Istanbul Straits and that any revision of the Montreux Convention should be directed through the United Nations. Great Britain has sent a similar letter. This leaves this important strategical problem unsettled, at date of writing, with Turkey practically assured that she will be supported by the Americans and British in holding on to the Straits.

RUSSIAN SECRET WEAPONS

Russian announcements have been made that she will have atomic bombs for experimental use ready by early summer 1947. This may be propaganda,

but it may be true.

Numerous reports come from Sweden that long range missiles frequently pass overhead. The first noted was on 24 May. Since then they have increased in number with the heaviest fire on 12 August, when the missiles were fired by volleys. Similar missiles have been occasionally observed over Denmark, Norway and Finland.

No reliable information is at hand regarding Russian fire over Scandinavian countries. It seems certain that Russia has reopened the former German experimental station for guided missiles and long range rocket fire which had been established near Stettin. Whether or not any or all of the German scientists who formerly operated the station are now in Russian employ is unknown.

A Russian circular issued at Berlin charged that Germany had plans for a rocket having a range of 2,400 miles. Assumptions have been made that this is what the Russians are using. The general direction of fire from the Stettin area points towards Novaya Zemlya. The range to those islands in round numbers varies from 2,400 to 2,800 miles. It is possible that fire towards that generally desolate waste has been undertaken. The Russian circular claims that the rocket levels off at an elevation of 70,000 feet, at which altitude the velocity is said to be 1¼ miles per second.

Since Sweden reports noting volleys there must be a number of launching devices on hand. Sweden observers have also reported seeing missiles turn around, while others were noted coming southwards. This indicates guided missiles.

The general impression is that the fire is experimental.

RUSSIAN CONTROLLED BALKAN STATES

In Yugoslavia an active campaign is under way against "Fascists," a term which seems to include anybody not liked by the government of Marshal Tito. The Orthodox Church has acknowledged the supremacy of the Russian Metropolitan; meanwhile, other churches are being destroyed, and their ministers and priests killed or otherwise liquidated. The teaching of religion is prohibited.

Yugoslavia ill will against the United States is increasing. It is not exactly clear why this should be so. The United States has done much for Yugoslavia and the UNRRA has delivered large quantities of food and supplies, which is about 75% American. Nevertheless there is no apparent gratitude for aid given.

"Incidents" along the frontier between Yugoslavia and American occupied Italy in the Trieste area have increased in number and severity, including border incidents in the Trieste area and the shooting down of American planes allegedly over Yugoslavia territory without authority and the confining of passengers. Hostile acts, and made apparently with Marshal Tito's approval, the United States reacted vigorously by handing Yugoslavia an ultimatum type of note demanding that the crews and passengers be turned over to the Allied military authorities across the Yugoslav border within 48 hours of the receipt of the message. The United States reserved the right to take further action depending upon the evidence in this case. Yugoslavia complied with the American demand by releasing the personnel of the downed plane as directed, less 1 passenger held wounded in hospital.

In Bulgaria it is reported that Russia is consolidating her position by the usual liquidation prior to elections of personnel known or suspected of opposing Russian policies. According to the Moscow radio this has included the purging of 1,742 officers from the Bulgar Army and an unstated number of civilian officials. This operation was to be completed by the end of August, just prior to the election on 8 September, to determine whether the kingdom is to be continued or whether a Soviet state should replace it.

A Russian military conference was held in Bulgaria on 17 August. It was to be a top secret, but it is reported that the British discovered its mission. This was to plan for changing a minor insurrection now in progress in north Greece into a major one with the object of organizing Macedonia into a separate state, ultimately to fall within the Russian orbit. The dissident element in north Greece has been receiving arms and ammunition from Yugoslavia. This is said to be materiel of German or Italian origin, which is being replaced with Russian equipment to insure uniform military materiel throughout the Russian zone, including Yugoslavia.

"ALL OVER THE WORLD"

A French summary of off-the-record remarks by certain members of the the large Russian delegation at the Paris Peace Conference — no names mentioned — charges that some Russians favor driving the United States and the British Empire out of continental Europe. A United States of Europe (naturally of Soviet states) would then be organized headed by Russia. This group believes that a major war would not be necessary, arguing that never again would the United States send a large military force into Europe, and that Great Britain would be helpless without the United States. Another possibility is that complete withdrawal of American forces might be accomplished within a reasonably short time by disgusting the Americans with the European situation by multiplying disagreeable "incidents." If these charges be true, such "incidents" might be expected to increase.

France is reported to have told these Russians that their theory is not only unsound but also highly dangerous, and that they cannot count on the Americans and British accepting without a contest the absorption of all of Europe with its huge population and resources into a Russian dominated whole.

Confirmation of these views also comes from refugees from Ukraine. Their names are withheld for obvious reasons but a comprehensive report was published by the Catholic religious press on 18 August. Two of the refugees who were Catholic priests state that the Russian slogan at this time is: "Soviets all over the world, or there will be no Soviets at all."

CHINA

THE POLITICAL SITUATION

There has been no change in the relationship between the American supported Kuomintang Party and the Communists. The war between them continues and is generally on the increase. Several developments warrant reporting.

Mme. Sun Yat-sen, the estranged sister of Mme. Chiang Kai-shek and the widow of Sun Yat-sen, founder of the Chinese Republic, has been in retirement for some time. She was educated in the United States, is a member of the Methodist Church, lived in Hong Kong prior to World War II and, after the death of her distinguished husband in 1923, wrote numerous political works. She used to be very sympathetic to Soviet Russia.

Late in July, Mme. Sun Yat-sen broke her retirement with a communique pleading that the United States should withdraw its military forces from China and make no further loans to a government which she states is not truly representative. In her opinion intervention by the United States in favor of the Kuomintang would incite war between the United States and Russia. If the United States stops intervening she predicted that the civil war in China would cease and peace be brought about. She proposed a coalition government to be formed by a free election which she believed could be had provided the civil war is stopped.

Mme. Sun's plea was bolstered by another signed by 56 prominent Chinese leaders who also appealed to the United States Government to cease aiding the Kuomintang, claimed by them to be reactionary, dictatorial and really fascist. It is charged that this unrepresentative government imprisons critics of its activities, and suppresses freedom of the press.

Due to her American education and her own position and former eminent political activities, Mme. Sun's pronouncement is bound to have a serious effect. As has been pointed out in this column in prior months, the Kuomintang is a dictatorship and is generally considered inefficient and corrupt. Communism does not appeal to the Chinese. Since China has no capitalists throughout the greater part of its territory and no religion, Communist appeals to slaughter capitalists and suppress religions make no sense in China. The people have accepted Communist rule in part, however, on account of its general reputation for honesty and for certain social improvements, not because they agree with Marxist theories.

Statements by missionaries recently returned from Shantung claim that the Kuomintang government will fall if the United States does stop supplying it with war materiel and funds. The missionaries are not in favor of the Communists and their report does not apply to other provinces.

The new American ambassador to China, Dr. John L. Stuart, and special ambassador, General Marshall, issued a joint statement on 10 August which included the following regarding the long efforts of the United States to mediate between the warring Chinese:

"The desire for peaceful solution to political problems appears practically unanimous on the part of the people. The economic situation demands a prompt solution if a disastrous collapse is to be avoided. Fighting, daily growing more widespread, threatens to engulf the country and pass beyond the control of those responsible.

