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MARCH, 1944

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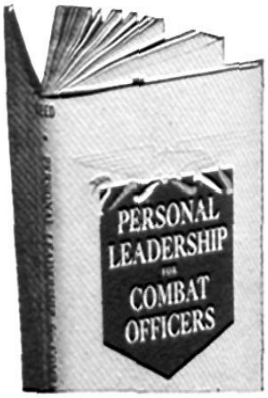

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LT. COL. JOHN E. COLEMAN. ***Editor***
MAJ. BERTRAM H. WHITE, ***Assistant***
LENNA PEDIGO, ***Business Manager***

THE "LITTLE FELLOWS" have recently been overshadowed by the heavies. We are glad to yield this month's cover to them, with a photo made at Fort Bragg.

REPORTS FROM ALL THEATERS emphasize the need for flexibility and adaptability of methods and minds. Ingenious devices sometimes save the day. This approach must not be carried to absurd extremes, however. "The book" is sound, and in most instances provides better methods than can improvisations on the spot; even when it doesn't do so directly, it furnishes pretty good points of departure.

The chief objection to branching out too arbitrarily is that fundamental principles are too easily overlooked or ignored. No, tradition for the mere sake of tradition is not desirable. But certain basic elements are tried and true, and their essentiality must be recognized. For example, the fact that FO methods work excellently in some situations does not mean that they offer a cure-all, that large-T no longer has a place: the latter will often produce effective fire faster and with less cost than any other system.

A "Donald Duck" attitude of frustrated rage at "what is" gains nothing. Evolution is slow, yes, but the old effective things should not be discarded unless the new is *sure* to be better. Criticism *per se* is foolish—something constructive and presumably better must be offered. This is not reaction. It is sheer common sense.

WE HAVE SEVERAL CALLS for copies of the JOURNAL for January, 1943. If you are willing to part with yours, please send it to us for redistribution; in payment we will adjust your expiration date.

The Field Artillery Journal

"Today's Field Artillery Journal is tomorrow's Training Regulations."

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A NEW COMMANDANT, F.A.S.

Major General Orlando Ward was born in Macon, Missouri, on November 4, 1891, and following graduation from the United States Military Academy was commissioned a second lieutenant of Cavalry on June 12, 1914.

PROMOTIONS

General Ward was promoted to first lieutenant on July 1, 1916; to captain on May 15, 1917; and to major (temporary) on July 3, 1918. He reverted to his permanent rank of captain on January 20, 1920, and was promoted to major on July 1, 1920; to lieutenant colonel on November 25, 1935; to colonel (temporary) on December 23, 1940; to brigadier general (temporary) on August 4, 1941; and to major general (temporary) on March 10, 1942.

SERVICE

General Ward was assigned to the 9th Cavalry and first served at Douglas and Naco, Arizona, and Alamo Hueco, New Mexico, until December, 1915. He returned to Douglas, Arizona, and in March, 1916, participated in the Punitive Expedition into Mexico, returning to the border in February, 1917, for duty at El Paso, Texas, with the 7th Cavalry. In August, 1917, he was transferred to the 10th Field Artillery, stationed at Douglas, Arizona. In the last three months of 1917 he completed the course at the School of Fire at Fort Sill, Oklahoma; he then returned to Douglas and sailed for France with his regiment in April, 1918.

He served with his regiment in France until August, 1918, then joined the 3rd Division staff until September, when he enrolled in the Army General Staff College, Langres, France. After graduation in January, 1919, he served in the Office of the Inspector General, Second Army, until March, 1919, when he was designated as Assistant Division Inspector of the 6th Division.

General Ward returned to the United States in July, 1919, and served the following four years as Professor of Military Science and Tactics at the University of Wisconsin. He entered the Field Artillery School at Fort Sill in September, 1923, and was graduated in June, 1924. He then served one year with the Organized Reserves at Denver, Colorado, and in September, 1925, enrolled in the Command and General Staff School at Fort Leavenworth, completing the course as a distinguished graduate in June, 1926.

Next he served at Fort D. A. Russell (now Francis E. Warren), Wyoming, with the 76th Field Artillery until September, 1929, when he went to the Philippine Islands and served at Fort McKinley. In June, 1931, he returned to the United States, becoming director of the Department of Gunnery at the Field Artillery School. In August, 1935, he entered the Army War College, was graduated in June, 1936, then was transferred to Fort Benning, Georgia, for service with the 83rd Field Artillery.

In February, 1938, General Ward became a member of the War Department General Staff, serving in the Military Intelligence Division. He became Assistant Secretary of the General Staff in November, 1938, and Secretary in July, 1939. In August, 1941, he was assigned to the 1st Armored Division at Fort Knox, and was designated as Commanding General of that division in March, 1942. Subsequently he was given an assignment in North Africa and was wounded in action in April, 1943. That same month he became Commanding General of the Tank Destroyer Center, Camp Hood, Texas. On December 31, 1943, he was detailed as commandant of the Field Artillery School.

DECORATIONS

For heroism in the World War, he was awarded the Silver Star. In April, 1943, he received the Oak Leaf Cluster to the Silver Star with the following citation:

"For gallantry in action in March, 1943, when he distinguished himself in action against an armed enemy. General Ward with utter disregard for his own safety rallied and organized a successful attack of infantry and tank elements against a strongly held enemy position.

Major General Orlando Ward

The action of General Ward in the face of intense enemy fire from all classes of weapons reflects the finest traditions of the Armed Forces, and is deserving of the highest praise."

He was awarded the Distinguished Service Cross in 1943, the citation for which is as follows:

"For extraordinary heroism in action in March, 1943, in the vicinity of Maknassey (Hill 322, Djebel Naemia). While in command of a Division which was attempting to push east and cut off retreating German Afrika Korps troops, Major General Ward, in order to obtain personal knowledge of combat efficiency of his troops and to obtain personal knowledge of defensive measures of entrenched enemy fortifications, joined the 2nd Battalion, —— Infantry, in a night attack. While on this mission, General Ward crossed numerous final protective lines of heavy machine gun fire, 20-mm fire, and prepared mortar night defensive fire. When the attack seemed about to halt, General Ward personally led eight men up the hillside and began directing the fire of these men, thereby drawing fire his way and allowing the other troops to advance. Although wounded in the face, General Ward remained on the hill until the Battalion was forced to withdraw at daybreak. The courageous actions and utter disregard for personal safety of General Ward are worthy of the highest recognition."

In 1943 he was awarded the Legion of Merit with the following citation:

"For exceptionally meritorious conduct in the performance of outstanding service as Secretary of the War Department General Staff from 3 July, 1939, to 30 August, 1941. He displayed high executive ability and judgment in organizing the secretariat of the General Staff to meet the emergency of the early mobilization of the Army and later the shock of war. General Ward performed the exacting duties of secretary of the General Staff with vigor, force, and unflagging loyalty."

The German Conception of Artillery Organization

By "Esen" (of the Polish Artillery)

The profound transmutation which the present war introduced in the equipment and general organization of units, as well as in the methods of fighting, caused great regroupment among particular arms, changing their significance on the battlefield. Being witnesses of the dusk of such a brilliant arm as cavalry, we observed some temporary dimming in the significance of infantry; we also affirmed the mighty improvement of air-force; and lastly we saw the promotion of tanks to the leading place.

One must be very careful when trying to fix the real value of separate arms, including artillery, for modern battle. This is a very interesting problem, but nevertheless a difficult one. Care is essential for many reasons.

First of all, the present chapter of history is not yet finished—the war still continues. It can be supposed that in this case, as usually happens, new ideas did not at once provide the final form and some modifications and changes are possible and probable, the proper form arising later, usually in an experimental manner. Therefore it must be taken into account that some misconception can arise from a subjective and not absolutely fortunate approach to certain problems.

Taking into consideration these objections it would not yet be safe to formulate a definite opinion regarding the actual part which must be played by artillery in so-called modern battle, as in this way one could find oneself on a false path. On the other hand, the study of definite conceptions in connection with existing needs and possibilities of the battlefield, is very profitable.

The necessity for this kind of study follows the fact that those innovations gave their initiators unquestionable gains. For those who joined this war with minds working on the lines of the last, arose the urgent need to adjust themselves to altered conditions. The following procedure took place:

(i) To follow the originators.

(ii) To scrutinize theoretically, as well as by examination of reports received from the battlefield, the suitability of conceptions used by the enemy.

(iii) To investigate weak points in the enemy conceptions in order to find possibilities for parrying him.

(iv) To look for improvement and perfections.

(v) To watch carefully for alterations applied by the enemy and to sound their reasons.

German mobile units were naturally the main objects of interest and investigation. The right of initiative and great experience led one to suppose that the German conceptions must have been deeply thought out.

The first big change in the organization of German mobile units took place in 1941, just before the attack on Russia. In the new structure three main points strike one:

(i) Complete lack of corps artillery.

(ii) Original location of heavy guns in the division.

(iii) High general proportion of organic weapons within units lower than divisional level.

In the first models of their mobile units the Germans had corps artillery but this vanished in the middle of 1941, probably on account of experiences gathered during earlier campaigns or because of expected different conditions of fighting in Russia.

Reorganization of German mobile units, achieved in 1941, not only consisted in the winding up of corps artillery, but also introduced some changes in filling up the division with its own fire weapons. Instead of four 105-mm guns and eight 150-mm howitzers, as formerly, they introduced twelve 150-mm howitzers and four 150-mm infantry guns. This meant an increase in a proportion of 4:3.

Heavy guns were located within panzer and motorized divisions in the following manner:

75% as divisional artillery.

25% in infantry regiments as their own organic weapons.

Infantry units in previous examples of German panzer divisions did not possess their own heavy guns, but since 1941 one could find them in motorized brigades. This change means:

(i) There are some moments in an action of mobile units when immediate application of bigger power of fire is indispensable.

(ii) If the general intention is for a swift action, there may be some situations when immediate and direct intervention of even a few heavy fire weapons can be more profitable than an appeal to the stronger help of divisional artillery.

(iii) In operations of a mobile character there exists the possibility of using heavy guns within the bounds of infantry regiments.

(iv) The German conception tends to establish self-sufficient formations, able to fight independently even when isolated.

The main point of location of support weapons, as can be recognized in the German conception of 1941, was clearly pushed forward. A very interesting result can be obtained if one tries to compare the value of fire sources kept as divisional resources with those present in smaller units. In making this comparison there should be taken into account not only the quantity of separate weapons, but also their caliber. All fire weapons (excluding small arms) should be reckoned regardless of their fundamental destination, because the Germans do not now abide by the principle of close specialization of weapons. Many examples are now known where German antiaircraft guns were used for anti-tank tasks or as assault weapons, for instance, to fight against fortifications by firing directly into embrasures.

Below are a few figures regarding the German mobile units of 1941, obtained in the above mentioned manner:

	Panzer division	*Motorized division*
(a) Whole support resources:		
Divisional resources	**25%**	**36%**
Smaller units	**75%**	**64%**
(b) Anti-tank sources:		
Divisional resources	**10%**	**30%**
Smaller units	**90%**	**70%**
(c) Anti-aircraft sources		
Divisional resources	**30%**	**50%**
Smaller units	**70%**	**50%**

In the whole location of fire weapons there can be underlined some very characteristic points:

(i) The majority of resources belong basically to smaller units (below divisional level).

(ii) All rungs of command from company to regiment possess their own sources of fire support.

(iii) The level of brigade command has no resources at its disposition.

(iv) Only the minority of fire-support sources remain at the disposition of divisional command.

(v) The difference between the quantity of fire-support weapons located inside small units and those kept on a divisional level is bigger in panzer divisions than in motorized ones, as the former are destined for more rapid action.

(vi) There is a complete lack of fire-support resources on corps level.

The general course of German tactics (in comparison with that of the Allies) still shows some quite different points, making the exploration of enemy military thought all the more interesting. In order to understand their reasons some grounds for the German conceptions should here be mentioned.

The structure of every unit should express its tactical adjustment to correspond to the tasks for which this unit is destined, and also to the conditions under which those tasks are to be executed. Therefore one cannot treat the German changes of 1941 as a matter of chance; possibly there are some deeper reasons based on the needs and possibilities of the modern battlefield.

German mobile units are destined, first of all, for offensive operations realized by swift and deep mobile action. Hence arises their intention to push aside, or at least mitigate, all these factors which reduce the general mobility and capacity to unrestrained action, very often undertaken under difficult conditions in the rear of the enemy—the German authorities being afraid of losing the possibility of a quick decision.

In order to take into account the special conditions of modern battle, in which armored and air forces play such an essential part, the Germans strove to prepare universal and self-dependent formations consisting of various arms and thus being able to fight even in complete isolation.

It is true that artillery as a source of fire raises the power of the unit to which it belongs, but at the same time it reduces the mobility of that unit. Forcing elements of strength in the construction of a unit always prompts an increase in fire weapons. If on the other hand speed is favored, reduction of support resources is induced. One can suppose that for every military formation, in conformity with its type and purpose, there exists some limit of absorption of artillery.

The creation of non-divisional artillery finds its grounds in the tendency to possess on a higher rung of command some sources which facilitate the formation of a main effort within the bounds of closely operating divisions, or render it possible to even out the difference existing among those divisions in their needs of fire support. Theoretically this assumption is right, but it is not easy to realize in the operation of mobile units. Above all, if it is intended to participate swiftly in the action of mobile units, it would be necessary to assure to the non-divisional artillery such a reserve of speed that it could enter the action in good time even though this had already begun. Furthermore, if the speed of an action carried on under modern conditions is so important, then also the decisions on the battlefield must possess possibilities for quick realization. Bringing non-divisional artillery into the battle from the rear will always take time, if it is decided upon by the higher command, because of the longer time required to size up the whole situation, make a decision, and give out orders. These considerations suggest some fear that this additional artillery might "miss the bus." In order that this supplementary artillery could play its part it would have to be present beforehand in the appropriate division. Moreover, when the modern battlefield has procured such a great depth, the artillery would, in principle, never be secluded in the operative zone from the fundamental arms which secure it.

One can also suppose that the system of roads existing in Russia was one more clement which induced the Germans to wind up the non-divisional artillery in their mobile units and introduce a new structure of division which, in their opinion, agreed best with the needs and possibilities of the battlefield.

The quantity and species of support weapons are always a gauge of mobility of a unit. Trying to value the German conception of mobile units with regard to their capacity for movement, there occur the following conclusions. The value of the whole fire-support weapons (except small arms) belonging to a German panzer division corresponds approximately to an equivalent of about 8-9 field artillery regiments (six troops (Br.) or batteries (U. S.) each). In relation to 6 battalions* this means a very strong support. The ballast of 8-9 artillery regiments would at first sight seem to completely deprive the panzer division of its capacity to move. Therefore the fact that the greater part of support sources are included organically in the units must be treated as an act which tends to raise the mobility of the panzer division, at the same time keeping up its great strength of fire. The result is that they keep only 6 field and 3 medium troops as divisional artillery, i.e., a proportion of 1 field and ½ medium troops to a battalion.

Inclusion of the majority of fire weapons in small units also aids their security. As one knows, under present conditions, especially in action of mobile units, independent movement is often quite impossible for such defenseless elements as artillery. Either in motion or in gun-position artillery must always be tied to some troops of other arms which assure its security.

The presence of numerous weapons in regiments also gives that advantage which increases the capacity to fight against enemy armor, thus raising the possibilities of self-defense.

Such location of fire weapons must be defined as a use based on the principle of decentralization, which means a clear dispersion of fire without the possibility of massing. This raises the question of whether it is only an inevitable evil or whether it corresponds to the needs of the battlefield in normal action of mobile units, as understood by the Germans.

In the First World War, when machine guns through the efficacy of their fire caused complete atrophy of movement on the battlefield, one staked on the artillery, hoping to gain that power which would release the frozen fronts; thus through artillery fire one endeavored to find a way of restoring the freedom of maneuver.

Apart from the question of the improved status gained by artillery in this way, it can be affirmed that this conception brought about the special method of procedure by massed fire. This strength of fire is obtained not only by the introduction of a large number of guns, but above all by applying special tactics based on the principle of so-called *centralization*.

The centralization of artillery allows for the accumulation of fire of numerous weapons, and further permits the maneuvering of fire. Applying centralization always demands time. This time is necessary for siting guns, as well as for constructing the special system of control and communications; it is also needed for preparing fire-plans, as well as for gathering necessary ammunition. The formation, setting in motion, and maneuvering of the "hammer of fire" are all complicated and difficult, and these difficulties mount up if it is necessary to assure incessant support in time and space. Besides this, the maneuvering of fire is nothing more than a performance of greater work with fewer means in the way of distending it throughout the time.

Using armor as an assurance against efficacious machine gun fire, the Germans renewed the maneuver. Then, instead

*4 infantry, 1 motorcycle, and 1 reconnaissance.

of power, movement became a foundation for German operations, with speed as the mainspring of their action. Fire support based on the system of centralization did not suit the action so planned. In the German conception time was so valuable for keeping up the speed of operation that it did not pay to sacrifice it to gain the strength of support.

The system of centralization leads to concentrations which tend to even out the imperfection of artillery fire. Whereas a single shell often seemed to be sufficient to liquidate a target, artillery could never ensure such good results. Many difficulties existed which brought about the use of the expensive method of shooting within certain areas, but this was not suitable to the conditions of movable battle because of the difficulties of ensuring a constant supply of adequate ammunition.

These difficulties were remarkably reduced in the conception of weapons attendant upon infantry units. In this case the difficulty of transferring the target to the executors was lessened; also, the observation and communications were less complicated, and the efficacy of fire was extended by direct shooting to draw down the fire on a definite target. This greatly reduced the consumption of ammunition, but above all extended the possibilities of immediate reactions to the signs on the battlefield.

Of course there was another side to the matter, which was susceptibility to the enemy's fire—but with no actual danger so long as the action kept its speed. However, the danger grew as the speed declined, as then the adversary obtained better conditions to fight systematically against fire sources.

To appreciate German conceptions the following comparison can be made. In modern battle there appears, more than anywhere else, the well-known law of mechanics—the inverted proportion existing between power and motion. As the shorter end of a mechanical lever is more powerful though less swift, also as in a motor-car the changing to a higher gear prompts the reduction of strength, likewise on the battlefield the strength of fire reduces the speed. Every driver knows that it is necessary to change to a lower gear if the car is losing speed, that greater power is not necessary if the car already possesses adequate speed, also that changing to a lower gear is tantamount to the brake. Gears are always fitted to speeds according to the type and use of vehicles. A like phenomenon takes place on the battlefield.

In the past the atrophy of movement could be seen when the power of machine gun fire appeared on the battlefield. The strength of armor proved that it was an efficient means of security against the power of machine gun fire. When a force able to defeat armor appears, movement again becomes impossible. Movement on the battlefield, in the place where this happens, can only be renewed by a power which is able to ensure security against means which brake the movement. Elimination of enemy fire weapons is a possible solution.

The first models of German mobile units were expressly adjusted to quick operations under fluid conditions when efficient enemy contraction was not expected, hence their smaller saturation of fire weapons. The occasional needs of bigger support had every time to be met by sources specially gathered for these occasions. This was generally realized by the higher command.

The conceptions of 1941 had already taken into account the necessity for enlarging the fire strength of mobile units, but at the same time they showed a tendency to keep within a movable capacity, hence the increase of support sources in smaller units only. The general character of German mobile units of 1941 can be defined as follows: they were destined for offensive actions under fluid conditions, that is for maneuver and occasional counterattacks, but they were prepared neither for a break-through nor for independent defense.

Experiences of fighting in Russia and the Mediterranean theater show that the average form of combat is not fighting under fluid conditions against a feeble adversary, but is a case of very quickly coming to grips with an equal adversary inducing a decline in movement.

Former successes in the "Blitzkrieg" weigh on the Germans like an original sin which does not permit them to alter in any radical manner their conception of organization and compels them to look for some rather half-hearted solutions.

ANTITANK MINES—SOME DON'TS!

By Lt.-Col. G. D. W. Court, M.C.

Mines have figured in contemporary battles to an ever-increasing extent. Much information has been collected on this subject, but these notes have been culled from bitter experience and should be of great use to readers who have not firsthand knowledge.

1. If a truck blows up on a mine, DON'T drive up to see what is wrong. Park several hundred yards away, and WALK—carefully—noting the route you have taken.
2. If you have to enter a minefield, DON'T forget to note the route you have taken in.
3. If one of your vehicles does blow up in a minefield, DON'T forget to get all personnel away from the scene before dark, if you can't remove the vehicle at once. If circumstances permit, it is advisable to leave one man, preferably the driver, with the vehicle.
4. DON'T think you are OK because there are no mines immediately the "other" side of a Boche minefield wire. Go warily for 300-400 yds.
5. DON'T travel with your arm(s) and/or leg(s) hanging outside the truck. This is very easy to do in a jeep.
6. DON'T think "That's an old mine notice!—I'm OK!"—Remember that mines remain active for a long time.
7. DON'T be led away by track marks in a minefield. That's an old German dodge!

Finally, in addition to sandbags on the floor of the vehicle, keep your eyes open and trust in the Lord.

THE MODERN ANTITANK GUN

By Col. Seither

TRANSLATED FROM "WEHRTECHNISCHE MONATSHEFTE" FOR AUGUST, 1943: WRITTEN IN NOVEMBER. 1942

The modern antitank gun is the product of long years of development. In order to evaluate it, we must therefore make a brief survey of this development.

It was born in the second half of World War I when the Western Powers were employing large numbers of armored vehicles for the first time. Pointed projectiles with steel core fired from machine guns were soon matched by the thickness of the armor. The field gun 96 n/A used by the German side did, to be sure, win considerable success, but neither its flexibility and rate of fire nor the flatness of its trajectory were adequate. Consequently, the antitank gun was developed as a special type of cannon. It alone was capable of fulfilling the requirements that are still imposed, namely, great mobility when hauled by manpower, low elevation, flexibility within wide traversing limits, and accuracy throughout a long trajectory.

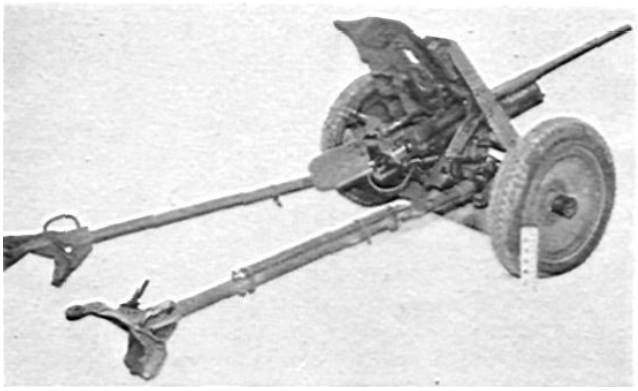
A gun having a caliber of about 37-mm, firing a projectile weighing 0.7 to 0.9 kg. (1½ to 2 lbs.) and having a muzzle velocity of about 750 to 800 meters (2,460 to 2,625 yds.) per second, was considered adequate to cope with armor of the thickness then used. Consequently, most of the leading countries developed such guns, some examples of which are:

Characteristics	*Rheinmetall*	*Skoda*	*Bofors*
Caliber (mm)	37	37	37
Length of tube (calibers)	45	48	45
Muzzle velocity (meters per second)	745	750	800
(f/s)	2,444	2,461	2,625
Traversing limits (degrees)	60	50	50
Weight in firing position (kg.)	450	364	370
(lbs.)	992	802	816
Weight of projectile (kg.)	.69	.85	.70
(lbs.)	1.52	1.87	1.54

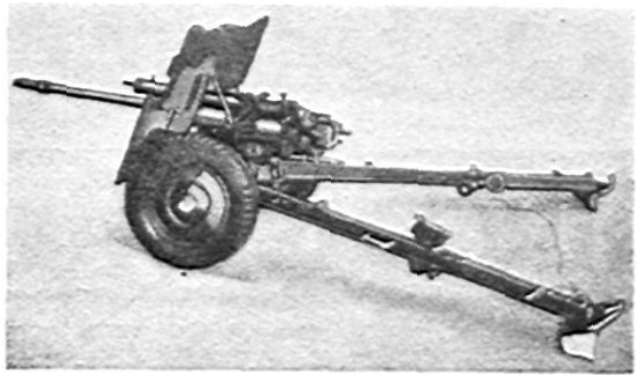
For easily understood reasons, little news leaked out to the public concerning the further development of the thickness of armor during the period between the First and Second World Wars. Such news did, however, result in increasing the penetration of the projectile of the antitank gun by causing the use of longer tubes of the same caliber (tubes 60 to 70 calibers long as compared with 45 to 50 calibers), and in increasing the caliber to 45- to 50-mm. These changes were designed to make it possible to use the antitank gun against infantry targets with the aid of HE shells.

	Madsen-Bofors M-35/37	*Russia*	*France (Schneider)*	*Rheinmetall M-1937*
Caliber (mm)	37	45	47	50
Length of tube (calibers)	60	46	53	60
Muzzle velocity Meters per second	900	760	855	835
(f/s)	2,953	2,490	2,805	2,740
Traversing limits (°)	60	60	68	63
Weight in firing position (kg.)	380	560	1.070	930
(lbs.)	838	922	2,359	2,050
Weight of Projectile, in kg.	0.80	1.43	1.7	2.16
(lbs.)	1.76	3.15	3.75	4.76

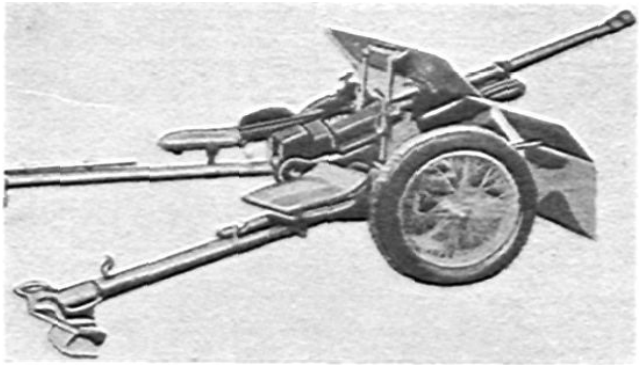
France alone continued to retain 25-mm guns of very low weight. On the other hand, England was already beginning to



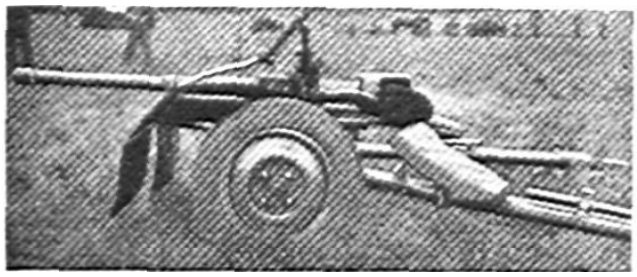
37-mm German AT gun (1935)



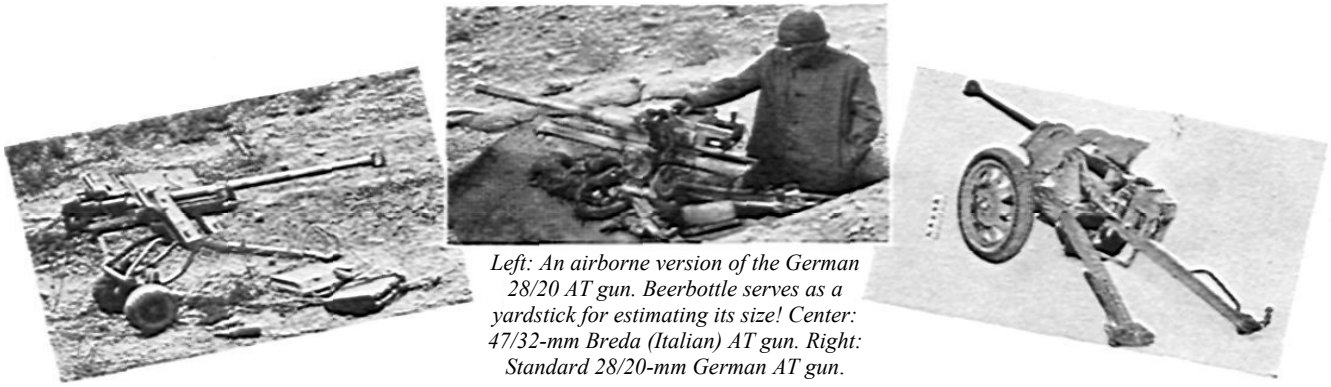
37-mm PAK Skoda



37-mm PAK Bofors



37-mm PAK Madsen-Bofors (*Mod. 1935/37*)



Left: An airborne version of the German 28/20 AT gun. Beerbottle serves as a yardstick for estimating its size! Center: 47/32-mm Breda (Italian) AT gun. Right: Standard 28/20-mm German AT gun.

introduce the Vickers 40-mm antitank gun for the purpose of obtaining, through all-round traverse, maximum flexibility of fire.

	Schneider M-1937	*England* (*2-pounder Antitank Gun M-11*)
Caliber (mm)	25	40
Length of tube (calibers)	77	52
Muzzle velocity (meters per second)	900	792
(f/s)	2,953	2,598
Traversing limits (degrees)	37	30/360
Weight in firing position (kg.)	310	757
(lbs.)	683	1,669
Weight of projectile (kg.)	0.32	1.0
(lbs.)	.70	3.28

The nations participating in the Second World War entered it with these guns. The battles that took place in Poland and France were fought with them. The appearance of several heavy types of armor in France had already shown that the performance of antitank guns was not wholly adequate. Their relatively small number and the method of tactical employment adopted could not have changed the fate of France.

On the other hand Soviet Russia, whose isolation had made it possible for her to maintain complete secrecy concerning her development during the last 20 years, used heavy and very heavy armor, especially in the second half of the campaign of 1941, and this necessarily resulted in the very rapid development of antitank defense in general and the antitank gun in particular. This development has brought forth the modern antitank gun—modern in the sense that further developments during the war may result in changes.

While antitank defense was for a long time conducted with the aid of a special weapon, the fact that the outcome of battles was being decided for such defense made it necessary to use all weapons for this purpose. In this article, we are mainly interested in the cooperation of the field artillery.

Field artillery was rendered capable of cooperating in antitank defense with decisive effect by being equipped with armor-piercing ammunition. Russia, which had retained the 76.2-mm gun for the bulk of her divisional artillery and had developed it into a long-range field gun, used it extensively for antitank combat. Its high muzzle velocity of 700 meters (2300 ft.) per second made it especially suitable for this purpose.

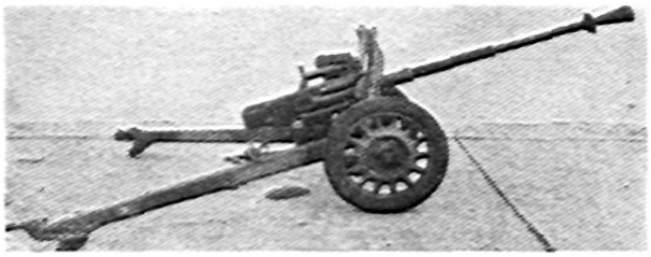
England tried to improve the low lateral field of fire of her field guns by adopting a box-trial carriage with improvements permitting fire with all-around traverse.

	Russia (*76.2-mm Gun M-1936*)	*England* (*87.6-mm gun-howitzer*)
Caliber (mm)	76.2	87.6
Length of tube (calibers)	51	28
Muzzle velocity (meters per second)	706	520
(f/s)	2,316	1,706
Traversing limits (degrees)	60	360
Weight in firing position (kg.)	1,350	1,800
(lbs.)	2,977	3,969
Weight of projectile (kg.)	6.2	11.34
(lbs.)	13.67	25.11

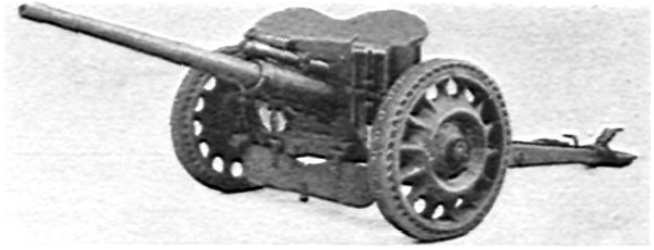
Moreover, AA guns of different calibers were also adapted to antitank defense. The improvements necessary for AA fire—namely, those permitting fire with all-around traverse, a high muzzle velocity, and a high rate of fire—rendered them extremely capable of being used for antitank fire. The success of the German 88-mm AA gun is so well known that it is unnecessary to describe it in greater detail. It is obvious, however, that the use of so valuable a gun, especially on defensive fronts, can only be helpful in the long run.

Lastly, we must not overlook the fact that the tank itself, as a result of the improvement of its armament, is the best antitank defense weapon, especially when used in rapid units. Consequently, Russia has used either whole tanks or merely their turrets for antitank defense on defensive fronts.