"Both Government and Communist leaders are anxious to put an end to the fighting, but there are certain issues concerned in the immediate settlements involved, regarding which agreement has not been found.

"It appears impossible for the two parties to reach a settlement of these issues which would permit a general order to be issued for complete cessation of hostilities in all of China."

The foregoing statement is an excellent summary of the situation. The American endeavors, ever since the war with Japan started, to compose the differences leading to civil war in China have borne no fruit.

On 14 August, Generalissimo Chiang Kai-shek issued a proclamation in which he acknowledged the bad economic condition in China. He represented this as being caused exclusively by Communist control of most of the railroads. He charged that the Communists stopped food supplies from going from their territories to his, thereby causing serious shortages and famine in some places. Further, the Communists collected taxes which otherwise he would have received and thereby severely handicapped the Kuomintang Government.

He proposed the convening of a National Assembly on 12 November 1946 without stating whether or not this would be elected or appointed. He called upon the Communists to unblock the railroads, incorporate their troops under his orders, stop collecting taxes etc. Provided they agreed to do this they would be given representation in the proposed National Assembly.

Substantially the same as former offers by the Kuomintang in that it would practically require unconditional surrender under a promise of a minority representation in a proposed National Assembly, the Communists rejected the offer on the grounds that they would lose everything they had fought for for twenty years. Their rejection took the form of a General Order, on 18 August, directing the mobilization of all possible forces everywhere in the areas controlled by them, to pass to the offensive as soon as possible to shatter the Kuomintang forces.

Commencing on 15 August, Communist Headquarters made an uncomplimentary attack against General Marshall. This was the first open sign of hostility by the Communists to the United States. Previously Communist opposition to the United States had been limited to propaganda for withdrawal of American forces from China.

OPERATIONS IN CENTRAL CHINA

Extensive fighting has occurred in the area between the Yangtze River on the south and a line drawn east and west through the north part of Shantung on the north. This area is about 700 miles wide and 450 miles deep from north to south.

In mid-July-a Kuomintang offensive in Hupeh (region north of Hankow) was just about completed. It announced the annihilation of important Communist forces who had maintained blocks across the Peiping & Hankow RR. What really happened appears to be that the superior Kuomintang forces did recover the railroad as far north as the Yellow River. However, the Communists apparently escaped with losses. The greater part of their force (about three divisions) went west to Shensi, where they established themselves on a line from Lonan to Shantung. A smaller force (about one division) went east, and during August was identified in line not very far from Nanking. Traveling over country devoid of roads and with no motor transportation, the Communists who went west made 400 miles in 14 consecutive days. This gives an idea of the mobility of Chinese troops who were nearly all infantry. The Kuomintang troops followed the Communists to the west and established contact along their new line of resistance, but no attack was made. According to their own reports, the Kuomintang had 13 armies in this campaign, of which 6 armies (totaling 25 divisions) were based on Hankow and 7 armies (totaling 21 divisions) were based on the Yellow River. This gives 46 divisions against 4 enemy divisions, all of which appear to have made good their retreat.

At the same time that the foregoing campaign was closing, a new one was initiated in the area just north and northeast of Nanking. Here the Communist Fourth Army, estimated at 10 divisions, held a line just north of the Yangtze River from opposite Nanking to opposite Shanghai. Main force was in the area Luho-Kiangtu—Jukao—Nantung, a 100 mile front. The Kuomintang claimed a three fold superiority, but this is considered doubtful. No foreign correspondent was permitted to witness the operations, and the identifications noted total less than 12 divisions. The Communist force was also probably exaggerated, and may not have exceeded 5 divisions.

The Kuomintang commenced operations on 21 July by simultaneously attacking all four cities mentioned above. After two weeks of fighting the line appeared to be Chuyi (Com)—Tienchang (Com)—Kiangtu (Kuo)—Jukao (Kuo)—Nantung (?). The terrain in this part of China is flat, low and cut up by innumerable canals, lakes and streams. Part of the area at this season is normally flooded, and much of it can be flooded at will by breaking levees.

A secondary Kuomintang operation was undertaken in conjunction with the one north of the Yangtze River which was based on Tungshan (Suchow on some maps) at the south edge of Shansung. The Kuomintang claimed 5 armies in this area; the Communist Intelligence reports state that there were 10 armies. Only 3 armies have been identified, of which the 18th is one of those completely trained and equipped by the United States. Just as north of the Yangtze River the Kuomintang attacked several objectives at the same time, so from Tungshan they simultaneously attacked outwards on a wide are extending from the east around to the south and southwest. This of course was on divergent lines resulting in a weakening of the front through dispersion as the advance continued

By 5 August, the advance had gained about 40 to 50 miles. On the 10th, a Communist counter-offensive was launched headed due south on the front Kaifeng—Hwangchow or on the right rear of the Kuomintang forces based on Tungshan. The Kuomintang 18th Army appears to have been badly mauled, while the other two armies—the 7th and 28th—were too far away to help.

This Communist offensive was strategically sound. If continued southward it would cut off the Kuomintang forces operating in the Tungshan-Nanking area from those along the Peiping and Hankow RR. However, this Communist offensive apparently stopped after capturing the Lung Hai RR sector between Kaifeng and Hwangchow, both inclusive.

Still another Kuomintang offensive started at the end of July from Tsingtao headed west along the railroad to Tsinan. This force included the 54th Army which had arrived by sea and the 73rd which had been flown by air from the Tungshan area just before the offensive from that area commenced. The Communists have managed to keep between the Kuomintang troops from Tsingtao, those at Tungshan, and the others along the Yangtze River. None of these Kuomintang forces has achieved any victories either jointly or separately, although advances across country have been made. Due to the vastness of China, the inferior enemy has so far been able to make a getaway without serious loss. Net result is that the general situation in central China has not been materially changed by a month of war.

OPERATIONS IN NORTH CHINA

No large scale operations such as occurred in the central area have been undertaken. Only isolated and widely separated activities have been reported.

In Manchuria no fighting has been reported. The Kuomintang with 6 American equipped armies or 18 divisions holds the railroad line from Hulutao northward to the Sungari River. The Communists hold the remainder of Manchuria. There has been cooperation between the warring Chinese factions in evacuation of Japanese civilians. This operation is American directed, with the Japanese aiding efficiently. Chinese are looking on. Under Japanese direction on an average of 10,000 Japs per day are being evacuated through Hulutao. By 1 August a total of well over 300,000 had left for Japan. It was estimated that about a million Japanese remained and that these would be evacuated by November.

The Kuomintang holds the Peiping area with 2 armies. Minor fighting is reported in that vicinity. These two Chinese armies have only 2 divisions each, and are organized as airborne troops. As far as known, they have no transport planes and are operating as infantry, using American equipment. Each army has at least 8 batteries, and some armor.

There is an isolated Kuomintang force west of Peiping at Tatung. This is under siege by a superior Communist force. The UNRRA has flown in medical stores to aid the Kuomintang, but not other supplies. This is the first instance

of direct aid to a combat force given under American auspices.

Minor operations have occurred along the railroad in south Shansi between Linfen on the north and Chiehsien on the south—about a 100-mile front.