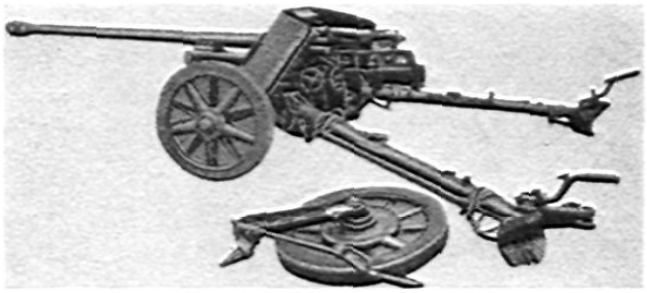
The only really modern antitank artillery known to be in use is a Soviet 57-mm antitank gun and a recently developed British antitank gun. The Russian cannon must be regarded as a good example of a modern antitank gun with which, owing to its caliber, length of tube, and muzzle velocity, it is



2.5-cm PAK Schneider (Mod. 1937)



47-mm PAK Schneider (Mod. 1937)



50-mm PAK Rheinmetall (Mod. 1937)

5.7-cm (6-pdr) British AT gun

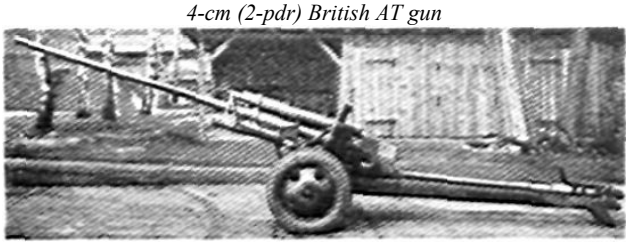
possible to penetrate armor about 80-mm (3.15″) thick at a range of 1,000 meters (3,280 yds.), while the weight of the gun remains tolerable.

	Russian 57-mm Antitank Gun, Mod. M-41	*British* 57-mm Antitank Gun, M-11*
Caliber (mm)	57	57
Length of tube (calibers)	73	45
Muzzle velocity (m. per second)	1,020	830
(f/s)	3,346	2,723
Traversing limits (degrees)	56	90
Weight in firing position (kg.)	1,125	1,060
(lbs.)	2,480	2,337
Weight of projectile (kg.)	3.1	2.85
(lbs.)	6.8	6.38

The greater efficiency in antitank defense—which must consist in an increase not only in penetration but also in effective range (the standard range, which was about 500 meters when the 37-mm gun was used, is now 1,000 meters in the case of the 57-mm antitank gun, for example)—can be obtained mainly by increasing the caliber and length of the tube, as well as by using special projectiles necessitating the use of certain raw materials. The weight of the gun is correspondingly increased thereby, although the use of a rather efficient muzzle brake, whose absence would now be inconceivable in modern high performance guns, is lightening the burden of the carriage. The mobility of the gun when drawn by man-power is necessarily impaired by this increase in weight.

* And U. S. Ed.

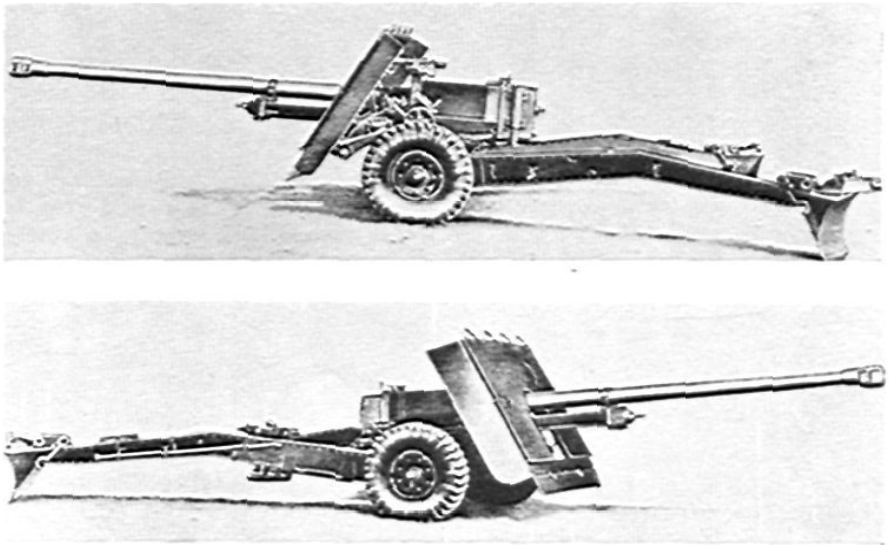
4-cm (2-pdr) British AT gun



5.7-cm Russian AT Gun (Mod. 1941)

Just as the Soviet Army is using its long-range field gun as an antitank cannon, so it is natural to use an adequately effective HE shell for other purposes in the modern antitank gun, in view of its increasing caliber, for the muzzle velocity required for a modern antitank gun gives the latter the maximum range corresponding to its caliber when it is fired with the usual maximum elevation of 20 to 25 degrees.

Another way in which the antitank gun can be used is in firing at loopholes. It is a well known fact that pillboxes constitute the backbone of modern prepared defensive positions, and that the weapons in them are fired through loopholes which are open or can be covered. These are successfully combatted by horizontal fire directed at the loopholes, for the execution of which the antitank gun is especially fitted because of its flat trajectory and accuracy.



British 17-pdr, Mk 1

Not content with 2-pdr and 6-pdr (57-mm) AT guns, Britain developed a 17-pdr to counter Germany's increasing armor. By an odd coincidence it first saw action on the very day the PzKw VI ("Tiger") tank first entered action. Although the two did not meet until later, when they did the 17-pdr proved devastatingly effective. From muzzle brake to lunette it measures just over 24'. Its semiautomatic breach permits high rate of fire. At 1,500 yds. it has blown off tank turrets.

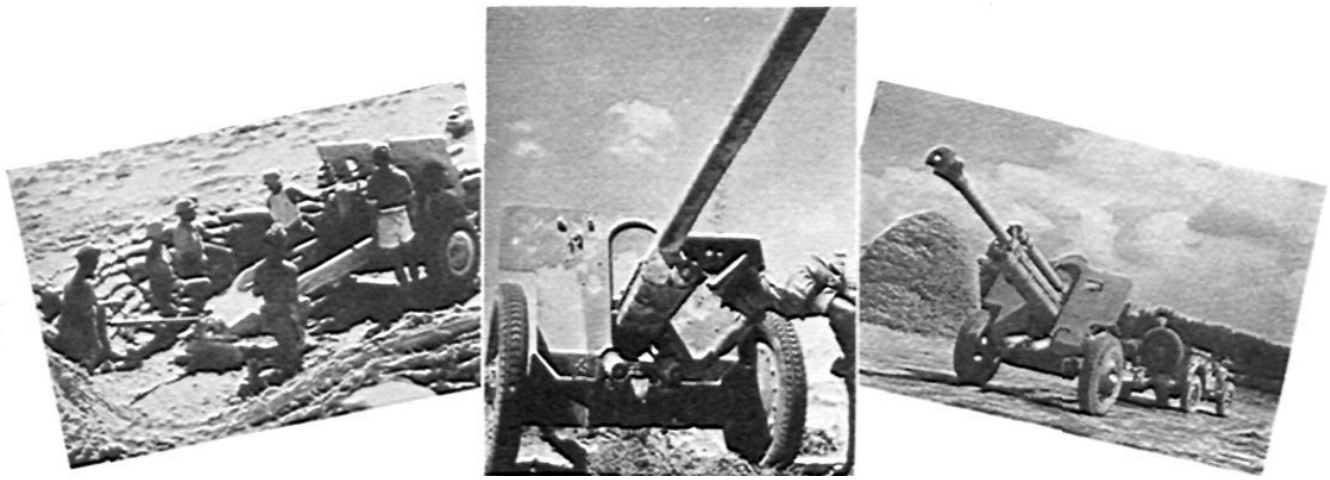
Alamein introduced the 17-pdr, principally the Mk. II model. This was mounted on the 25-pdr carriage to speed up production; it is a temporary or substitute-standard type.

GROWTH OF AT GUNS

17-pdrs travelled across North Africa, but the Nazis retreated so fast that they saw little action 'til Mareth and Tunisia. They are highly effective against pill-boxes as well as tanks, and have been doing exceedingly well in Italy.

Adapting German practice, the 17-pdr is fitted with a double shield for increased protection. Lateral and bottom wings of single thickness add considerably to the safety of the crew of the Mk. I model.

Germany too has been stepping up her AT weapons. This low-slung PAK 40. 75-mm in caliber, covered the main bridge into Scafati (south of Vesuvius) until knocked out by mortar fire. Note how its shield gives no protection to wheels and tires, in contrast to the British 17-pdr.



Left: 8.76-cm (25-pdr) British gun-howitzer. Center: Here is a Russian 76.2-mm gun "as is" from the Russian front and as first used in Africa by the Germans. In the case of HE ammunition, the Germans issued Russian rounds as captured. But for AP-HE (capped and ballistically capped) the Germans used their own type shell, reseated in the Russian case; they crossed out the Russian markings and stencilled new German data on these cases. A PAK-40 (tungsten carbide case) round was also made for this gun. Right: This is the dual-purpose (AA-AT) version of Russia's 76.2-mm. It is shown as captured from the Germans in Sicily. except that it now has British tires and is towed by the ubiquitous jeep.

The modern antitank gun is therefore taking on the characteristics of a field gun, which may determine its future appearance. In view of these facts it can readily be imagined that the field gun, which has, at all events, disappeared from the German Army, is experiencing a rebirth but is being provided with the special technical improvements characteristic of an antitank gun and is to be used primarily against tanks and secondarily for other artillery purposes.

On the other hand the necessity of at least using the divisional artillery for antitank defense, has compelled us to provide these guns also with the technical improvements that ensure that they will have the necessary flexibility and rate of fire. The lower mobility of the modern antitank gun when drawn by manpower has led to mounting it on a self-propelled carriage and employing it in rapid units, just as has been done with AA guns on various fronts.

The antitank guns which were developed during and after the First World War were constructed in such a way that it would be possible to employ them in the infantry combat zone and thus afford the infantry fighting in the front line direct protection against tanks. It is difficult to employ a modern antitank gun in this manner owing to its weight and the small number of its crew. The problem of how to give the infantry a sufficiently light and yet effective antitank weapon has consequently again become acute. It is not within the scope of this article, however, to enter into a detailed discussion of this question.

GERMAN REAR GUARDS

By Lt.-Col. G. D. W. Court, M.C.

Opinion is unanimous that these were always very well executed. To put it bluntly, Jerry uses every conceivable feature, natural and artificial, and fights like hell. Then he suddenly packs up, and for the next day or more his vehicles are streaming back—across narrow passes—across the desert—along the coast road—wherever it may be—nose to tail—concerned only with getting back to his next line, where he will again fight really ferociously. This is now being demonstrated in Italy, although, of course, the distances are nowhere nearly so great as in Africa.

In the initial stages, tanks cover the deployment of the antitank guns and infantry. The tanks then withdraw behind the screen. The 88-mm guns then open up on us at very long ranges and make us deploy.

In regard to the siting of the 88-mm gun, the Boche had a habit of making it the core of a little strongpoint: well dug in and excellently camouflaged, protected by several 50-mm antitank guns in dug-in positions, maybe assisted by one or two dug-in tanks or some mines.

Artillery OPs had difficulty in spotting the 88-mm guns, and the practice was introduced of sending an air OP in behind a wave of bombers. The 88s opened up on the bombers, for which purpose they had to elevate their long, characteristic barrels. Thus, they were spotted by the gunner on the OP and fire was brought down on them with good effect.

The Germans made considerable use of artillery and, at any rate, in Tunisia, their *Nebelwerfer* — 6″, 6-barrel mortars (towed).

Rearguards normally withdraw at night: if by day, they withdraw behind the tanks which have come out in front to cover them.

Know Your Enemies' Weapons

ROCKETS

By Maj. William J. Hanks, FA

As this photo suggests, Schweres Würfgeraten are usually fired in mass, with only the crudest type of laying.

NEBELWERFER

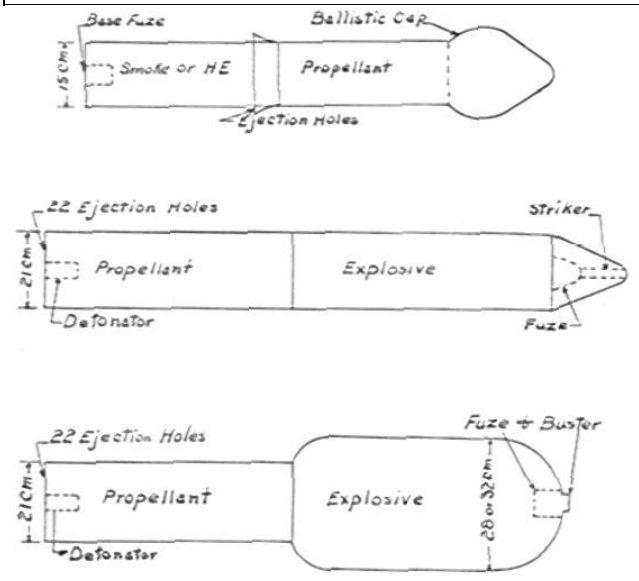
Germany's rocket gun was first reported from Russia. American troops first encountered it when the PJth Inf and PJth FA Bn were fighting near Maknassy in Tunisia; in this single North African appearance it was used only in a very limited area and not in great numbers. In Sicily, however, the Nebelwerfer appeared in full force; large numbers were used in a coordinated manner which caused appreciable damage.

At first sight the Nebelwerfer appears to be 5 or 6 parallel hollow tubes bunched together in the shape of a polygon, the whole arrangement being mounted on a split-trail carriage about the size of that of our 37-mm AT gun. Closer inspection shows that the tubes are about 5½ feet long, are of smooth bore and relatively light like our Bazooka, have a clip to hold the loaded rocket in place, and are fitted with a brass electric contact. Normal hand wheels elevate and traverse the entire set like one tube. Underneath is an electric contact plug which probably takes the cable which supplies the electric power.

This entire apparatus appears too light and flimsy to throw the big stuff that it does. This brings out one very significant advantage in any one rocket gun—the rocket projectiles in their open-end tubes give no appreciable recoil and exert little pressure on the sides of the tubes. The mechanism and structure of the rocket gun need be only substantial enough to support and maneuver the loaded rocket projectile and to withstand the road stress of a towed weapon.

EDITOR'S NOTE

It is as important to know how to use and to combat our enemies' weapons as it is to be skilled in the use of our own. With this in mind we present here the first of a series to be published periodically on these matters of both interest and importance.



Schematic diagrams: top, 15-cm Nebelwerfer projectile; center, 21-cm Nebelwerfer projectile; bottom, 28- or 32-cm Schweres Würfgerat.

Several different sizes of rocket guns have been discovered among the many found abandoned or destroyed. Of these the 150-mm (6 tubes) and the 210-mm (5 tubes) seem to predominate.

The ammunition for this weapon is enormous. 150-mm and 210-mm projectiles range from 4 to 5 feet in length—almost as long as the tubes from which they are fired. Several types have been found. Some are machined throughout, like an artillery projectile; others are cased, with 2 machined bands girding the projectile fore and aft. Some have blunt, rounded noses, others taper to a point. In one type the propelling charge appears to be concentrated in the base of the projectile; in the other 2 it seems to be contained in a layer around the circumference of the projectile with the inside HE. Propelling holes around the circumference of the base slant into the sides of the projectile, undoubtedly to impart rotation. The size and weight of those projectiles along with the rapid expenditure of this ammunition bring out what a tremendous problem the Nebelwerfer troops must have in the transport and resupply of ammunition. They also emphasize that the immediate supply of ammunition must be kept very close to the emplacement weapons.

Prime mover for the rocket gun is probably the German tracked personnel carrier. This tentative conclusion is based on reports of observers who have watched the weapon displaced and on the fact that in an abandoned rocket gun position previously heavily shelled by our artillery, the burned ruins of several vehicles of this type were found.

Some form of electric power is required. This is probably supplied either by a separate power unit (possibly mounted on the prime mover) or by some hook-up to the electric system of the prime mover itself.

A Nebelwerfer is fired electrically, one tube after another, consecutively around the circle. There is about a 1-second interval between rockets. The propelling charge burns out quickly—in about the first 200 feet—and gives a tremendous flash which is estimated to be 30 yards high; some observers say that in the distance it appears like a ball from a huge roman candle and all agree that it is very apparent. Another very noticeable feature in firing is the huge cloud of dust

Germany also uses her 320-mm rocket in a carriage similar to that of a field gun. Six (or perhaps 8, in some cases) rockets are removed from their crates, put in guides on the carriage, and fired electrically.

kicked up by the backfire of the rocket in the open-end tubes. These characteristics greatly facilitate an observer's locating the Nebelwerfer.

The projectile leaves the tube with a resounding, far-reaching roar of the propelling charge. This is followed almost directly by the loud, penetrating whine of the projectile in flight. As the trajectory is commonly very high there is an extremely long time of flight; this sometimes gives a first impression that a fighter plane is diving. Although the startling and continuous nature of these sounds is at first confusing in attempting to locate their origin, it does instantly identify the type of weapon firing.

Concussion gives the main effect of the rocket projectile. Most fragmentation is very poor. Often the entire case is found peeled back like a banana skin, so that the chief fragmentation (if it can be so called) seems to be large curved portions of the metal walls.

Many variables enter into estimation of maximum range, but it appears to be around 7,000 or 8,000 yards for the 150-mm and about 9,500 yards for the 210-mm.

The Nebelwerfer does not appear to have much accuracy—certainly nothing to compare with a field artillery piece. Most of its firing seems to be directed into an area rather than at a specific point. The extremely short guide tube, relatively low muzzle velocity, and changing center of gravity of the rocket projectile all undoubtedly contribute to the relative lessening of the Nebelwerfer's accuracy.

Germans employ this weapon in much the same manner as their close support field artillery. It is usually found on reverse slopes, but with perhaps greater defilade than is sought by an ordinary field piece because of its tremendous flash. Registration does not seem to be customary. Frequently these guns have been employed in close banks in as many as 6. When in banks they appear to be fired at the same elevation setting, like a battery of artilery, all projectiles hitting in roughly the same area.

Nebelwerfers have great speed of displacement, of which they constantly take advantage to avoid counterbattery fire. At times they have displaced within 3 minutes after a close round burst. This speed of displacement naturally demands that the prime mover and other installations be kept close at hand and ready to go at all times, and that the position be selected close to a road or trail for the getaway. It also probably precludes the practice of piling ammunition at the gun position—yet the size and expenditure of the ammunition makes doubtful the possibility of carrying all necessary ammunition in the prime mover. Numerous small piles of this ammunition found here and there near where rocket guns have been active suggest that each gun has selected several alternate positions, with ammunition stored at each.

All these observations must be kept in mind in the artillery attack on the Nebelwerfer. Speed or surprise is vital in adjustment because of the chances of the target's escaping. Adjustment must be made either on the Nebelwerfer with great speed and followed immediately by fire for effect, or on a point 400 or 500 yards away and followed by a surprise transfer to the target, going immediately into fire for effect.

During fire for effect one must remember that the Nebelwerfer is frail and easily damaged, and that in the immediate vicinity of the weapon are its generators, vital electric cable, prime mover, and bulky ammunition, each of which is as essential to operation as is the weapon itself. Fire should be intense (one Nebelwerfer is worth a battalion concentration, a bank of them deserves a division artillery concentration) and should cover an area 400 yards square.

In one instance before Randazzo when a bank of 5 rocket guns was firing, the combined fire of 3 battalions (one light and 2 medium) was placed on the area, through a 400-yard zone. Immediately afterwards our radio intercepted a German message to cease fire until the heavy artillery fire ceased and open fire again at 1030. It was then 0830. Our battalions continued

22 ejection holes for the 21-cm Nebelwerfer projectile form a closely-knit ring about its base.

Details of the larger incendiary rocket appear here. Lattice-work crate contains guide rails for firing. The crude sight folds forward to prevent projectile from falling from crate during shipment. Officer at right seems to be holding a screw-plug removed from near nose of projectile; this is likely where the incendiary liquid is poured in.

heavy fire on the area and followed it by intermittent concentrations. A large cloud of smoke arose from the area. 1030 came, but neither then nor later did the rocket guns open up from that position, nor was their radio heard again. Subsequent examination of their position revealed several burned ammunition piles, 3 burned-out prime movers, no guns, but all kinds of small equipment lying around destroyed. Numerous results like this verify the soundness of these methods in attacking the Nebelwerfer target — speed or surprise in adjustment, and fire for effect immediately, intense, and through a large area.

OTHER ROCKETS

28-cm and 32-cm Schweres Würfgerat are fired, electrically, directly from their cases. Range is determined by the angle at which the case is placed against the side of a ditch or similar support. Their maximum range is not much over 2,000 yards.

Projectiles for the 28-cm model weigh about 180 lbs., and so far have all contained HE filling.

The 32-cm projectiles are incendiary filled (oil and gasoline), weigh more than the 28-cm ones, and hold around 11 gallons of fluid. Although some projectiles have been found with a yellow cross (German mustard gas identification) marked on the nose, all of these contained incendiary filling.

A WIRE I.P.

By Maj. Norman Locksley, FA, and M Sgt. John M. Bobo, FA

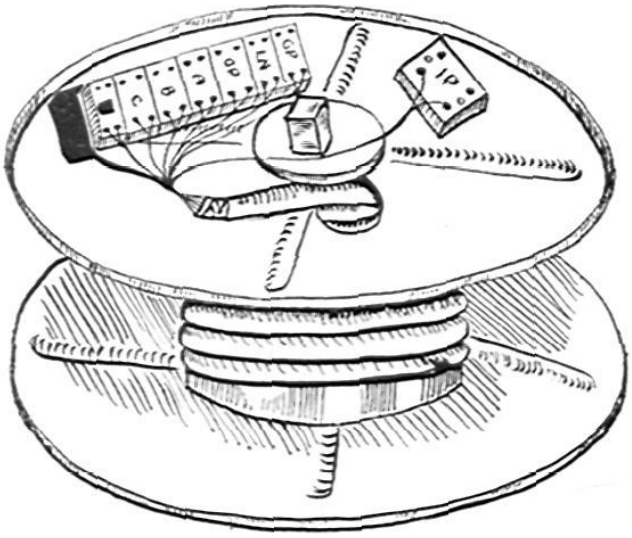


FIGURE 1

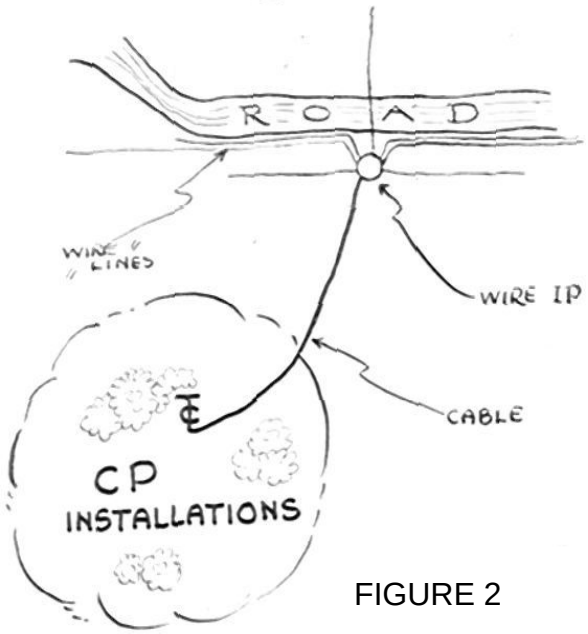


FIGURE 2

Ordinarily the connections to a battalion switchboard are, of course, 3 battery lines, a battalion OP line, liaison line(s), and (coming in) one line from Div Arty or Gp. These lines may be duplicated, and in many cases should be. Usually, while the battalion wire is being installed, several wire-laying crews will be stomping around hunting for the switchboard, tying lines into it, and often taking different routes to the switchboard—whose location had once been carefully concealed. Perhaps it would help to establish an Initial Point, away from the switchboard, from which wire laying could begin. We tried one. It worked.

In our case, the IP consisted of a salvaged DR-5 upon which was wound a 200-yard homemade cable of 8 pairs of wires (when more than 8 lines were needed we used our spare outfit). We painted the drum with white stripes so it could be located easily at night.

At the switchboard end of the cable all lines were marked to indicate their destinations, for the convenience of the operator in tying in the cable to the board.

At the drum the cable was threaded through a hole in one end-piece and fastened to a terminal strip, as shown in Fig. 1. A piece of pipe for an axle, and a wooden stand completed the ensemble.

The small strip marked IP was for the use of the Wire Sergeant and Communications Chief. When all lines were in, a phone was hooked on and these men made the IP their station. Spare crews were scattered in the vicinity. This arrangement was very handy for sending men out to repair breaks in the line.

Use of the terminal drum was simple. While the CP group of WTs was setting up the switchboard and making local installations, cable and drum were unloaded at a nearby road or trail. The drum was placed in the wood stand by means of the axle, and the cable unrolled to the switchboard. As this wire IP was the center of wire laying operations the crews took off from there without disturbing the switchboard or any other installation in the CP. Information concerning a break in communications could be phoned to the wire IP without delay.

Advantages of the Wire IP:

1. Traffic is kept away from switchboard and out of CP area.
2. A handy place is established as a headquarters for wire-laying and wire crews.
3. CommO has better control over wire personnel, acting through the Communications Chief and Wire Sergeant.

Disadvantage:

1. A shell hitting the cable would temporarily end all wire communications outside the CP. But such a break could be repaired quickly and, especially with a spare cable, should be an easy job.

The Greatest Victory of German Propaganda

By Capt. Andrew Kamarck, FA

It is well known that Italy entered the war in June, 1940, because Mussolini believed that the war would soon be over. Mussolini made a blunder. But Japan entered the war because of an even worse miscalculation.

In Italy's case, it was the facts of the situation which misled Mussolini. On June 10, 1940, when Italy went to war, France was on her last legs, and England had barely saved the men of her expeditionary force from the continent, leaving all heavy war equipment behind. In fact, England was even worse off than the Fascists could have suspected: the British have revealed that there were then less than 100 tanks in the whole British Isles. On the face of it, the Italians could reasonably believe (as did many American military men) that England, facing the Axis alone, could not survive.

In Japan's case it was not reality that misled, but German propaganda. Japan swallowed the German propaganda picture of the state of the war as being the true situation, and hence plunged into the war herself. The attack on Pearl Harbor was "Made in Germany."

The story really begins in 1940. The German conquest of the Netherlands in May, the collapse of France in June, and the desperate state into which Britain was thrown, took Japan by surprise. The Dutch, French, and British Far Eastern Empires were defenseless and ripe for picking. The United States had scarcely begun large scale rearmament. Japan had a priceless opportunity to seize the entire western Pacific, yet she did nothing toward this goal. The only action Japan took was directed toward victory in the Chinese war: she moved into northern French Indo-China to cut off the Haiphong-Yunnan rail supply line to China, and she forced England to close the Burma Road. It is obvious that both actions were directed against *China*, not against the Philippines, the East Indies, and the British Empire. Japan was unprepared to grasp the opportunity presented to her. All that she could do was to improve her position in the Chinese war. By fall, even one of these gains was lost by Japan. British victories in the battle of Britain and in Libya over the Italians restored to some extent the old balance in the Far East. This change was signalized by the reopening of the Burma Road in October, 1940.

The Japanese saw that they had lost a golden opportunity, and must have resolved not to be caught unprepared the next time. They also recognized that their hopes of permanently acquiring the rich loot of the Pacific were dependent on a German victory in Europe. To help along that German victory, on September 27, 1940, Japan signed the Tripartite Pact with Germany and Italy. This Pact was openly designed to threaten the United States and so prevent us from helping the enemies of Hitler in Europe. It was intended to speed a Nazi victory in Europe and, therefore, a Japanese victory in the Pacific. Premier Konoye of Japan flatly stated that "One of the aims of the Pact is to prevent the United States from participating in the war in Europe." Our former Ambassador to Tokyo, Joseph C. Grew, reports that the Japanese foreign minister, Matsuoka, told the United States in April, 1941, to stay out of war against Germany or else suffer a Japanese attack. While willing to threaten, the Japanese did not as yet feel certain enough of a German victory to enter the war.

It was becoming more evident, however, that the future of the Japanese Empire was becoming more and more closely linked with the fortunes of the German Army. *The Oriental Economist*, one of Japan's leading economic organs, early in 1941 proposed "that Japan go to the aid of Germany and Italy, no matter what the cost, so that they may emerge victorious in the European struggle."

At the same time that Japan was regretting her lost opportunity and becoming convinced that only a German victory in Europe would provide her with a chance to seize control of the Pacific, she was also learning how not to be a German ally. Italy had gone to war in June, 1940. Although her immediate ambitions ("Tunisia, Nice, Corsica") were all possessions of defeated France, Italy received nothing from victorious Germany. Japan undoubtedly learned, if she needed the lesson, that the way to get a share of the loot from a German victory was to grab it first.

Meanwhile, what was happening in Europe? In spite of the almost hopeless position of England in the summer of 1940, no German victory appeared. As has since been repeatedly pointed out by Hitler, it was the existence of the Russian Army in his rear which prevented him from bringing the whole weight of the German armed forces to bear on England in the summer and fall of 1940. The amount of air power which Hitler felt he could spare for the task of reducing England was insufficient, and was successfully beaten off by the British in the Battle of Britain.[1]

Then, in the winter and spring of 1941 the Germans tried to starve England out. There is now no doubt of this plan. Churchill revealed in his speech in the House of Commons on November 12, 1941: "In the various remarks which the Deputy Fuehrer, Herr Hess, has let fall from time to time during his sojourn in our midst, nothing has been more clear than that Hitler relied upon the starvation attack more than upon invasion to bring us to our knees. His hopes were centered upon starvation, as his boasts have made the world aware." These attempts failed. In large part this was due to the assistance of the United States—Lend-Lease, shipbuilding, and the American assumption of protection of the western Atlantic.[2]

In order to end the war rapidly, England had to be invaded. But invasion of England could not be successfully undertaken until the threat of the Russian Army was removed from Germany's back. Hitler stated this clearly on June 22, 1941, when the invasion of Russia started. Churchill's analysis was similar in his speech of the same day. Churchill summed up the situation succinctly in his broadcast of August 24, 1941: "But why is Hitler striking at Russia, and inflicting and suffering himself (or rather, making his soldiers suffer) this frightful slaughter? It is with the declared object of turning his whole force upon the British Islands . . . ."

Japan's hopes for loot depended on the downfall of Russia,

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[1] *Why Hitler Attacked Russia*, by A. Kamarck, FIELD ARTILLERY JOURNAL. Sept., 1942.

[2] *The Unknown British-American Victory*. by A. Kamarck, *Institute of Naval Proceedings*, August, 1942.

but the slightly-publicized crushing defeats administered by the Russians to the Japanese Army at Nomanhan and Changkufeng in 1938 and 1939 did not give the Japs any appetite for tangling with the Russians. In fact, the Russo-Japanese non-aggression pact signed on April 13, 1941, pointedly emphasized Japan's intention to sit out any Russo-German war. The Japanese were convinced that if the Nazis could defeat the Russians and the Nazi legions could turn undeterred to the west, England would soon fall. Profiting from their experience in 1940, the Japanese were determined not to let another opportunity slip this time. Also, with the example of Italy's treatment before them, they were convinced of the necessity of seizing the loot before their allies, the Germans, were in a position to do so.

During the fighting in Russia in the summer of 1941, German propaganda played on two main themes. One was the old Red bogey with which the Nazis hoped once again to isolate Russia from the other nations. Although a few individuals in the United Nations fell again for this one, on the whole German propaganda had no notable success here. The second theme was that the Russian armies were being destroyed one after another and therefore it was hopeless to give Russia any aid. We must admit that this German propaganda campaign succeeded: Great Britain and the United States did not give any appreciable aid to Russia during the whole German offensive from June to December. No military aid was given and the U. S. Government statistics, which have been published since, show that practically no materials were sent either.

Dr. Goebbels won a considerable victory over the United Nations. The same campaign, however, won an even greater victory over Japan.

This German propaganda victory in 1941 was based on the exploitation of the reputation of the German Army for telling the truth. Experience prior to the Russian campaign had shown that the communiques of the German Army, rather than over-stating, had consistently under-stated successes during the course of the campaign. This reputation was the asset which the Nazis now proceeded to realize on in the summer and fall of 1941.

On June 22, 1941, the German armed forces crossed the Russian frontier. From the beginning, the German communiques hinted that operations were progressing favorably. On June 25th, the communique stated, "In the east, fights of the army, air force, and navy against Soviet armed forces take such a favorable course that great successes are to be expected."

After the first week of war a series of special communiques were issued listing successes. The most notable of these was the victory in the air: "Although greatly outnumbered, the air force on June 22 won air mastery in the East and administered a destructive defeat to the Russian air force."

Also mentioned was the encirclement of two Russian armies.

A few days later, on July 2, progress was reported in flamboyant tones: "It is to be perceived more and more that the destructive battle east of Bialystok has brought a decision of world historical proportions. Unbelievable chaos has closed over the Soviet Army. . . ."

And on July 3: ". . . it now appears that resistance of the Soviet Army is broken."

On July 4: "Pursuit of the Soviet Russian armed forces is proceeding relentlessly. . . ."