COMMENTS

On paper the Kuomintang has a large superiority of troops. It seems to have a crushing superiority in materiel. In the air it has no rival, and Kuomintang planes fly where they will and bomb as desired. The Communists have no antiaircraft defenses. Tactically, however, the Kuomintang planes have thus far accomplished just about nothing.

In general, Kuomintang leadership appears poor. Dispersion of troops and operations on divergent lines are a rule. Offensives are not carried through. After a few days of fighting a halt is made. This may be partly imposed through unsuitable lines of communication and deficient supply services.

Russian reports published in Moscow allege that some Kuomintang troops have refused to fight. The experience of past engagements where American observers were present — as along the Burma Road — is that Chinese troops care little about organizations other than their own. This has led to either imperfect cooperation or no cooperation.

Communists do not appear to be able to defeat the Kuomintang. They can escape their own destruction and, with the help of the people, can maintain themselves in all places not garrisoned by the Kuomintang.

Chinese hostility towards the United States is increasing. It has been manifested in propaganda against American troops, and in the north by numerous incidents involving attacks on our Marines.

Chinese policy for over a century has been not to fight foreign invasions, but rather to invite other foreigners to free their country for them. No gratitude has been shown at any time for aid given by allies. As soon as the emergency has passed, hostility toward friends who came to their aid when in need quickly returns.

Peace—that is a relative peace—was maintained in China for some 20 years prior to the Revolution of 1919 by the Manchu dynasty supported by Manchu governors and troops. The Manchus were rated as foreigners, coming from behind the Great Wall which was built expressly for the purpose of keeping them out of China.

With the disappearance of the Manchus, China soon degenerated into a country where corruption and civil war became normal. If the United States withdraws, a return to that condition on a large scale appears likely, as predicted by the joint statement of the two experienced American ambassadors. The other course of action available appears to be to occupy the key points in China as Japan did, and enforce a reasonable amount of peace and order. That line of action is exactly what the war was supposed to be directed against, so it is unlikely that it will be undertaken in the near future.

SOUTHEAST ASIA

Burma. Sir Reginald Dorman-Smith, who had been Governor before the war and was re-appointed after the war to succeed himself, has been relieved. He seems to have been much disliked by the natives, and his replacement by a more congenial Governor may tend to smooth the difficulties of the British authorities. The new governor is Major General Hubert E. Rance, who was the civil affairs officer in Burma during the war.

Indo-China. On 31 July, Chinese troops crossed the border into Tonkin, and advanced southwards. By 4 August, they had arrived at Bacninh which is only 19 miles from Hanoi, the capital, and 70 miles from Langston, the border town where the Chinese entered.

The Chinese joined a band of Viet Nam (Annamite) troops. The combined force attacked a French motorized convoy at Bacninh en route to Langson, and inflicted considerable losses in a 9-hour engagement. There is no explanation as to how it happened that the French Intelligence service failed to know that hostile forces had passed Langson. The Chinese Government later announced that their troops crossed into Indo-China, chasing about 800 Communists, and followed the latter in the absence of any French troops. There was no explanation as to why they attacked the French. The French lost 12 killed and 41 wounded.

On 4 August representatives of Cochin-China, Cambodia and Laos met at Dalat and agreed to accept autonomy under French supervision. The Viet Nam which controls the north half of Annam and Tonkin has not agreed to this program.

Minor sabotage against the French continues in Saigon and other places.

Netherlands Indies. On 21 July the United States sold surplus war materiel valued at $100,000,000 to the Dutch authorities. The Dutch have 7 years before payment need to be made, with interest at 2⅜% per annum. Part of the supplies are being shipped from Australia and included trucks, ammunition, etc.

There has been no agreement between the Dutch and the Java Government. The Dutch continue to hold Batavia and 4 other points all virtually under siege. Military activities have been limited to patrol actions.

On 25 July, the Dutch Governor General held a conference on Celebes with representatives from islands, less Sumatra and Java. It was agreed to establish a United States of Indonesia within the Dutch Empire. Java and Sumatra termed this a Quisling Conference. They demand independence, not subservience to Holland.

With time, the Dutch are becoming stronger. More troops have arrived and more war materiel. Although they have working governments, the natives of Java and Sumatra are blocked by air and sea and can not receive war materiel. They have a considerable quantity on hand, mostly taken from the Japanese, but can not replace whatever is expended. Their ability to maintain a war is limited. Their large numbers—about 60 millions—and the tropical country might make it possible to maintain a guerrilla warfare for many years and make the islands completely unproductive to the Dutch. For this reason, and for purposes of prestige, the Dutch desire a peaceful settlement.

The Javanese hold about 35,000 POWs (Europeans or part Europeans) which is a factor in the situation. Most of the Japanese troops have been evacuated. A labor detachment remains. The British are withdrawing rapidly.

Distinct Breed?

Dear Editor:

I agree thoroughly with the sentiments expressed in the editorial, *A Left-Over Army?* in the September issue.

I do not know where the impetus is to come from or in what form it is to be expressed but it certainly seems to me that we must have some outward symbol, association, useful house organ, or similar flag staff around which to rally the *ground army* as an entity. And in so assembling the ground army we must not forget that the combat support elements of the services are and must always be an integral part of the ground army.

I suggest to you that it would be singularly appropriate for the field artillery to begin to beat the drum now and then with respect to the essentiality of these service support elements. The reason for its being so appropriate is the fact that the artillery, in battle, requires and receives more service and support, particularly from ordnance troops, than most other branches.

I am particularly concerned about this whole matter because of the quite apparent tendency to confuse service troops of the Ground Forces with service troops of the Chiefs of Services, both as to proper missions and training policy. If this policy is extended the ground army may find that it is dependent in battle upon services with those tactics, technique, organization, and *indoctrination* they have had little to do. Good service support in battle is, to an enormous extent, dependent upon the *state of mind* of the service support troops. If they have the combat viewpoint they can contribute to success in battle out of all proportion to the number of men required for service support. If, on the other hand, they are indoctrinated with the so-called "communication zone" complex they become a profound handicap in many ways.

It has been my experience that the difference in state of mind largely depends upon the conditions and supervision encountered in training and the degree to which combat arms have adopted the service units as their own.

In a word, I believe that with the present and future highly technical army it is essential that the combat support elements be recognized as a distinct breed from communication zone and zone of the interior troops and be integrated into the ground army.

COL. J. B. MEDARIS, Ord

Fort Monroe, Va.

▼—Additional discussion of this very important subject, either in the form of articles or letters, is most welcome.—Ed.

Heed, Read, and Study

Dear Editor:

Two items in the September issue range a bell with me:

1. The photo of armored artillery blasting away at night which illustrated Colonel Brown's *Spearhead Artillery*—truly a flash observer's picnic!

2. Colonel Ralph M. Osborne's remark from "B-Bag" Land: "In my present position of research and development in reverse in Germany, I have found little in existence of *true future value to Field Artillery* since the experts have performed a good job and knew or expected by war's end exactly what the Germans had."

Just on the bare chance that the next war won't be fully automatic push button, I hope that the experts have found a way to adapt the German "Salz Vorlage" or salt increment to American artillery so that such pictures as the one referred to above may become as obsolete as the muzzle loader. I frequently thank Saint Barbara that the Germans took so little advantage of the flash locations we provided for them with our magnificent nocturnal illuminations.