July 10th the German army announced that "The greatest materiel and encirclement battle in world history is now concluded with the double battle of Bialystok and Minsk. A total of 323,898 prisoners, including several commanding generals and division commanders, fell into our hands." This communique makes interesting reading because there is considerable evidence that this "double battle of Bialystok and Minsk" never took place outside of the communique writer's imagination. There is a master's touch apparent in the preciseness of the figure of prisoners taken, "323,898." On the other hand, the number of generals captured is "several." It was easier to count 323,898 prisoners than it was to count 2 or 3 or 4 generals. The real reason probably was that it would be easier for outsiders to check on the number of generals than it would be on the number of privates.

On July 12, "In a brave assault the Stalin Line has been broken at all decisive points of the Eastern front." Although the Stalin Line never existed except in the German communiques, the world unhesitatingly accepted the picture of a powerful German Army irresistibly overwhelming a second Maginot line in its stride.

Further progress was reported on July 13th: "Our air force, by destroying the enemy rail system, has taken from the foe every possibility of organizing large-scale counter-operations. Many enemy units show signs of disintegration."

By this time the world (including the Japanese) had become convinced that the war in Russia was going according to plan for the Germans.

The propaganda was so successful that even setbacks became German victories. In the middle of July the German army was stopped by a Russian counterattack near Smolensk which smashed the first German attempt to take Moscow. But how did the picture appear at the time outside of Russia and Germany? Hanson Baldwin, the *New York Times's* military expert, summed up prevailing military opinion in Washington:

"POCKETS RETARD NAZIS

". . . as the situation appears here, a series of large-scale struggles to the death are being fought in several sections of the long Eastern front, with Russian forces of varying sizes in the north, center, and the south encircled or partly encircled by the Nazi Panzer spearheads and with these spearheads in some instances threatened themselves by Russian reinforcements."

In other words, any delay in the Nazi advance was merely due to the necessity of stopping to destroy encircled portions of the Russian Army. The situation must have been similarly interpreted by the Japanese, and they were ready to take a preliminary step: on July 21st the Japanese took over all of French Indo-China. Military occupation of southern Indo-China could only be in preparation for a jumping-off base against the Western Powers.

The immediate imposition of freezing control on Japanese funds (in effect, a trade embargo) by the United States, the British Empire, and the Netherlands East Indies made the Japanese pause before taking the next step. This vigorous reaction strengthened temporarily the position of that part of the Japanese ruling group which was reluctant to tackle the Western Powers.

Throughout the rest of the summer the German communiques continued to report German advances and great victories in Russia—victories which were much more plausible in the summer of 1941 than now, when the strength of the Red army makes it clear that the Russian retreats were withdrawals and not routs. The picture was skillfully painted of a German army forging ahead and smashing one section of the Russian army after another, and of a Russian army which under

the German attacks was degenerating into an armed mob. Russian resistance continued only because of the existence of huge masses of cannon fodder.

On August 6th the German communique stated that "As apparent from numerous reports, Soviet leadership no longer possesses a reliable picture of the situation on their own front." In September was reported the encirclement and total destruction of four Soviet armies consisting of 50 divisions in the Ukraine.

By October, if the German reports were correct, the Russians were nearing exhaustion of their manpower reserves. On October 2nd Hitler launched "the last great decisive battle" of the year. In the Order of the Day, Hitler told his troops: "Within a few weeks his (Russia's) three most important industrial regions will be completely in our hands.

"During these three and a half months . . . the precondition, at least, has been created for a last mighty blow that shall crush this opponent before winter sets in."

On October 3d the communique stated that ". . . this enemy is already broken and will never rise again."

By October 8th the encirclement of a vast group of Russian armies at Vyazma was claimed.

On October 9th came the great climax: an encirclement at Bryansk was reported and, said the communique, "Together with units already encircled at Vyazma, Marshal Timoshenko has here sacrificed the last fully able armies of the whole Soviet front."

Dr. Otto Dietrich, the Reich press chief, after a conference with Hitler flew back to Berlin, summoned all the correspondents, and categorically declared that Russia had been conquered. Said he, "I have never misled you on the Western Front campaign. I pledge my good name for the genuineness of this information." He made the following statements which were blazoned on the front pages of newspapers throughout the world:

1. The last complete Soviet armies, those of Marshal Timoshenko defending Moscow, were locked in two circles and faced inescapable destruction.
2. The southern armies of Marshal Budenny were routed, and virtually the only hindrance to further German conquest there was the human and mechanical factor of how fast men can drive machines.
3. The kernel of Marshal Voroshilov's army was locked in Lenigrad and was useless to stay the German drive eastward.
4. With the annihilation of the six Russian Armies on the central front, "the campaign in the East is decided. The military decision has already fallen. For all military purposes Soviet Russia is done with. The British dream of a two-front war is dead."

The impact of these categorical statements was great. Even those who had been skeptical of the German communiques were shaken. It was felt that, after all, these statements must be true—for certainly nobody would dare to go out on a limb so far and tell such stupendous lies. Hitler's statement that a lie to be believed must be a big lie was perfectly exemplified in this case. And on the whole the world believed these enormous lies. On the same page on which the *New York Times* reported this news it carried a story from Washington which began, "The American program of aid to Russia is proceeding undiminished, notwithstanding the great German drive to *liauidate the remaining effective Soviet Armies*" (my emphasis).

The same news determined the Japanese decision that the time had come to strike.

The Japanese leaders held a series of emergency meetings to determine policy. On October 15th the Privy Council, the advisory body on foreign matters, met in the presence of Emperor Hirohito. It is probable that the decision to enter the war was made on this day. On October 16th the cabinet of Prince Konoye resigned, and a new cabinet headed by General Tojo was organized to lead Japan into war. The Navy Ministry spokesman, Captain Hiraide, director of Naval Intelligence, in a speech the same day told the nation that "the Japanese navy is itching for action." "The fate of our empire depends upon how we act at this moment. It certainly is at such a moment as this that our navy should set about its primary mission."

We do not have to guess at what happened: the October 16, 1941, edition of the *Central China Daily News*, organ of the Japanese regime in Nanking, let out the secret. It is clear that the German "final victory" in Russia was the decisive element in the final decision. The paper stated:

"A Japanese—American conflict is inevitable as soon as both nations [read, 'Japan'] have completed their preparations. Neither Washington nor Tokyo ever had any real hope that the current Japanese—American diplomatic negotiations could lead to broad general understanding with regard to the Far East, but each [read, 'Japan'] found a period of negotiation convenient to mask its preparations for war.

"In addition, both nations wanted to await a definite trend in the Russo-German conflict before risking a clash. The trend in the Russo-German conflict now seems to be apparent with German occupation of Moscow almost a certainty, and, therefore, it may be expected that the armed forces of both Japan and the United States [read, 'the armed forces of Japan'] have begun clearing for action."[3]

The new cabinet headed by General Tojo that was organized on October 16, was set up to plunge Japan into war against the democracies—a war based on the false premise that Germany was already victorious in Russia.

Preparations for the attack on Pearl Harbor and for the drive to the South began. And, as a part of the camouflage and probably also to try to accomplish a far-eastern "Munich," if possible, on November 5th Kurusu was dispatched to Washington as a special peace envoy. The attempt to persuade the United States to abandon the Pacific failed, but the diplomatic maneuvering put our army and navy at Pearl Harbor off guard.

Preparations for the war went on. Where and how to strike was predetermined by natural conditions. Acquisition of the Maritime Provinces of Siberia would be valuable from a strategic point of view, but the year was too far along and the disorganization of the Russian "collapse" had not yet reached Siberia. There would be time enough for that in the spring. But in the south where the rich loot lay, the attack had to be made and finished before the monsoons came in the spring. The earliest date practicable for action was early December when the rice fields in Thailand, Burma, and Malaya were dried up.

The Germans would invade England in the spring. To *wait* for this would be too late; by that time the weather would be unsuitable for campaigning in the south. Also, the experience of Italy was worth profiting by. It was one thing to grab colonies

[3] *New York Times*, Oct. 17, 1941.

from a besieged and about-to-be conquered England, it would be quite another thing to seize the spoils from under Germany's nose. If Japan waited too long she might even find herself confronted with a German — "Vichy" British partnership.

So Japan planned and prepared. President Roosevelt pointed out on December 8th that Germany had ". . . been telling Japan that if Japan did not attack the United States, Japan would not share in dividing the spoils with Germany when peace came." To make sure that she would receive her share of the spoils Japan kept her plans a secret not only from her enemies but also from her ally, Nazi Germany. The time table proves that the Japanese attack was as much a surprise to the Nazis as to the United States and England. Japan struck on December 7th. If the attack had been coordinated with Berlin, the Nazis would also have struck at us on the same day. When the Japanese attacked, the Germans and Italians, taken by surprise, did not declare war until the 11th of December. And this is most revealing: not until January 14, 1942, did Nazi submarines reach the east coast of the United States and begin sinking ships. The five-week lag between December 7 and January 14 can only be acounted for by the fact that the Nazi sub assault on the United States had to be planned from scratch on December 7, 1941.

And so on December 7, 1941, the Japanese attacked without warning. Convinced by German propaganda that Russia was finished and therefore that England would soon be knocked out and the United States would be isolated in a world of enemies, the Japanese acted in furious haste to acquire as much of the Pacific as possible. With Japan completely committed, a German military spokesman felt free on December 8th to admit that the Germans had had to stop short of Moscow and that capture of the Soviet capital was not expected that year.

Nazi propaganda has won some notable victories in the war, but unquestionably the greatest victory of all was the seduction of Japan into the war. The Japanese entrance into the war diverted the forces of the Nazis' enemies and enabled the German army to recover from the disastrous over-extension of its lines in Russia, unimpeded by attack from the west. As for Japan, its gullibility toward German propaganda has plunged it into a war which can end only in its utter ruin.

Troops In Training and Combat

By Col. Michael J. Fibich, FA

THOUGHT, SPIRIT, AND MORALE

Independence of thought and action on the part of all military personnel *within their missions*, is stressed at every opportunity. That is a basic principle. A well-trained army is composed of *aggressive* and *thinking* individuals, organized in *teams*, operating with *precision* and *careful timing*. The tremendous importance of *common sense* and of the *simple* and *practical solution* of every problem that presents itself in the field is repeatedly emphasized.

Every soldier is trained to the *limit* of his abilities. He is not taught anything that he will have to forget the very first day that he is subjected to actual battle conditions. Time is spent only on those things that are *useful in war*. He is not compelled to *memorize* rules. On the contrary, every effort is centered on teaching him how to *think* for *himself*. Frequent *practice* and *experience* in the field will train a man to *use* his *head*. The soldier, whether he be an officer or an enlisted man, acts in battle as he has been *taught* to *act* in *practice training*.

The soldier is the *measure* of his officer's worth. He reflects the *officer's* ability and character. Fine officers constantly *anticipate* with reference to the welfare of their men, to reap the reward of their respect and affection. Officers do not ask without giving of *themselves*, and *give before asking*.

Excellence in *performance* is the basis of high morale and esprit. It is evidenced by the soldier who is *inspired* with an aggressive urge to come to grips with his enemy—*at the point of the bayonet*. This inspiration comes from the knowledge of his superior ability to *kill* and *not to be killed*. No need to worry about him! Excellent leadership is accompanied by an eagerness to follow.

Close-order drill is not the *only* disciplinary drill. This objective is attained in equal measure on the marches, in the field, and in daily routine. The principal thought uppermost in our mind is "Which is more important, close order drill or combat training?" The relative importance can be determined by the answer to the question, "Which method is *used in war?*"

Practice is often held on the terrain in conjunction with *frequent changes* in the *assignment* of officers and men to *different duties*. Problems are constantly varied so that *no attempt* is made to *memorize rules*. Men must learn how to *think*. Each problem must require a *different solution*.

A battery commander leads his battery *better* if he *understands* the problems of leading a *battalion*. The more thoroughly a commander understands the leadership of the next higher unit, the *fewer orders* he needs. When informed of the mission of his superior unit, he can act with greater confidence *within his mission* if a changed situation arises before he gets a new order from his superior commander. He can act more correctly because he knows what is at stake. The more thoroughly a soldier is trained as a *leader*, the *better* he will *fight*. To be successful in combat, each soldier must be a leader on a small scale.

Every situation is unique and requires its own plan and organization. Organization and tactics are closely bound together. Each situation can be handled in various different ways. The principle that there are *different solutions* to *every problem* is driven into the minds of subordinates by constant repetition. "Only one solution" is *not* the correct solution. The aim of military training is to provide *thinking soldiers* who are able to make prompt solutions and render quick decisions.

A critique may be given by a corporal, a sergeant, a lieutenant, a captain—or other individual. Procedure and purpose are the same in every case. What more instructive method can be found to help the officer who has that day fired a problem than to have his battery commander review and criticize his conduct of fire on a sand table which is an exact reproduction of the terrain over which the battery was firing? Is there any better way to clear up all doubts and reproduce the continuity of every exercise from an instructional point of view?

In warfare, only the *simple thing* is *possible*, but it is usually difficult to do the simple thing. The human mind likes to complicate matters. This idea of utmost simplicity must be kept *constantly* in mind.

Everything connected with war is subject to war. Only *change* is *permissible*. Inactivity at any time, whether it be in bivouac or assembly areas, on the march, or in forward battle positions, is to be *severely censured*. The great need is for *activity* and yet *more activity*.

All situations in warfare are subject to continuous change. Rapidly changing situations *cannot* be solved by *rules*. War is not normal. Neither is there a normal or rational way of carrying out any form of combat. There is no such thing as the *golden rule*. A military

force runs the danger of being enmeshed in rules. An efficient army is free of all set rules, and avoids all preconceived ways of thinking. If this is not done, then successful operations are hampered with disastrous results.

Complete orders for immediate execution are not wanted. Short, fragmentary, and concise directions must be given at the *proper time* to the *proper persons*. The latter *reflect* the *character* and *forcefulness* of a *commander* and produce *quicker action*. The long order serves its purpose only in the matter of completing an important record of any action or operation.

Every officer must have a complete and thorough knowledge of *his own* particular *job* and of the *responsibilities* that such a job entails. He must have the important facts at his fingertips, so he can make *prompt* and *decisive use* of them when the occasion arises. A lack of understanding of his own mission or that of his superior must not hinder him from rendering all the assistance possible. It is too late to attempt to learn one's lessons in combat.

The tempo of modern warfare is being stepped up every day. Officers cheerfully support this state of *continuous change* with every ounce of their *initiative. Self-confidence* is the *fundamental requisite* for rendering useful service. No man can perform good service when he is not sure of himself. A soldier uses his *brains*. He is convinced that he is *right* and then goes ahead *promptly* after the objective with confidence.

Organization and Movement in Combat

The important elements of a knockout punch in organization and movement are: *mobility, surprise, protection, prompt* and *early attack, flexibility* without *loss of effectiveness*, and the *opponent's weakness*. A commander has three things: a *mission*, a *map*, and a *will*. His staffs are small because only *small staffs* can work *quickly* and *get things done*. Everything is arranged in the simplest manner, so that prompt decision may be made and the decision executed. The commander's decision clearly points out the tactical mission, but must *not* give any stereotyped rules as to *how* it is to be executed.

Movement is the *vital* element of war, and only by mobile warfare can decisive results be gained. The principle of mobility is a very important one because the supreme tactical principle is *mobility*, aided by *surprise. Mobility* means *quick decision, quick movement, surprise*, and *attack* with concentrated force and fire power. *Mobility* imples *constant change* as to means and methods, and the determination to do the most *improbable thing* whenever the situation permits.

In order to remain mobile, an army must be able to *shift* its troops at *any moment*, and the troops must be *ready* to *fight* at *any moment*, as soon as contact is probable. Artillery must be as strong and early as possible in terms of *time* and *space factors*, with all its supporting fire power in a state of *readiness* at any time, without having to make additional preparations. Only one thing matters: guns must be ready to fire *when* and *where* they are *most needed*.

Advance is continued by bounds without halting, *stripped* of all *impedimenta*, except those absolutely essential for the final kill. *Mobility and movement to the last*. Intestinal fortitude makes men *grim, forceful*, and *ruthless*—and *kill* with a *snarl*. Sledge-hammer blows!

Traffic and March Discipline

No troop or vehicle uses a road longer than necessary to move forward; when lining up, halting, or marching into rendezvous, position, or bivouac areas, *clear* the *road at once*.

Do not form on the main road. Utilize side roads, byways, and sometimes even the terrain along main roads.

Take lighter vehicles immediately *off* the *road*. If heavier cars have to stop on the road itself, then select *broad spots* for halts, and train drivers to drive as sharply as possible to the right.

Exercise care in the selection of convenient *halting spots* for vehicles *close* to the *border* of the *road*.

During a short halt, move a column *at once* to the extreme right side of the road. Distance is sometimes gained if single vehicles *close up*. The left side of the road is kept *totally clear*.

Field kitchens and other vehicles do not block the left by driving ahead.

Single vehicles do not halt on the left and thereby stop traffic from the opposite direction. When this occurs, officers and men of every rank take *corrective action* and *initiative* in maintaining order.

Roads are blocked when a column stops suddenly and vehicles in rear are unable to turn to the right, along the roadside. Use signals or commands, well in advance, to *advise* vehicles in rear of *intention* to *halt*.

Give early consideration to possible movements of troops from main march roads into villages and side roads, to avoid congestion *and confusion*.

Remove from the road motor vehicles temporarily out of commission, by having personnel push them if necessary.

Careful reconnaissance of selected rest and halt places is of the greatest importance.

Train each unit to understand that, in active campaign, the road serves many units besides itself.

Training in *march discipline* is important. Bad habits exert a very positive influence upon wartime actions.

Every superior has not only the *right*, but also the *clear duty* to intervene on the march where he is needed, and to take vigorous action to *prevent* the *clogging* of roads or to clear up road *bottlenecks*.

There can never be any dispute about competency: *He who is present is competent and responsible*.

BASE-EJECTION SMOKE SHELL—*ADDENDA*

Much interest was aroused by *Tactical Use of Base-Ejection Smoke Shell* by Lt.-Col. W. Burrell, RA, which was published in this JOURNAL for October, 1943. Some questions have been raised; their answers are doubtless of general interest.

Height of Burst

As stated in the earlier article, the ideal height of burst is 2º 30′ (44 mils). The standard fuze settings given in the 25-pdr. Smoke Range Tables (Firing Tables) are for this height; no false angle of site is therefore applied. This admittedly results in a variation in the absolute height of burst at different ranges, but the object is to ensure that 100% air bursts are obtained—unlike in HE time fire, where a proportion of graze bursts are accepted and desirable. The longer the range the longer is the time of flight, and the larger the error of both gun and fuze. This means that bursts have to be higher (in yards) to avoid any shells' bursting on graze.

For example, at long ranges the fuze error will cause a differential between burst points of over 200′ along the trajectory. The 100% zone of the guns (100 yards or more) and the fuze *K* have also to be considered. Thus it can readily be seen that it is preferable to have the mean height of burst too high rather than too low, in order definitely to avoid graze bursts. And since the canisters approximately follow the trajectory of the shell, height of burst is not so important as in the case of HE time fire.

Fuze Setting

If the rate of fire is slow, the fuze setting can and should be altered to obtain the correct height of burst. But if there is any chance that stopping fire to alter fuzes might cause a window, changing the site may achieve the required result without that drawback.

Maintenance begins with the first echelon. If there is good driving and good first and second echelon maintenance, there need be little third echelon maintenance.

LT. GEN. L. J. MCNAIR

TROINA ADDENDA

By
Brig. Gen. Clift Andrus,
USA

Like Troina, Vizzini is a hilltop town. It well illustrates the extremely difficult terrain over which our infantry had to advance and our artillery had to render support.

Early in the morning of 27 July 1943 the "B" Regiment moved out to take some high ground in conjunction with the Goumes on their left. In this sector 400 Italian and 25 German prisoners were taken, many as the result of fire from a 155-mm M-1 gun battery and a battalion of 155-mm M-1 howitzers. Fighting in the sectors of "A" and "C" Regiments continued to be bitter, with the enemy employing machine guns, mortars, nebelwerfers, and considerable effective artillery. Some advance was made in each sector against strongly contested resistance, and our artillery units gave close and continuous support. Targets throughout the day consisted of troops in gullies, mortars, and guns, dug in position; and the 155s engaged in counterbattery. Results of firing were extremely effective. Time fire on the back slopes of hills was especially so. Three direct hits were scored by battalions on nebelwerfers, and enemy batteries were silenced and neutralized. Air OPs were effective until approximately 1500 hours, when all were grounded due to high wind. During this period the artillery in action consisted of "E," "F," "G," and "H" Battalions (organic to the Division) and "J" (155-mm howitzers) and "N" (plus a battery) (155-mm gun) Battalions from Corps. At 1500 hours the Division made a coordinated attack supported by artillery and light tanks. By daylight the next morning there was little resistance and the infantry advanced rapidly, taking many prisoners left in pockets during the hasty withdrawal. This cost the enemy over 1,000 in prisoners and dead.

EDITOR'S NOTE

Col. Lanza's "Perimeters in Paragraphs" are splendid accounts of current military activity. Necessarily, however, they are drawn only from such public information as is available immediately after the events. As specifically stated at the head of each installment, they are subject to correction.

Gen. Andrus, from his first-hand knowledge, helpfully elaborates and corrects the account of Sicilian operations set forth on pages 765 and 766 of this Journal for October 1943. We welcome all factual material from overseas, whether in complete narrative form or as addenda to earlier articles.

July 29th was one of the quietest days during the campaign. The enemy had withdrawn so rapidly that it was very difficult to maintain contact.

Cerami was occupied on 31 July. The artillery preparation was fired by 10 battalions. Five other available battalions could not be put in position in time due to the fact that Corps was using the one very poor road for all movements of the Corps. Beginning at 2400 hours, 30/31 July, and lasting until 0300 hours, 7 battalions fired 19 concentrations of harassing fire, opening with battalion volleys. From 0315 to 1500 hours 9 battalions fired 51 concentrations. Infantry units moved in with no opposition and passed through the town at 0830 hours on July 31st. "H," "F," "P," and "E" Battalions displaced forward concurrently. Heavy enemy resistance was encountered as stated in the article, and the only road in the area was as described.

Throughout the night 31 July—1 August harassing fires covered known targets and suspected locations of enemy installations and armament, interdicted the roads, and were effective as will be mentioned later. More Corps battalions moved up into position as the road congestion in the rear cleared.

From 1 August on there were never less than 10 battalions that could reach Troina, which was several thousand yards in rear of the enemy position. Every available gun position was utilized. At one time Division Artillery Command Post was located in the center of a diamond of one battery and the area within a mile of that point covered most of the artillery in action, most of which could easily reach Troina.

Artillery units were active throughout the 2nd. During the morning the targets were mostly troops, mortars, machine guns, and nebelwerfers. One counterattack was effectively repulsed at 1012 hours by 3 battalions. An observer with the Goumes on the mountain to the left adjusted on 3 enemy batteries with excellent effect on 2 of them. During the latter part of the day the number of targets increased considerably as better observation was gained. The engineers had repaired the road.

The Division Artillery Field Order issued for the attack of 4 regiments before daylight on 4 August provided that each of the 4 direct support artillery battalions have a 155-mm battalion to reinforce its fires direct. The remaining Corps artillery was in general support. All units were active over the entire front on observed targets of all kinds, including a great deal of counterbattery. During the day Division Artillery Headquarters directed 26 concentrations, many of them being called for by direct support battalions in need of more power than was provided by the 2 battalions available to them. These concentrations varied from 3 to 7 battalions and stopped counterattacks, dispersed enemy concentrations, neutralized strong points and artillery, and were unceasing. One infantry commander before the attack desired to know what artillery support he could have. He was shown on the artillery liaison map at Division Command Post that the range ares of 10 battalions covered his effort, and his request for fire support later in the day brought a response of heavily concentrated and massed fire. The statement that the assault detachment passed through the German front line is misleading. On the front of the only battalion of infantry to which the statement could have referred over 350 mangled German bodies were collected as a result of artillery fire (largely time) that was adjusted when that battalion was practically surrounded.

On August 5th there were 4 regiments in line, and had been for a week.

The following is a list of some of the targets fired on during the 4th and 5th: major targets destroyed were mortars, ammunition dumps, and vehicles on the entire front; troop concentrations and ammunition dumps; counterbattery; Mount Acuto on request of liaison officer with the Goumes by "H," "S," and part of "E" Battalions; strong point by "P," "S," "J," "E," and "F" Battalions on request by "A" and "D" Infantry Regiments; 6 tanks (all destroyed); 12-gun battery with several vehicles and much equipment and stores destroyed by concentration of "W," "G," "T," and "U" Battalions. These are but a few of the missions reported.

No attempt was made to destroy Troina, because of the presence of civilians, but when definite locations of observation posts and enemy gun positions were discovered, and the suspected location of the command post was announced, considerable fire was placed on those few selected targets. From a report the following statements are made:

"The town was found to be in a greatly destroyed condition and circulation in and about the town was almost impossible because of the debris in the streets. It was observed that nearly every house had been to some extent affected by the bombings. It was ascertained that of the total population of approximately 15,000 only about 1,500 people had remained in town, the others having been evacuated over a period of 10 days prior to the 1st of August. * * * *

"Contact was immediately established with the local Carbinieri and Agents were assigned to various missions and the following results obtained:

"a. Six locations, formerly occupied by German and Italian troops as command posts, observation posts and billets, were determined. It was ascertained that the main command post of the enemy located in the center of town in a building formerly occupied as Fascist Headquarters had been the subject of a direct bomb hit, two German officers and approximately eight soldiers having been buried in the debris. * * * *

"A former enemy CP located in a demolished convent immediately outside the town limits was searched and three German soldiers captured. Two others seriously wounded were subsequently treated by Army Medical units.

"A school utilized both as billets and offices and unknown enemy activity was found to have been bombed and no papers found. * * *

"* * * *. The five-day shelling and bombing of the town and area apparently allowed an orderly destruction by Fascist organizations of the records and other material. * * * *."

In considering the Sicilian campaign and especially the Battle of Troina, certain things must be recognized. The Battle of Troina really developed on July 31st, which was the 22nd consecutive day the Division had been in action and during which time it had fought several severe battles and marched a distance of approximately 175 miles over mountains and difficult terrain, with a supply line limited to one poor road that had been subjected to a great amount of demolition. Troina was the keystone of the enemy defense on the final line. It was the vital communication center for the defense of northeastern Sicily. It was strongly held, organized with all the skill and ingenuity available to the Germans, garrisoned by first class troops, ably handled, and when it fell resistance in Sicily practically ceased. It is not known exactly what casualties were suffered by the Germans in its defense but at least 2,500 German dead were left and most of them had been shattered by artillery fire.

Approximately 90% of all the artillery fire delivered in the daytime was observed fire and extremely effective. The other 10% was of harassing, searching or interdiction missions.

That the infantry received supporting artillery fire is beyond question.

READ, MARK, LEARN

By Lt.-Col. G. D. W. Court, M. C.

I wish to teach the simple rules
We preach in Antitank,
Although they are not often taught
In rhyming verse or blank.

The first important rule to learn.
If knowledge you desire,
Is ALWAYS hit him in the flank—
And NEVER frontal fire.
(For it is quite the usual thing
To face the way you run.
And if you shoot him in the flank
He will not see the gun.)

But shooting Jerry in the flank
Is only ONE trap laid:
To solve the school solution you
Must find some defilade—
By which I mean that you must try
To site the —ing gun
So that the tanks *behind* the one
You've hit, won't see the fun.

Now, if you choose to site the gun
Upon a forward slope,
You'll never live to tell the tale;
There's not the slightest hope.
For all OPs for miles around
Will spot you pretty quick—
A ranging round upon the ground
Then bags and bags of *stick!*

So if you'll take a tip from me
And live to fight again—
You'll bank your hopes on REAR of slopes
And save the lives of men.

LENTINI — 14 July 43

Action of KBNth Field Regiment RA

Received through

Maj. Edward A. Raymond, FA

On 10 July, 1943, the 50th Div landed in Sicily from 0245 hrs onward, all personnel of KBNth Field Regiment RA in 'D' day convoy (less rear parties) being ashore by midday. On this day positions were reconnoitered south and southwest of Avola to cover the beaches, also in the area immediately north of Cassibile. The former were not occupied, the latter were. During the next few days positions were occupied (*a*) on the road Canicattini Bagnia—Siracusa, (*b*) south of Floridia, (*c*) on the road Floridia—Sortino, (*d*) just east of Sortino, (*e*) 3 miles north of Sortino, and (*f*) about 7 miles south of Lentini. Although in the early stages little shooting took place, the actual movements were such that most people got very little sleep between the night before landing and the night of 14/15 July.

On that afternoon KBNth Field Regiment in support of FSth Infantry Brigade arrived in Lentini to receive a delirious welcome from what appeared to be the entire population, and it was felt that there was a sporting chance of at least some undisturbed sleep that night. Various factors prevented this, however. Firstly an unfortunate episode during reconnaissance of regimental areas on the afternoon of 14 July resulted in the deaths of Maj. P. Perbury, MC (B.C. LHRth Btry), Capt. P. T. G. Withycomb (Troop Comdr B Troop), and two other ranks. A number of Italians had been giving themselves up, and on this particular occasion a party was discovered in the regimental area. Thinking little of it, Maj. Perbury and Capt. Withycomb approached to receive the surrender. Suddenly a German bolted from the lorry in which the party had been travelling and almost immediately a very heavy explosion took place, killing Maj. Perbury and Capt. Withycomb outright and wounding several prisoners. The driver of Maj. Perbury's truck was killed and his operator died of wounds.

As a result of this episode a fresh reconnaissance took place and positions were chosen close into Carlentini village on the road to Agnone, where it was considered that interference by wandering parties would be less probable. While preparations were being made to occupy these positions and the leading battery was involved in the long column of the 50th Div winding through Carlentini, a lorry approached from the east along the Agnone road. This was challenged by one of the regiment's Bren Carrier OPs which had been put out for the purpose, but declined to halt. Fire was opened with a Bren and rifles, but it was not until the lorry was well within the area and even revolvers had been brought into play that it was finally halted. It disgorged some 20 ancient, battered, and grey bearded Italians from the coastal battalion who were greeted by the CO with the remark "You silly old men! What are you doing fighting in this war?" Incidentally, on his way to the original reconnaissance of this area the CO had been somewhat embarrassed by the appearance of 3 Germans and an Italian. The former were fully armed and equipped and more than a match for the CO and his jeep driver, whose total armament at that moment was one rifle, one Tommy gun, and one revolver. Fortunately they decided to accept our hospitality for the duration and all was well! Later in the day further reces down the Agnone road produced 15 more Italians of the Marini battalion. Such was the state of confusion in the enemy ranks that numbers of such bodies were wandering in the area covered by the division and many of them surrendered eagerly when permitted to do so; the appearance of these parties was therefore not particularly alarming.

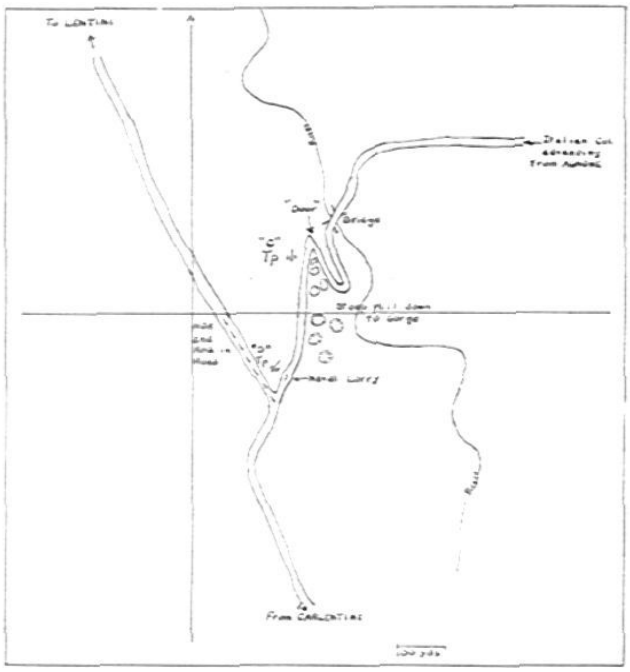
The position was duly occupied by NHSth Btry, NDKth Btry and RHQ arriving later just after dark. Owing to the late hour and subsequent developments LHRth Btry bivouacked in the streets of Carlentini, through which town a steady stream of troops was still proceeding. Steps were taken to picket routes into the area, Lt. Irwin being in charge of one patrol, and to ensure that local defense was more carefully organized than usual. The afternoon's experiences persuaded every man to keep his weapon and ammunition very close to hand. It was not until about 2000 hrs, as it was getting dark, that a column including tanks was reported approaching the position.

Meanwhile, in the field on the north side of the road (see sketch) NHSth Btry had been waiting in tense expectation. Suddenly there came a warning order from Capt. Langlands—"Tank alert"—and the sound of tracked vehicles coming up the hill could be plainly heard. The standing patrol which had been posted down the road withdrew. The first vehicle that loomed up was a large truck towing a field kitchen. This sailed past unmolested and was brought to a halt by the previously captured lorry which had been used as a block at the road fork.