I never have been able to figure out why our Army couldn't develop such a salt. If the stuff was a German secret, it was an ill kept one. The Germans had it in World War I and we found it by the barrel in Normandy. The increment was described and its ballistic effect tabulated in most German firing tables. Nevertheless one of our corps artillery S-2's created a minor sensation in artillery intelligence and observation battalion circles when he "discovered" the salt, and found that it reduced the illumination of an FH 10.5 to the magnitude of a pistol flash. At last we realized why our own flash observers found so few locations.

To me, surprise at this "discovery" indicates that:

1. We paid too little heed to World War I technical artillery intelligence reports.

2. We didn't study captured German firing tables very carefully.

3. We apparently failed to read Arnold Zweig's very fine novel, *Education Before Verdun* (Viking Press, 1936), in which the author describes (p. 139) the discouraged moan of a German battery executive before Verdun (1916) complaining of the low morale of his cannoneers:

"Lieutenant Schanz, . . . in a burst of confidence told him how his men were getting into all sorts of bad habits, partly out of boredom; . . . they no longer used a charge of salt to dim the gun flashes, because they did not want to clean the dirty barrels."

I have been told that we can make flashless powder or smokeless powder, but not both. Nevertheless, I hope that Colonel Osborne's Field Information Agency, Technical, is following up the humble salt as well as "the items of value ten years hence . . . which are still in the scientists' or technicians' notebooks."

MAJOR WALDEMAR A. SOLF

Arlington, Va.

FDR's Speeches

NOTHING TO FEAR. The Selected Addresses of Franklin D. Roosevelt, 1932-1945. Edited by B. D. Zevin. 470 pp. Illustrated. Houghton-Mifflin. $4.00.

Franklin Delano Roosevelt is assured of an outstanding place in the history of our country. His precedent-shattering tenure of office spanned several of our nation's greatest crises. Aside from any personal capabilities and accomplishments, this alone would insure him an important position in our annals. There are certain to be innumerable biographies written about him but none will capture his personality so completely as this one written in the words of his speeches.

Mr. Roosevelt first took office when the country was in the depths of a depression. He shattered his first precedent and electrified the nation by delivering his acceptance speech at the Democratic convention the night following his nomination. In this speech, he keynoted the program which swept him into office with these words, "I pledge you, I pledge myself, to a new deal for the American people."

This log of his speeches outlines the trend of his administration. His new deal consisted of many temporary recovery measures as well as many lasting social reforms. The best remembered of the temporary recovery measures were the AAA, the PWA and the NRA, the latter getting the "unconstitutional" axe from the Supreme Court to bring it to an end. Branded radical by many at the time, the bulk of his reforms have since become an accepted part of our American way of government. The term "new deal" was well taken indeed, as no other Administration in our history chartered so many social changes.

Mr. Roosevelt had supreme confidence in himself and the country, and kept within his grasp the final decisions on all matters of national importance. This led critics to charge that he was reluctant to delegate responsibility and authority to his subordinates. However, his integrity and devotion to duty were certainly above reproach. No soldier or civilian gave more unstintingly of his health and energy than President Roosevelt, and the complexities of his many responsibilities undoubtedly shortened his life.

Mr. Roosevelt brought to this country world stature that heretofore was lacking. For many years, the United States has been physically the most powerful nation in the world. But for want of imposing leadership, we too often lost out at the parley tables. Mr. Roosevelt supplied the necessary prestige and stature to place us at the top of the world leaders.

Few men in history have mastered the art of public speaking as well as Mr. Roosevelt. His delivery was superb. Listening to his addresses on the radio always brought to mind the oft-seen advertisement, "His Master's Voice." Friend and foe alike could not resist the overpowering eloquence which he so artfully handled.

His famous "Fireside Chats" brought about a personal popularity enjoyed by few in public life. He was capable of imparting his supreme confidence to every listener. His talks were wide in scope and simple in delivery.

The phraseology of his speeches has been unexcelled. Many of the phrases which he coined have become a part of our national language—"We have nothing to fear but fear itself"; "I would dedicate this country to the policy of the good neighbor"; "A date that will live in infamy"; "We must be the great arsenal of democracy"; "A world founded on the four essential human freedoms"; "We seek a peace—an enduring peace."

Since his death, we have been faced with many problems. Not the least of which is that of bringing about the peace for which he so valiantly worked. His remarks concerning the peace on his return from Yalta bear repeating.

"The structure of world peace cannot be the work of one man, or one party or one nation. It cannot be an American peace, or a British peace, or a Russian or a French or a Chinese peace. It cannot be a peace of large nations—or small nations. It must be a peace which rests on the cooperative efforts of the whole world." R. F. C.

First Effort

END OVER END. By Nelson Gidding. 298 pages. The Viking Press. $2.50.

By John R. Cuneo

As usual in first novels, this is—at least in outline—autobiographical. Like the hero of his story, the author was a navigator of a B-26 which was shot down north of Rome. This is an account of the experiences and thoughts of a young flying officer during five days of solitary captivity in the hands of the Germans. His mind is constantly reliving the past and the reader is gradually acquainted with his memories from the age of eight until his capture. If the author is merely seeking to present a clinical picture, he succeeded.

But the clinical details do not make it a good novel. Perhaps experience is the only teacher as to when such details damage a story. For example as the hero is only twenty-five years old, his thoughts are often adolescent and it is accurate reporting to present them as such. But after a while in a novel they become silly. The hero's preoccupation with the process of and results of elimination made me forget that there was some good writing in the book.

War History

IRON OUT OF CAVALRY. By Walter Phelps Hall. Appleton-Century, New York, 1946. 389 pages. index. $4.00.

Richard Cordon McCloskey

Reviewing a history of World War II is a thankless task at this stage of the game. You know that the book can't be good, so the question is: "How much less bad is this book than the other bad ones on the market?"

Granting the validity of this negative approach, I can unhesitatingly say that this is the least bad of the score or so histories I have read. In fact, I was surprised how good it was in many places. Taken with Shugg and DeWeerd's *World War II*, you'll get as comprehensive a picture of the overall operations as you could want for the time.

Iron Out of Cavalry is particularly good because of the unbiased and incisive summary of events leading to World War II, and the clear statement of America's indecision between the Battle of Poland in September 1939 and Pearl Harbor in December 1941. Military operations are given in broad generalities, and the widely separated fronts are coherently tied together. All in all, this is a very commendable effort, and an extremely useful book.

Manhattan Story

ISLAND IN THE ATLANTIC. By Waldo Frank. New York Duell. Sloan and Pearce. 503 pp. $3.00.

K. S. Giniger

Waldo Frank's first novel in five years is another family portrait expressed in terms of fiction. The Hartts, of Manhattan or the *Island in the Atlantic*, are first introduced to the reader during the Draft Riots of the Civil War and we follow them until the generation born in the 1860s dies in the *Titanic* disaster.

Island in the Atlantic is an authentic portrait of New York life in the latter half of the last century. But neither its people nor its story come alive except as types to illustrate one of Mr. Frank's labored points. The canvas is wide—perhaps too wide for the author—but it remains a canvas and the figures on it are flat and one-dimensional.

Mr. Frank had — and has now — a prose style of some distinction. He was once considered a writer of great promise and, for all we know, may yet be considered one. But *Island in the Atlantic* remains only promise and, since this is Mr. Frank's twenty-sixth published work, promise is not enough.

Atom Satire

MR. ADAM. By Pat Frank. 252 pp. J. B. Lippincott Co. $2.50.

Ever since Hiroshima, the world has been speculating about the possible results that might stem from the use of the atom bomb. Certainly, the devastating effects of the bomb have given very little mental comfort to any of us. In his satirical novel *Mr. Adam*, newspaperman Pat Frank introduces a humorous twist to this otherwise frightening subject.

The plot stems from an accidental explosion in an atomic plant down in Mississippi. Aside from the literal disintegration of a large southern area, there seem to be no ill effects. Quite by accident, however, AP newsman Steve Smith stumbles onto the greatest story of his career. It appears that the atomic explosion has sterilized the entire male population of the world. This startling discovery envisages the banishment of the human race from the face of the earth. Before this horrible prospect can be pursued to its ultimate end, a certain Homer Adam turns up as a prospective father! It seems that at the time of the explosion he had been exploring the furthermost depths of a lead mine in Colorado and was the only male in the world to escape the sterilizing Gamma rays.

In the interests of mankind, Mr. Adam is taken over by the government after a serious wrangle with the military. From this point forward, this rollicking tale twists and turns through the red tape maze, subtly jabbing our government processes.

The great American public, its elected representatives, diplomats, military brass and bureaucrats, Hollywood and the many other popular institutions all share in Mr. Frank's biting satire. *Mr. Adam* is a slick piece of writing which, though pursuing a theme of fantasy, startles the reader with its brutal parallels in our modern American way of life. R. F. C.

Back to Sea with Horatio

LORD HORNBLOWER. By C. S. Forester. 322 pp. Little, Brown & Co. $2.50.

During the war, eleven million excellent books were made available to members of the Armed Forces by the Council of war on Books. None were more popular than the *Horatio Hornbloner* series written by C. S. Forester. The legion of new Forester fans created by this wartime outlet will be greatly disappointed by Mr. Forester's announced intention of culminating the series with his most recent, *Lord Hornblower*.

To those who have followed Horatio Hornblower through his thrilling rise in the British Navy, the pattern of this latest episode needs no description. Hornblower is at his exciting best battling Napoleon, mutiny, seasickness, and possible courts-martial. Though happily married to Lady Barbara, his emotions are momentarily upset by a return appearance of Marie, who once claimed his heart (in an earlier book) prior to his marriage.

Mr. Forester has no peer in contemporary storytelling. His audacious and indomitable Hornblower will live in the memory of all who have read of him. We echo with emphasis the words of Ernest Hemingway: "I recommend Forester to everyone literate I know."

R. F. C.

To the Nth Degree

THE ADVENTURES OF WESLEY JACKSON. By William Saroyan. 285 pp. Harcourt, Brace & Co. $2.75.

By Cas Cocklin

To attempt to interpret William Saroyan to the uninitiated is difficult because the author by his very uniqueness defies a stereotyped classification; on the other hand, to recommend this Saroyan book to the reader who has already met him may prove equally unsatisfactory. The latter inevitably has by this time formed one of two reactions—he either appreciates Saroyan or he doesn't. And he has probably made up his mind concerning *The Adventures of Wesley Jackson*, regardless of what this review says.

Saroyan's current work bears out the point—it is Saroyan all over, and to the nth degree. The story of Wesley Jackson from his induction into the Army through experiences in Normandy shortly after D-Day, it encompasses the normal activities of a soldier in addition to his assignment to a Special Service writing unit [no doubt flavored by the author's own Army career]; one or two fleeting though intense semi-platonic affairs of the heart, climaxed in England by a fulfillment of his desires to find the mother of his future son; at the many-faceted friendships among his fellow-soldiers which seem to this reviewer to serve only one good purpose—as vehicles for the author's view points.

Sarovan, of course, never intended to present a factual account of a soldier's career but the military adventure of Wesley are almost too nebulous to be acceptable to readers who are still absorbed with their own war memories And some viewpoints will find scant sympathy from the reader; in particular, Wesley's fantastic love for his country's enemy and an equally absorbing dislike of each and every officer, simple because he is commissioned.

Yet, throughout the book are sprinkled enough gems of Saroyan's wide understanding, his discerning sense of human foibles and fancies, to compensate for the presence of the inalterable ego. If you have never cared for Sarovan, don't read *The Adventures of Wesley Jackson*—but if you have savored him in the past, you'll no doubt enjoy this latest novel. And if you've never read him at all, perhaps this is not a satisfactory sample for an introduction.

Battle for Monte Cassino

THE MONASTERY. By F. Majdalany. 148 pp. Houghton-Mifflin Co. $2.00.

The reading public has been given ample opportunity to view the "big" picture of the recent war. Many fatual accounts covering practically every theater have been written. Few of these narratives, however, have exposed the

ILLUSTRATION CREDITS

(If not listed, unsigned illustrations are from authors, by the Journal staff, or from special sources. References are to pages.)

Signal Corps: Cover
Infantry Journal: 565
PRC. FA School: 582, 583, 584, 587

feeelings, fears and grim lives of the individual soldiers who actually fought the war.

Written by ex-British officer F. Majdalany, *The Monastery* is a sharp, intense, personal account of an individual in the classic attack on Monte Cassino in Italy. Though it may differ in locale, the gripping account of his reactions to battle will strike a familiar note in fighting men regardless of the theater in which they fought.

The Monastery points out clearly what a dirty business war really is. Holding on in exposed positions, crouching under rocks all day awaiting the sheltering cloak of nighttime, no bathing or shaving, friends blown to bits before one's eyes—these were part and parcel of the daily experience of fighting men the world over. No longer the ingredients for sensational stories in the press, to the combat veteran these things are still grim realities and indelible impressions on their minds and souls. Only fellow-sufferers can attest to the accuracy of Majdalany's writing. *The Monastery* bears the stamp of truth and has a quality of permanence that should insure it a high place among the books on World War II.

R. F. C.

Canadian Airforce

THE R.C.A.F. OVERSEAS: THE FIFTH YEAR. 404 pages; illustrated; index. Oxford University Press. $3.00.

By John R. Cuneo

Individual achievements are highlighted in this second volume of the series by the Air Historian of the Royal Canadian Air Force. Although the operational activities of the R.C.A.F. squadrons from September 1, 1943, to August 31, 1944, are followed as a basic outline, the volume is not designed as a complete study of Canadian air power. It is rather a book for Canadian readers issued while the war is still fresh in their minds in order to arouse public support for the unit in the postwar era. However, any person interested in the individual airman's side of the war will find the volume engrossing.

It might be noted that the students of air power in World War II will find some hints in the introduction to the book relating to the problems of the organization of the R.C.A.F. A brief but adequate glossary is useful to explain many of the terms and abbreviations of R.C.A.F. (or R.F.C.) slang which sometimes make airmen's accounts almost unintelligible. The index unfortunately lists only the names of airmen noted in the book—it serves the purpose of the volume but limits its value for reference work.