Some people suspected that this was not a British vehicle. L/Bdr. Armiger then jumped into the road with a rifle. In the trees on the right Gnr. Phillips of NDKth Btry was concealed with a Bren gun. 2 or 3 motor cyclists first appeared; no one opened fire as it was still doubtful if the approaching column was enemy or friendly. At a few yards' range the leading motor cyclist fired the machine gun mounted on his cycle, was challenged, and put his hands up. Lt. Stevenson shouted, "Don't kill him," and L/Bdr. Armiger threw down his rifle and knocked the man off his cycle with his fist. Another of these motor cyclists was shot by Phillips and a third by Bdr. Anson.

Three minutes later tanks could be heard coming round the last bend into the straight. No. 3 gun of D Tp fired 3 rounds of HE at 900 yds along the direction of the road. No. 4 gun fired 1 round AP at the leading tank, but could not get sufficient depression, for the road was in a hollow rut below the level of the field. Simultaneously, in C troop Sgt. Halliwell, whose gun had been brought into action just inside the wall and laid and loaded ready, got into the road with Bdr. Gray while the rest of the crew took up defensive positions with rifles. They suddenly saw the tanks approaching, but before they could get to their gun it was fired by Lt. Irwin, who had come back from his patrol unobserved. It had proved impossible to get the gun on its platform at that particular point, so when it was fired it jumped back and broke Lt. Irwin's leg.

By now every man had a Bren, tommy gun, or rifle in action



and was thoroughly enjoying it. There was considerable danger that those in rear, if not strictly controlled, might fire into the backs of troops further forward. This danger was fortunately averted, chiefly owing to timely action on the part of Sgt. Ashton of D Tp, who indicated the position of his troop by shouts during a lull. The leading tank, finding a 25-pdr shell whizzing over its head from point-blank range, swerved and hit the wall. An officer got out and fired with his revolver at Gnr. Phillips in the trees (at 5-yd. range); Phillips replied with a burst from his Bren; both missed. The tanks behind also stopped and, since they could not use their guns as they were beneath the level of the wall, used their automatics to return fire over the wall. They also threw a few grenades. Some of them lined the cactus hedge on the far side of the road from the battery. It was a bullet from here that killed Capt. Langlands at 10 yards' range as he was standing in the open directing the fire of his troop.

At this stage a call from C Troop to charge and man the wall received immediate response and from then on many of the gunners remained standing by the wall, firing point-blank at the tanks and their escort of motor cyclists, and there was a general uproar of shouting and firing for a few minutes. Most of the men were shouting, "Pack in," "Give up," and certain more idiomatic expressions, and seemed surprised that the Italians did not cotton on to what they meant. The Italians shouted back "Italiano, Italiano," apparently thinking that we were Germans.

Confusion was increased by the men of NDK and RHQ, who were packed in the road on the left of the field. Not suspecting the presence of any enemies, they were astonished to find bullets begin to whistle over the road. The greater part at once took cover at the foot of the high walls bounding the road. The RSM boldly leaped the wall and advanced toward the firing to see what he could do. The men then got hold of their small arms, lined the wall, and started to return the fire in the general direction of the shooting and shouting on their right until their officers prevented them, not knowing if it was friend or foe. NHSth Btry was for a time between two fires.

After a few minutes the CO managed to restrain the firing and restore order; the Italians were summoned to surrender, which they were perfectly ready to do, but whenever they showed themselves someone would open fire and they popped down into their tanks again. At last BSM Moore, Sgt. Ferguson, and many others leaped over the wall and pulled them out of their tanks by main force. (The "tanks" were 3 47/52 Semovento, open at the top, armed with one 47-mm gun and one MG.) Lt. Stevenson got into the hindmost one to try to block the road with it, but as it would only go backward he got out and with several others held up 2 more tanks and some more motor cyclists who came 'round the corner. Sgt. Waugh and Gnr. Lawley, who joined this party, both went in to mop up those tanks in spite of the fact that neither of them had any ammunition left at this stage.

Shortly afterward a party headed by Lt. Easter, Lt. Smith, and the RSM went around the first corner and found 2 stationary tanks. They fired at them, rushed up, and overpowered the crews. Gnr. Phillips took charge of 9 prisoners and was marching them back when another tank was heard at the foot of the hill. They all waited in the road, concealed, as it roared up firing its machine guns. One burst of fire halted it and it jammed against the wall. Phillips remarshalled his prisoners, but as he did so the barrel of his Bren gun fell off and (not being a Bren gunner) he had to shout for help to put it on again. The bag was now 8 tanks with several motor cyclists, 2 large lorries, and a field kitchen. One lorry turned out to be packed with the complete kits of high naval officers, including cocked hats, jack-boots, and dress swords; the other had good medical equipment, crates of oranges, a dead sheep, and several large, live, grey and white rabbits. Lt. Crump got into one of the tanks and opened the breach of the gun: out fell an orange, then another, till altogether 7 "rolled out the barrel." He tried the trick with the other tanks but the penny wouldn't drop. This closed the first phase of the skirmish. All was quiet.

One of the prisoners, however, said that 18 tanks had left their last position, so it seemed that more might happen. The CO sent Lt. Easter with a patrol down the road with another one in support. Lt. Easter was withdrawn shortly afterward but the RSM's patrol went down the hill through the wood as far as the bridge. They found nothing on the road, but heard MT ahead, so they returned.

The second phase opened with preparations for an ambush of anything else that might come. Lt. Easter, the RSM, Sgt. Ashton, Sgt. Waugh, and some others—about 12 men in all—armed with rifles, tommy guns, and 2 Brens, cautiously followed by the Padre armed with a looted first aid outfit, went down the second leg of the road to a door in the left-hand wall, inside which most of the party were posted. Some were left on the road, taking cover behind the last abandoned tank. The CO came down to supervise arrangements.

MT was heard at the top of the opposite hill; it came down across the bridge and approached up the bottom leg of the road. The plan was to open fire as they rounded the bend, but the head of the column halted on the bottom leg, perhaps suspecting that something was wrong. Some of the crews dismounted and could be heard talking. One patrol listened for a few minutes, then decided to open fire. They opened up with whatever they had and shouted at the tops of their voices; the shouting consisted of curses on "you yellow bastards" and a good deal of irrelevant ribaldry, but combined with the bullets it had the desired effect. Then, leaving the 2 Bren

gunners to give covering fire, they charged down the precipitous hillside through the trees, and also around by the road, and found that the Italians had at once surrendered. There were 3 more tanks, 40 motor cycles armed with machine guns, some lorries and some motor tricycles, and about 40 men. The result of our volleys at 50 yards' range was 2 men wounded in the leg. The rest of the men were later found hiding in a little cave near the bridge. Though bulging with grenades, they proved most amiable and showed no fight. They were marshalled in a line and marched up the hill after the others.

Just beyond the bridge the patrol made contact with the O E.Y. Regt who were responsible for combing out the area in front, so they returned and fell to searching the vehicles before returning up the hill to rejoin the battery. On the way the Padre produced a melon (looted) and distributed slices to the returning patrol. A crate of oranges was also discovered and lugged up the hill to be shared among NHSth Btry. The time was then about 0100 hrs.

Matters were now well in hand. The Italian drivers obliged by maneuvering their tanks off the road and parking them in a neat line. Their MO and Red Cross orderlies helped our doctor to attend to the wounded. The rest of the P.O.W.s were guarded in the road, except for a party which was set to collecting the dead. (One of these men had the distressing experience of turning a body over and finding it was his brother. All were shocked to discover their grey-haired colonel lying dead in the road; they carefully took the wedding ring off his finger and begged the Padre to see that it was sent to his widow.)

The final result was as follows: We had captured intact the 4th Battalion Contracarro Semoventi of the 33d Regt (Parmo) of the Livorno Division. We had lost one officer killed, one officer and one other rank wounded.

The Italians had lost their colonel and 2 men killed, and about a dozen wounded. All the rest (160) were prisoners. The booty consisted of 12 tanks (11 captured and 1 more which never even came down the opposite hill and was found next day), 50 motor cycles, 6 lorries, 3 motor tricycles, many automatic weapons, and 2 German 75-mm pack howitzers of an apparently new type. Unfortunately the regiment received orders to move before a more accurate check could be made. Including prisoners captured in the afternoon the total was 199, of whom 5 were Germans.

Tailpiece

During all this time LHRth Btry were at the top of the hill in Carlentini. Their advance party, on its way down, heard firing and received a report that the regiment was being attacked by tanks. They returned with the idea of preventing their guns from coming down into the trap, so mounted one to cover the road into the village, parked the rest in the market square, and patrolled the silent moonlit streets till morning. The men who served this gun that covered the road had an anxious night. In one of the houses close by there were curious rumblings and noises going on. They covered the door with a tommy gun and then, as they did not know what kind of deviltry was afoot, they brought a Bren gun and kept that trained on the door. The suspicious sounds continued all night long. When morning broke, the door opened and an old woman came out to greet the dawn. The men approached and asked leave to look inside. To their chagrin they found that the room contained one chair, one bed, and 2 restless donkeys.

Reflections on the Skirmish

1. The Italians carry in their vehicles just as much junk as we do, but considerably more cheap clothing.
2. A great many bullets can fly around in the dark and little damage be done.
3. A substantial force of Italians, powerfully armed with self-propelled armored guns, heavy automatics, and innumerable grenades, fighting on its own country's soil, made extremely little attempt to use its weapons before surrendering, and once captured showed ready willingness to help us to organize the situation.
4. The importance of a prepared scheme of local defense involving mutual support between areas was proved. In this case late arrival made it difficult for the rear parties to know where the forward ones were sited.
5. The importance of Small Arms Training was shown.
6. Definitely clear were the amazing dash and enthusiasm displayed by all ranks, and the keenness with which patrols carried out their unaccustomed duties.

THE BATTERY FDC—ADDENDA

By Maj. Roger Wilco

I wish to add a few lines to my article on *Battery* FDCs on page 915 of this JOURNAL for December, 1943, as the system has been modified in one respect.

Batteries DO NOT wait until the adjusting battery has completed its adjustment before being laid on target. When the FDC decides to use the battalion, initial data from the adjusting battery are sent to the FDC. FDC plots this data and sends initial data to the other two batteries.

Upon completion of the adjustment the adjusting battery, over radio (Bn FD channel) or wire, gives the usual corrections for all batteries, as "Corrections No. 29, left 30, add 150." Batteries and FDC "Roger" for this message. Bn is fired at command of Bn FDC. This is usually done in about 30 seconds for impact and about 45 seconds for time fire, from the time the observer orders fire for effect.

Note that this system is used for *observed* fires *requiring adjustment*. For unobserved fires or transfers the Bn FDC is charged with computing and applying all corrections and sending corrected firing data to the guns, as per usual. Often, however, the computers at the battery positions can be given the proper *K* to be set off on their GFTs. It is then necessary merely to apply deflection corrections and read the measured range to the battery computer. This computer can easily convert this range to proper elevation.

Use of one radio channel or a party line has not increased the time needed to send this data. The entire method was used with marked success on AGF battalion firing tests.

> Machines, like men, must get care and protection. Without it they cannot long be expected to perform their assigned tasks. It is the duty and responsibility of every officer and troop unit . . . to perform, or have performed, adequate preventive maintenance. . . .
>
> MAJ. GEN. E. REYBOLD, *Chief of Engineers*

PERIMETERS in PARAGRAPHS

(Based upon latest information available at date of writing, and subject to correction as more complete reports are received.)

By Col. Conrad H. Lanza

THE WAR IN ITALY (December 21, 1943 to January 20, 1944)

At the beginning of the period the 15th Army Group (consisting of the U. S. Fifth Army and the British Eighth Army) was holding a line across the Italian peninsula as follows:

Garigliano River—Mt. Camino mountain mass—San Pietro Infine — Venafro—Pozzilli—Filignano—Lagone—Cerasuolo—Alfedena—San Pietro—San Angelo—Rojo—Casoli—Orsogna (exc.) — Arielli (exc.)—Ortona (exc.).

The American Army held the left of the line, the British Army the right. The disposition of divisions in line has not been made known at date of writing, except that in the Fifth Army a British force of approximately one-half the total strength held the left of the line from the sea as far as the road from Mignano to Cassino. American troops were north of this road, and had attached French units under Gen. Juin. This was a North African group of native troops, led, with minor exceptions, by French officers. This force, located in mountains, had American artillery and engineers; it had French mule trains and was especially suited for mountain warfare. The British Eighth Army included Canadian troops, who were on the extreme right along the Adriatic, and New Zealand and India divisions in line near the center.

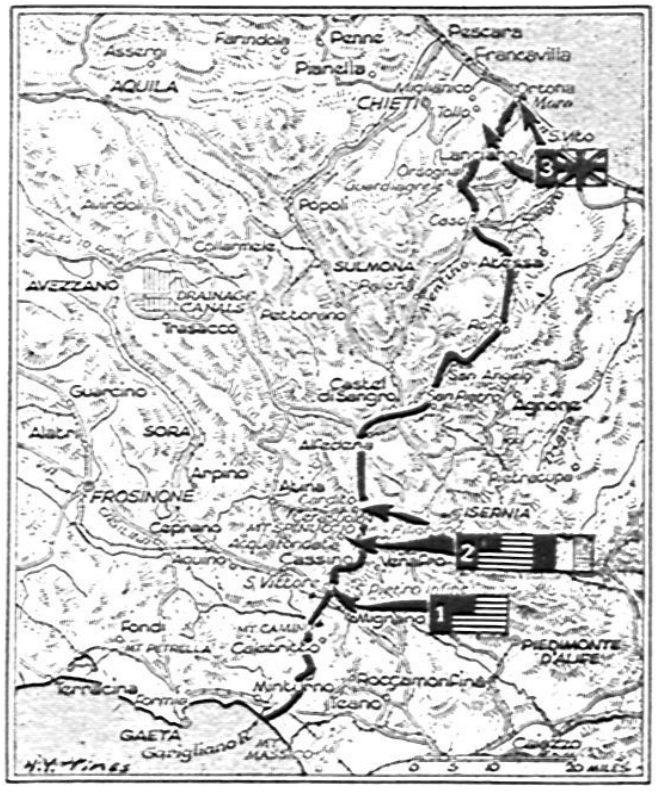
The mission of the Army Group was to capture Rome. Consideration had been given to landing troops in rear of the enemy's front, which was held by approximately 13 German divisions, including about 3 usually held in army reserve. It was a very strong position. Since 1 Oct experience had continuously and conclusively demonstrated that frontal attacks could succeed, but were costly and excessively slow.

The Adriatic coast has shoal water close to the shore—landings on this side of Italy would require transports to lie far out. Also, troops would have to force a passage across the Apennine Mountains, a method no better than that of moving north from present lines. A landing on the west coast was indicated. This could be made near to (or beyond) Rome, and would find no special terrain difficulties. Such a movement was considered desirable. Application had been made for what sea transportation was needed. During the period covered by this account, it was in process of being furnished. While this was under way the immediate mission of the Army Group was to detain as large a force of the opposing German Tenth Army as far south as possible. Consequently nothing was done to force the enemy's lines along the Garigliano River further north. Operations were limited entirely to mountainous sections, with a secondary effort along the Adriatic coast.

When this account opens, Canada troops were attacking Ortona, a small town near the Adriatic coast. Artillery strongly supported the infantry, who were able to enter Ortona. Days of savage house-to-house fighting followed, with alternate advances and halts. The town was finally cleared of the enemy on the 30th. Since that date the advance has been pushed about 3 miles beyond.

The major advance of the period, and that involving the hardest fighting, occurred in the sector held by the right of the Fifth Army. It consisted of a series of limited attacks against strong, fortified, mountain positions. Rain, sleet, snow, and mud combined to limit the ability of the troops. Steep slopes restricted the amount of supplies that could be furnished to the front line. The mountains are largely of lime formation, and (as is usual in this type) contain numerous caves. These assisted the defense, who established CPs in them; those near the front were converted into machine gun and infantry mortar nests. The caves were almost impervious to artillery shelling and to air bombing.

Hampered by cloudy winter weather, the air force was restricted



As the period opened, Americans advancing on Cassino battled in the outskirts of San Vittore (1). Together with French forces other American units were attacking the mountain villages of Cardito and Acquafondata (2). Near the Adriatic Eighth Army units were pushing toward Tollo and were fighting in the streets of Ortona (3).

in operations, although the Allies have had complete air superiority: on some days hardly an enemy plane was seen. Enemy forward areas were regularly attacked by fighter and fighter-bomber planes, special attention being given to batteries and to lines of communication.