Air Medicine

THROUGH THE STRATOSPHERE: THE HUMAN FACTOR IN AVIATION. By Maxine Davis. 253 pages. The Macmillan Company. $2.75.

By John R. Cuneo

Some reference must be made at this point to the name of the book in connection with its subject matter or some reader will think that the wrong review has been placed under this title. The name certainly suggests the current trend towards high altitude flying. But the book is a description largely of the wartime efforts of the AAF Medical Services. It would seem that the book was originally planned and written to show how the mental and physical health of the AAF was safeguarded but peace forced a camouflage to escape the rumored trend against war books.

Actually the title should have called attention to the little-known story of the medical side of aerial warfare. The book recounts in popular style an absorbing story. To some it will explain how air power had to overcome obstacles other than enemy action; to others it may explain some of the stress and strain which has affected the life of every man now returning to civilian life.

Professional medical men may cavil at some of the simplified explanations but this is inevitable in a popularization of a technical subject. The book is not critical and in places naive. But the author is frankly a reporter telling what she has seen, read or been told "with the generous permission of General Grant and the Army Air Forces Bureau of Public Relations." The last phrase should prevent any surprise that the contributions of other nations and of the Navy receive scant attention.

To my mind the book lags whenever the author tries to enliven the text with her own personality. The cute appeal

of such items as a chapter title "Victory Through Air Pants" or an anecdote concerning her belief that "Army PRO Station" means "Army Public Relations Office Station" ("My goodness! This Army certainly is public-relations conscious!") should have been resisted. However, this is a matter of opinion.

Internal Storm

THE SUDDEN GUEST. By Christopher LaFarge. 250 pp. Coward-McCann. $2.50.

By Cas Cocklin

Skillfully blending physical and psychological drama, Christopher LaFarge has produced what has been aptly called "a novel of intention on three levels." The first is the plot and its staging—the preparations by a lonely and egocentric woman of her home in Rhode Island to meet the hurricane of 1944. Her careful arrangements for the protection of the house are uninterrupted and in spite of the fury of the storm she expects to meet it serenely. But the violence outside her house and the progress of the hurricane (which is related in breath-catching sequences) forces her to reflections which prove dangerously alarming, and which comprise the novel's second level.

The author has unfolded in magnificent detail the painful cerebrations engendered by the mounting oppressiveness and tension of the violent storm. It is in this atmosphere that this woman, who has inevitably regarded everything only in relation to herself, relives the corresponding moments of the 1938 hurricane. Then, unexpected activities in the shape of personal quarrels and intrusive, unwelcome guests had resulted in the storm descending upon her before she was even aware of it. Now, although prepared mentally as well as physically for the brutality of the hurticane, her recollections of the last one cause her to realize with certainty that by living only unto herself, she has ceased to live. With the ending of the storm outside, she is conscious that the fury within her mind has just begun. But her salvation lies in the knowledge that she alone is the one who can control this internal struggle.

The third level of the book is only implied. This is a parable which illumines our lives today. It is apparent to the reader but merely underlies the story itself and gives it greater meaning.

This novel, the author's first effort as such in prose, is exciting as well as provocative reading and a stimulating companion for an evening's entertainment.

World Winner

ALEXANDER OF MACEDON. By Harold Lamb. 386 pp. Indexed. Doubleday and Co. $3.50.

Harold Lamb has devoted a great part of his career to scientific research in the East and Near East. His *Genghis Kahn, Tamerlane* and *The Crusades* have brought him critical acclaim as a popular historian and biographer. For his most recent biography Mr. Lamb has chosen that demigod of battle, the almost mythological, Alexander the Great, as his subject.

From his childhood, where he learned of war from his father and the mysteries of the then known world from Aristotle, to his early death, Alexander's life was one of high adventure. While his military accomplishments and indomitable explorative spirit have been legendary for centuries, for the first time his inner conflict, as exciting and as important to the world as his leadership, is brought to light.

Here is a young Macedonian prince who sets out to form a world federation of states. In pursuing this mission he met and conquered all the great armies of his time—before he was thirty. His military technique and his audacity of action have had their counter-parts in every great battle since then.

Alexander was essentially an ascetic, sensitive man. He flew into blind rages and ordered bloody massacres only to drop to the depths of despair and self-loathing for such actions. His immaturity, or shall we say, naivete, resulted in many personal disappointments to Alexander.

His courage was not limited to physical combat alone, for Alexander's journeys of exploration led him to the very depths of the unknown. His unceasing explorations and accompanying wars and tribulations completely exhausted Alexander both physically and mentally. He died at the early age of thirty-two supposedly from an attack of malaria that would have been quickly shaken off by a well man.

Few men in history are so well remembered as Alexander. He is a legendary figure in the history of every race existent during his time. The details concerning this great man differs in each legend. On one point do all legends agree—that being his fitness to the title of Alexander the Great.

Mr. Lamb has presented an important historical work in this book. He has presented it in a manner that is not only authentic and informative but also as an exciting, thrilling story that is easily read and long remembered. It is a style of historical writing that could beneficially be initiated in the history textbooks of our schools. R. F. C.

Inside the White House

THANK YOU, MR. PRESIDENT. By Merriman Smith. 304 pp. Harper Bros. $2.50.

Recent months have brought forth a veritable deluge of "inside" stories on the lives of our wartime leaders. One of the more entertaining of these is written by Merriman Smith, White House correspondent for the United Press.

Mr. Smith belongs to the small group of reporters who are assigned to the White House as a day-long, full-time job. They spend eight to ten hours a day in their own White House quarters and are classed practically as members of the White House family.

In *Thank You, Mr. President*, Mr. Smith presents an intimate view of the personalities and actions of two presidents, Mr. Roosevelt and Mr. Truman. He depicts the tragedy, humor, suspense and excitement which is the lot of the White House correspondent. While there are no startling revelations in this book, it satiates the innate human appetite for intimate morsels from the table of the famous.

The publisher classifies the book as a "find"—a classification reserved for books written by unknown authors with unusual and arresting qualities in their writing and in their approach to the subject matter. This reviewer is quite content to go along with the publisher in classifying. *Thank You, Mr. President*, as a "find." It measures up to the standards in every instance. R. F. C.

Psychological Warfare

PAPER BULLETS. By Leo J. Margolin, 149 pp.; illustrated. Froben Press. $2.50.

By Colonel Harold D. Kehm, FA

The title and the illustrations in *Paper Bullets* are misleading to the military reader who expects to find a large part of the book devoted to the principles, organization and procedure of psychological warfare applicable to combat units.

Actually the book discusses the national propaganda methods of Germany and Japan in war and peace and describes many propaganda operations of our own during World War II.

The book brings out many sound principles and conceptions as, for example, that the effect of propaganda is accumulative, the need for integration with other operations, that honesty is the best policy and the idea that propaganda exploits a situation rather than creates it.

The book puts too much time on proving that anti-Semitism is bad and that we must remain alert to the danger of German and Japanese propaganda. These ancillary subjects are important but they are another subject and take up too much space in this book.

The book overstates the case when it claims that advertising methods are the answer to the "how" of military psychological warfare. Experience in the war indicated that there were differences which were not only important but actually critical.

Mr. Margolin misjudges the effects of propaganda. As indicated previously, he makes and repeats the statement that propaganda merely speeds up or capitalizes on facts and situations. However, he presents too many cases and situations in a way which minimizes this point.

The chapter on history ignores American military psychological warfare in our Revolution and the Civil War. The treatment of the attitude of World War II commanders has a distinct tinge of condescension and fails to cite the fine integration achieved in many cases, notably in the Fifth and Third Armies in Europe. There is no reference to the vital principle that the successful use of psychological warfare in the combat zone depends primarily on a thorough understanding of the basic principles of military leadership and military morale.

From a propaganda point of view, the United States has had a simple problem in our last two wars. The facts were in our favor. Mr. Margolin brings out this point but he makes no suggestions as to what we can do in psychological warfare if the facts are ever against us. Nor does he give us notions to consider in our study of war in the present—the atomic—age.

Paper Bullets will give the reader a description of some things that national propaganda machines did and can do. The style is racy. There are good illustrations and descriptions of many interesting incidents. But *Paper Bullets* does not give the student of military art and science much of value when he is considering the application of this potent weapon in the combat zone.

REPRINT REVIEW

By Richard Corcon McCloskey

Too often we confuse dull reading with military reading. I grant you that the height of dullness is often reached in military writings, but just as often some of the best writing is about the military. The trouble is that we call it "military" when it's dull, and "biography," "history," or "fiction" when it's good.

Here are seven titles that fall squarely into the military field. All of them are excellent, and many of them you have probably read before without realizing that they belonged on your military bookshelf.

The Duke, by Richard Aldington (Garden City, $1.49), is a life of Wellington, a great soldier-statesman who was victim of his own fame. The fluke defeat of Napoleon at Waterloo and the renown it gained him have long overshadowed his subsequent career. Waterloo was fought in 1815; Wellington died in 1852. For almost forty very critical years of modern history, Wellington was *the* power in England. Aldington has done a superb biography of the Duke. The maps and illustrations are fine.

*Colonel Kehm had opportunity to note the planning, organization, operation and effect of psychological warfare in the recent war during the time he served as the War Department member of the liaison officers of the Joint Chiefs of Staff to the Overseas Branch of OWI, and during a trip to the United Kingdom. Africa, the Middle East and India-Burma in the winter of 1943. One of his duties on this trip was to observe the operations of our psychological warfare. From April 1944 to February 1945, he served as military deputy to the Chief of the Psychological Warfare Division of SHAEF. Thereafter he was AC of S. G-2. Ninth U. S Army a most advantageous position from which to judge psychological warfare operations.

For Whom the Bell Tolls, Hemingway and *A Bell for Adano*, Hersey (Garden City, $1.00) have received all the acclaim due them. These reprint editions are particularly good.

The Lives of a Bengal Lancer, Yeats-Brown (Bantam, $.25), is a biography of incredible accidents and dangers that starts when the author sails for India to join the colonial English Army as a subaltern.

The Brick Foxhole, Brooke (Garden City, $1.00), will bring back many memories that you may not want brought back, but it is a very fine book. *By Valor and Army* Street (Garden City, $1.00), is one of the most exciting and authentic Civil War stories I've ever come across. Highly recommended.

Joe and Willie in *Up Front* by Mauldin are back in a dollar edition (World). This is required reading and looking.

* * * * *

I have long known and admired the excellence of K. S. Latourette's *The Chinese—Their History and Culture* (Macmillan. $7.00), and I was delighted when this new and revised edition was issued. As an all-around history it is the best modern book I have seen on China. The revised editions deals more extensively with modern China than previous editions, but it wisely makes no attempt to compete with the newspapers in reporting the chaotic state of present affairs. The bibliographies at the end of each chapter are excellent. I can't conceive of any thinking soldier not buying this book if he is headed for the Far East, and he should just as certainly have it in the United States if he wants to understand what developments led to the present situation in China.

This month's crop of murder stories contains nothing of especial interest. Bantam has issued, at 0.25, Leslie Ford's *Road to Folly*, Anthony Gilbert's *Death in the Blackout*, Frank Gruber's *The Buffalo Box,* and Geoffrey Homes' *No Hands on the Clock* (the best of the lot).

One excellent Bantam book is Grace Zaring Stone's *The Cold Journey*, a brilliant, clear and moving novel of the famous Deerfield massacre in 1704. *David Harum* by E. N. Westcott (Bantam, 0.25) is a reprint of the well-known book about the sharp match-making Yankee trader.

Shaw has now turned his ninetieth year. This is no place for an appreciation of that extraordinary man, but it is place to mention three very handsome tributes issued by Penguin ($.25). Shaw's *Major Barbara* (the screen version), *Saint Joan*, and *Pygmalion*, are a tremendous value, not only for the plays themselves, but for the handsome format.

The big selling and very important *Strange Fruit* by Lillian Smith is now available at $1.49 (Reynal and Hitchcock). Another perceptive and very sensitive novel in *The Heart Is a Lonely Hunter* by Carson McCullers (Penguin, $.25).

WRITING YOU'RE READING

By Maj Robert F. Cocklin

With all of the existing shortages, the advent of the gift season promises to present some problems. Fortunately, there are plenty of excellent books available and they make fine gifts. Association members can get all the gift books they want and at a discount, too. Just send us the titles of the books and the person to whom you want them mailed, gift-wrapped—we do the rest.

* * * * *

David Stern has bested the joke about the talking dog in his new novel about a talking Army mule, *Francis*. This hilarious tale concerns a gifted army mule that assists a brand-new second lieutenant through some harowing experiences in Burma. With humorous satire interjected throughout, *Francis* guarantees you an evening far away from your worldly cares.

* * * * *

Christine Weston, known previously for her Indigo, has published a new novel called The *Dark Wood*. It's the story of Stella Harmon whose husband is killed in combat and who transfers her affection to a man who strongly resembles her deceased spouse. A romantic type of novel, it will certainly claim popularity, particularly among the feminine readers.

* * * * *

India has long been one of the mystery countries of the world, and few are the people who understand the inter-related social and political and racial complexities under which that country labors. For those who are interested in learning more, however, let me recommend Jawaharal Nehru's *The Discovery of India*. Not designed for light entertainment, this book is a serious and comprehensive study written by one of India's leaders.

* * * * *

Bob Hope is not only back on the air but is also back in print. His latest literary offering is *So This Is Peace*, with cartoons by Lew Glanzman. Listing Bob Hope as the author eliminates any further necessity for comment about the material between the covers. Suffice to say that all his corn is strictly off the cob.

* * * * *

For too long a time we have neglectFed mentioning George Stimpson's *A Book About a Thousand Things*. The ideal bedside book, this fact-crammed tome lists some of the most interesting and useless information ever gathered between the covers of a book. Easy to read and easy to lay aside, the information contained in it will stand you in good stead at cocktail parties and other social functions where unimportant conversation is sometimes very important.

* * * * *

The latest of the now-it-can-be-told stories is *The Brereton Diaries* written by the Lieutenant General of the same name. Unique fact about General Brereton is that he served in all of the major theaters in the last war—from the Philippines to India to the Middle East to the Mediterranean and finally to Europe. At war's outset, he was in command of MacArthur's air forces in the Philippines, and therein lies a tale. General Brereton intimates in this book that his plans for the use of the air force in those crucial days were overruled by higher headquarters. He claims that he wanted to use his planes to bomb Formosa, among other targets, but that this was held up by MacArthur's headquarters. This statement moved MacArthur from a long silence to refute it. General MacArthur states that not only were these plans unknown to him until he saw the book but also that such plans would not have been practical or have served any useful purpose in the defense of the Philippines at that time. Watch for a review of this book in our next issue.

* * * * *

***Mistress Masham's Repose* has been chosen as a book club selection for the month of October. This new fantasy by T. H. White concerns the adventures of a ten year old girl with a group of Lilliputians. The small ones have been living on a secret isle for some 200 years and doing quite well until Maria discovers them and attempts to rearrange their lives. A book with a novel twist that will find a large audience.**

* * * * *

Former Undersecretary of State, Suinner Welles, has continued his study of the international situation since he left the State Department. In his latest book, *Where Are We Heading?* Mr. Welles mulls over some of the problems facing the world today. In view of his unusual qualifications for writing such a story, this book will provoke serious thought among many readers.

* * * * *

The fall publication lists are crammed with likely-looking titles and we shall review as many as possible in the *Journal*. With the fall books just appearing, summer titles maintain a firm grip on the best-seller positions. The latest poll shows Frederic Wakeman's *The Hucksters* solidly in first place with *This Side of Innocence* in second place on the fiction list. *Britannia Mews* ranks third with a relative newcomer *The Salem Frigate* already in fourth place. *The Egg and I* has finally dropped to second place on the non-fiction list, relinquishing the top spot to Joshua Liebman's *Peace of Mind. I Chose Freedom,* Ernie Pyle's *Last Chapter* and *Oscar Wilde* by Hesketh Pearson rank in that order. Most of these books will gradually drop down the list as fall promotion campaigns get rolling. Look for *Bell Timson* and *The Miracle of the Bells* to take over the fiction section while *Nothing to Fear, As He Saw It* and several others fight it out on the nonfiction list. It's going to be a good winter book-wise and, with shortages and prices what they are, more and more Americans are going to be reading books.

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Choice and Charming

WHO AM 1? Pictures and Theme by Lily Swann Saarinen. Reynal and Hitchcock. (*up to 8*) *$1.50*.

To glow with honest enthusiasm over a new "fact" book isn't an ordinary occurrence, but this isn't an ordinary book. The answers to why the zebra's muzzle is black and the red squirrel resembles an autumn leaf is managed with such zest that nature's protective camouflage becomes a wonderfully exciting affair. The delicate perfection of the drawings must be seen to be believed.

CHINA A TO Z. By Emily Hahn: illustrated by Howard Baer. Franklin Watts. (*6-9*) *$1.50*.

No strangers to China themselves, this team has produced one of the loveliest books of the season in both eye appeal and story content. Printed on warm yellow stock, lilting verses illustrate brilliant scenes of everyday China in the homes, markets, cities and schools. Although well handled, the alphabet angle seems secondary to the knowledge acquired of a faraway land presented with distinction and beauty.

POCAHONTAS. By Ingri and Edgar Parin d'Aulaire. Doubleday. Junior Literary Guild Selection. (*Up to 10*) *$2.50*.

American history would be doubly pleasing to younger children if more books of this type were available. Given time, the talented d'Aulaires may produce them. Published within the month, the story of our favorite Indian princess shows every indication of becoming as valuable a reference book for junior readers as the d'Aulaires' *George Washington* and 1939 Caldecott winner *Abraham Lincoln* ($2.50 each). Characteristic of all their books, Pocahontas features lovely lithographs and large pages in a lively re-creation of another fascinating historical period.

SING IN PRAISE. By Opal Wheeler: illustrated by Marjoric Torrey. E. P. Dutton & Co. (*all ages*) *$3.00*.

H. M. S. PINAFORE. Adapted from Gilbert and Sullivan by Opal Wheeler; illustrated by Fritz Kredel. E. P. Dutton and Co. (*all ages*) *$3.00*.

To find two new prize song books after months of search bowls over this reviewer as it will anyone else who has looked. Although an over-abundance of superlatives leaps to mind—and the temptation to use them is great—perhaps a straightforward account will be equally convincing and less monotonous. *Sing in Praise* collects well-known and loved hymns, with a full page given to each song and its music and the author's story about either the words or melody. Miss Torrey adds 19 full page full color illustrations and 9 in two colors to produce an absolute joy to the eye as well as the ear. The second treasure will result in a chorus of pleased ohs and ahs from children who have always loved the humor of Gilbert and Sullivan, and who would probably name the operetta *H. M. S. Pinafore* as their very favorite, so adults needn't repress their desire to roll out in full voice the delightful phrases. Mr. Kredel's full color drawings are perfect. The music remembers out-of-practice fingers and the book itself is large and flat.

DANIEL BOONE. By James Daugherty, Newbery Medal. 1939. Viking Press. (*10 up*) *$3.00*.

History again comes to life under the pen of this author whose other biographies (*Abraham Lincoln*, $3.50, and *Poor Richard*. $3.00) are equally worthy of a permanent niche on the bookshelf. There are no better foundation blocks than these books with their splendid drawings and easy style. Indeed, one is tempted to read the chapters aloud. Boone blazed a trail across Missouri, Kentucky, Carolina, Virginia and Pennsylvania—a trail marked with dangerous episodes, the least of which would have lasted any other man a lifetime in the telling. Honored in life as in death, Daniel Boone served his country well and with no thought of personal gain. (See cut.)

COME, JACK! By Robert W. McCulloch illustrated by Duncan Coburn. Houghton-Mifflin Co. (*8-15*) *$2.50*.

Fine full-color pictures lend warmth to new and swiftly-paced dog story. As wild and free as his native Nebraska prairies Jack learns to cope with coyotes and rattle snakes as he loses one master, finds another and trails a vicious thief. Suspense and thrills is the kevnote of this book for boys and girls.

YOU CAN WRITE CHINESE. By Kurt Wiese. Viking, $1.50. (*See cut.*)

It's easy—if you let Mr. Wiese kindle your imagination. Three pen strokes create a man with arms outstretched—symbolizing the word "big" in Chinese characters. What could be more simple? Children catch on quickly to new tricks and there lots of knowledge as well as fun centered around Mr. Wiese's clever sketches.

JONATHAN GOES WEST. By Stephen W. Meader: illustrated by Edward Shenton, Harcourt, Brace and Co. (*11-15*) *$2.25*.

It's a thrill to list a new title and then sit back listening to cheers from the Meader fans. Jonathan's Maine to Illinois trip in the steamboat days combines a tightly-knit plot with a fine feeling for history that will bolster up parents' opinion of their children's choice in reading. Here is adventure that is all aces.

Tried and True

MARY POPPINS and MARY POPPINS COMES BACK. By P. L. Travers; full color illustrations by Mary Shepard. Reynal and Hitchcock. (*8-12*) *$2.49*.

Print orders for this combined edition were doubled, so popular is the bitter-sweet governess who descends from clouds so matter - of - factly that one dares not mention such unconventional behavior.

ALL BUT ME AND THEE

***By* BRIG. GEN. ELLIOT D. COOKE**

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