The artillery of both sides has been very active. Vigilance along the front has been acute. Except during battles, observable movements were liable to receive quick and severe punishment from hostile fire.

Troops especially equipped for winter mountain campaigns have been reported only for the Germans. Mountain ski troops have been identified in the sector southeast of Sulmona (this is an important junction for valleys, roads, and railroads, and the surrounding territory is high with considerable snow).

The first Allied mountain operation was the reduction of Mt. Sammucro, which is 4 miles due north from Mignano. By daily short advances this was captured by 27 Dec by American troops. Then followed a period during which there were no operations other than continual patrol activity. As the enemy's patrols were also active, and each side appears to have taken prisoners, it is to be presumed that both sides were fairly aware of the order of battle of the opponent. Reports indicate that the supply of the German army is still excellent, no shortage of ammunition, food, or materiel having been noted. Morale of Germans was good.

On 30 Dec a large-scale raid was conducted by British troops near the mouth of the Garigliano River. This was supported by an amphibious landing about 2 miles north of the river. An effort was made to take Minturno, which is 3 miles inland and nearly the same distance beyond the Garigliano. This failed. It appears, however, that as a raid the expedition was a success, having captured prisoners and learned something of the enemy's positions in this area.

As the period ends, American troops stormed from newly conquered Mount Trocchio to the banks of the Rapido River (*1*). *The French, to the north, advanced on Sant' Elia and were within a mile and a half of the Cassino-Atina road* (*2*). *Both forces were approaching the so-called Gustav Line, a German defense system guarding Cassino and other approaches to Rome*.

On 5 Jan a more important operation was initiated. This consisted of an advance astride the railroad from Mignano to Cassino, with the latter town as the ultimate objective. The Americans held a 5-mile front on the right of the railroad, British troops held 5 miles on the left. On the first day the Americans advanced about 1 mile, and entered the village of San Vittore. It was a down-hill drive to this place from the heights of Mt. Sammucro. The British at places reached the Peccia River.

On the 6th the battle continued within San Vittore in a most fierce fight from street to street. This town was not cleared of Germans until the 7th, when the line reached San Giusta, a hamlet about 1 kilometer beyond San Vittore. At this time there was deep snow in the mountains, and mud everywhere. Forwarding and distribution of supplies were difficult.

Next day a thaw set in, making roads next to impassable. The attack was renewed on the 9th for a gain of 2 miles, and again on the 10th for 1 mile. Enemy resistance was strong, and after every gain by the Allies the Germans counterattacked with strong artillery support. The last advance brought the American troops to Mt. Porchia and to the outskirts of Cervaro. The British held Mt. Cedro just south of Mt. Porchia.

A hard fight ensued at Cervaro. As with other towns, this one had been prepared for defense. All day on the 11th the struggle continued in and around Cervaro. It was impossible to stay in the town, but was possible to reach and hold positions to the north.

From these an attack was made before daylight on 12 Jan by wheeling to the left and advancing in rear of a rolling barrage. The barrage moved forward at an agreed rate of speed for limited distances, then halted until the infantry signaled that they were ready to renew their attack. Then it rolled forward as before to the next limited objective. This method was continued after Cervaro was entered. Three jumps of the rolling barrage, each time started on signal, carried the infantry through, and by 1300 hours the town was taken. The infantry were careful to keep very close to the barrage.

In World War I adjusting a rolling barrage to infantry movements was difficult, due to length of time required to transmit messages. By use of radio telephones in the hands of forward observers, this problem has about disappeared.

On this day the Americans completed capture of the high ground north of Cervaro (known as Mt. di Pepernis) and of Mt. Capraro (altitude: 2,285′). French troops of Gen. Juin at the same time extended the attack to the north from the Rocchetta—Cerasuolo—Casale area. The right gained about 2 miles, the left little.

Before daylight on the 13th a German counterattack entered Cervaro while many troops were asleep in ruined buildings. The enemy began throwing grenades through window openings while his tanks roamed around the streets. Notwithstanding the surprise and unfavorable circumstances, the Americans rallied and in a hot fight forced the enemy back. It was ascertained that the opposing enemy division was the Hermann Goering Division. This division has been in line since the landing in Sicily in July last. It, or a namesake, had

previously taken part in the north African campaign.

French troops, continuing their attack, reached Monna Casale. Two German counterattacks which soon followed were repulsed.

On 14 Jan the American advance was renewed. The main objective was Mt. Trocchio, the last obstacle before the low valley ground around Cassino. Strong resistance was encountered and only a small advance was made. The French, on the right of the Americans, continued their offensive. They found Acquafondata abandoned by the enemy, and occupied it. Unexpectedly the enemy remained in Viticuso, 1½ miles southeast of Acquafondata, although his line of communications passed through the latter town to reach the former. The French commander elected not to attack Viticuso, confident that the enemy's position there was untenable and that he would evacuate it anyway. The total French advance to date had been about 5 miles in 3 days. During this period 250 prisoners had been taken.

On 15 Jan the Americans made further attacks on Mt. Trocchio, a spiny ridge attaining a height of over 1,500 feet. The two main attacks were made from the north, one against the enemy's left rear and the other against his left front. Good artillery and air support were available and both attacks made very satisfactory progress.

The Germans did evacuate Viticuso as expected, and the French renewing their attack passed beyond it to reach Vallerotonda, 2 miles east from Sant' Elia, which was held by the enemy.

Next day the Americans completed capture of Mt. Trocchio and the French pushed on to near Sant' Elia. They captured this place on 17 January, and reached the banks of the Rapido River. This temporarily ended the offensive in the sector opposite Cassino. The line was now in contact with what was believed to be the enemy's main line of resistance. From statements of prisoners and from observation it was ascertained that this generally followed the Rapido and Garigliano Rivers to the sea, with defenses at varying distances in rear of the rivers. An enemy bridgehead existed at Cassino; it was reported as very strongly fortified.

The last operation of the period was at the mouth of the Garigliano. On 18 Jan, before dawn, a strong British attack was delivered along a 10-mile front eastward from the sea. The river averages about 200 feet wide. Crossing was in rubber boats, on rafts, and by swimming. A strong artillery preparation covered the movement. As the enemy's defenses were not on the river the troops did not immediately come under severe machine gun fire, but before they had advanced far very accurate machine gun and mortar fire was met in addition to a constant artillery fire.

This battle was hotly contested. It lasted all day and night and into the next day. The artillery was never silent. Attacks and counterattacks followed one another. By evening of the 19th the British were at the edge of Minturno and were approaching Castelforte. The bridgehead was some 2 miles deep. Numerous enemy mine fields were encountered. Many enemy machine gun posts were in caves in hills, and had to be individually attacked and destroyed. Two strong German counterattacks were delivered and were stopped. After these had failed, the Germans abandoned Minturno under cover of darkness. They held on to Castelforte, which presented a strong and active defense.

On 20 Jan the battle centered around Castelforte. This held out against all attempts to take it. The British proceeded to move around it on the north side. This attack reached Ventosa, 1 mile north of Castelforte, and secured a foothold on the high ground known as Santi Cosmo e Damiano, about 1,150 feet high and to the left tear of the Germans in Castelforte.

During this battle of the Garigliano demonstrations were made along the Adriatic coast and in the mountain sector. On 18 Jan Canadian troops supported by strong artillery fire made a limited attack north from Ortona. This succeeded—at least for a time. After dark a German counterattack by machine gun companies broke into the Canadians' newly won position and created such havoc that the Canadians were forced to withdraw to their former position. This resulted in no change in the line in this vicinity.

American troops were very active on the same day. Apparently to find out whether the attack along the Garigliano would be extended into the mountain sector, the Germans made a raid on the 19th above Cassino. They reached a camp and took some prisoners, whereupon they retired to their own lines.

This concluded operations for the period. At this date the line was:

Minturno — Castelforte (German) — Banoncella — Rocca d'Evandro—Rapido River—Sant' Elia—Alfedena—San Pietro—San Angelo—Palena (G)—Casoli—Orsogna (G)—3 miles northwest from Ortona.

The 15th Army Group has been renamed the Allied Central Mediterranean Force.

THE WAR WITH JAPAN (December 21, 1943 to January 20, 1944)

Dates used herein for operation is the Pacific Islands are the local dates of occurrence—all are east longitude dates although our Navy communiques use west longitude dates where attaching planes are based east of the 180° meridian.

SOUTHEAST ASIA

This sector remains relatively quiet, no major operations being under way.

An increase of patrol activity is reported along the India—Burma border, both in the coast section and in the Chindwin area. Along the coast British troops have taken Maungdaw and advanced 3 miles beyond it. Slight advances have been made in the Chindwin hills.

Allied air forces have been extremely active, with no corresponding activity on the part of the enemy. Day and night raids succeed one another almost without interruption. The targets most frequently attacked continue (as before) to be railroads, water transportation, airfields, and industrial plants. Along the front line the enemy's positions are regularly bombed. Bangkok and Mandalay, important cities, have been bombed.

Construction of the Ledo road is being pushed eastward, protected by Chinese troops who have been trained and equipped by the United States. They have overcome such minor patrol activities as have tried to interfere with working parties.

CHINA

Our 14th Air Force furnishes about the only Allied combat activity. Its range of action includes Hankow, Swatow, Hainan, north Indo-China, northeast Burma. The center of

Allied fliers—British and American—have attacked targets in the Bangkok area (*1*), *around Akyab and Moulmein* (*2*), *Rangoon and Bassein* (*3*), *Prome* (*4*), *Liokaw* (*5*), *the Mayu Peninsula* (*6*), *enemy positions in the Chin Hills* (*7*), *targets on Sagaing-Shwebo line* (*8*), *and objectives near Wuntho* (*9*). *Forward elements of Allied troops occupied villages southeast of Maungdaw* (*6*).

this circle lies between Chungking and Kweiyang. As in the Southeast Asia command, special attention is given to raids on lines of communication. In China these are, with minor exceptions, water lines. Occasionally ships are sunk off southeast China.

In unoccupied China economic conditions are none too good. Prices are increasing, and are already two to five times those current in normal times.

Industrial production is declining. Machines that were saved from Japan's clutches in 1937 and 1938 are being worn out through fair wear and tear. In the Chungking area, the only one on which detailed reports are available, about 15% of the factories closed down permanently during 1943. Another 3% were closed with some prospect of reopening.

Mineral production has not suffered as much. Coal increased by 10%, and there was some increase in alcohol. Tin declined by 80%. Wolfram, an important mineral needed in the United States for alloys, is declining due to excessive cost of production: for one ton this is 80,000 Chinese dollars, equal to say $800 in American currency.

Crops have been good throughout China. There is sufficient food in sight for all, although not evenly distributed. Due to key points' being in the hands of the enemy, much food can move only under Japanese licenses. In return for this cooperation the Japanese receive certain raw materials, such as tung oil, in exchange. The cotton crop has been good. Nearly all clothing (including shoes) used in China are made of cotton. Production of textile plants has declined only a little.

In the greater part of China the war against Japan is only nominal. This is explained as due to lack of supplies, including food in some districts. The Japanese are exploiting the country, and trying to strengthen their position in the areas directly occupied by them.

New Guinea

The main operation has been that on the Huon peninsula. About 1 corps of 3 divisions is engaged, 1 division being American and 2 Australian.

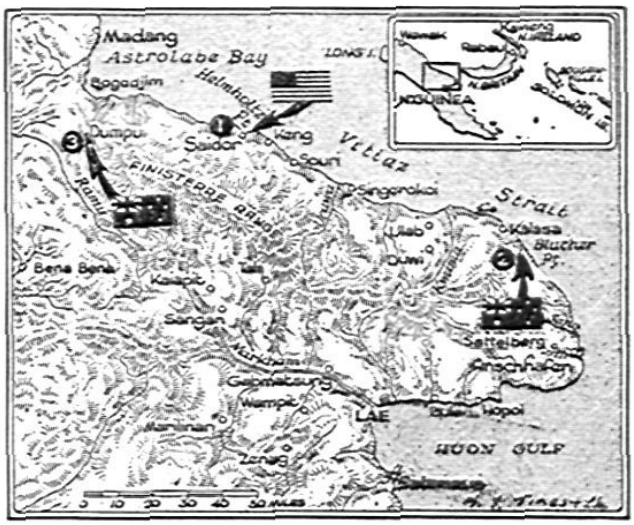
At the beginning of the period Australians were in the mountains in the upper Ramu valley, south from Bogadjim. This force is in contact with the Japs; occasional actions have occurred, without substantial change in the situation. The mission of the Australians appears to be to drive the enemy out of Bogadjim, and (more important) his base at Madang.

With the same mission, other Australian troops at the beginning of the period were advancing northwestwardly along the coast, being then well north of Finschhafen. Only minor opposition was met, although that this would be the case was not known in advance. On 26 Dec the advance was at Wandokai, and by 1 Jan was at the Dallman River.

At this point the enemy offered some resistance, but this was overcome by the 9th. On the 13th enemy opposition was again encountered and was again overcome. On 18 Jan the troops arrived at Sio, which had been an enemy minor base. The rate of advance of this Australian force has been between 2 and 3 miles per day. The country is devoid of roads, other than trails, and the physical difficulties of moving and supplying troops has been considerable.

Units of the U. S. 32nd Division were landed on 2 Jan at 3 beaches in the vicinity of Saidor, on the north coast. The Navy fired a heavy artillery preparation while the Air Force supplied an air preparation. There was no opposition, and the landing was without loss.

The mission of this expedition was to advance toward the



American troops went ashore on the north coast of New Guinea at Saidor (*1*) *and seized the harbor and an airfield. The move cut off enemy troops between this point and the Australian forces advancing near Blucher Point* (*2*). *It also boded ill for enemy units around Madang, toward which other Australians are making their way northward through the Ramu River Valley* (*3*).

east and arrive in rear of the Japanese, who at that date were near Kelasa. Since landing, little has been heard of this division, and no engagements of importance have been announced. It appears that the Japanese only had a small force in front of the Australians, which fell back, offering resistance at occasional halts. As on previous attempts to encircle Japanese troops, the latter seem to have found a way out.

NEW BRITAIN

The major event in this theater of operation has been the landing of a Marine Division, under Maj. Gen. William H. Rupertus, at Cape Gloucester on 26 Dec. At this place on the northwest coast, the enemy had maintained an air base. To neutralize enemy air forces, the landing was preceded by intense bombing attacks on other enemy bases at Gasmata, Cape Hoskins, and Rabaul, all on this same island.

The initial Marine landing was on the east side of Cape Gloucester, near the foot of Hill 800 (Target Hill). For this landing the Navy supplied an artillery preparation, while the Air Force bombed suspected enemy positions and then later laid a smoke screen. There was no opposition; the expedition was landed with no losses reported. Target Hill was occupied.

A second landing of Marines was made similarly on the west side of the cape, opposite Hill 660, and does not appear to have met any resistance either. The air field, near the tip of the cape, was north of both landings. Enemy troops in the vicinity withdrew to this area. Hill 660 was not occupied.

The bombing of enemy air fields failed to neutralize them. Strong hostile air forces counterattacked on the day of landing, making their main effort against shipping. According to our accounts the enemy lost 61 planes out of an unstated number, against a loss of 7 of our own planes. We lost one ship sunk (type not stated) and 3 others damaged. According to the Japs' accounts they lost 17 planes, and they claim to have sunk 2 cruisers and 2 transports.

Troops on shore made serious contact with local enemy forces on 27 Dec. when troops from both landings marched north toward the air field. The enemy was attacked in strength on the 29th, and after an intense artillery and air preparation the airfield was captured on 30 Dec. About 1,000 enemy killed were counted. Few could have escaped, but some bodies may not have been discovered.

Marines made two landings around Cape Gloucester. The principal operation was conducted on the western shore of Borgen Bay (*1*) *and a subsidiary one took place west of the cape* (*2*). *Simultaneously, marines occupied Long Island* (*3*), *dominating Vitiaz Strait. The landings at Cape Gloucester give the Americans a second foothold on New Britain—the first is in the Arawe area* (*4*). *They threaten the enemy supply lines to Rabaul* (*5*), *and, according to Gen. MacArthur, soon will put Kavieng* (*6*) *and the Admiralty Islands* (*7*) *within reach of our land-based air power*.

In the meantime other enemy troops were assembling south of the Expeditionary Force, and had occupied a line from Target Hill (exc.) through Hill 150 to Hill 60 (both inclusive).

It was now decided to attack Hill 150 as preliminary to an attack on Hill 660. Troops started down the west slope of Target Hill toward the enemy. It was found that the entire front of Hill 150 was covered by a swamp, which was waist- to neck-deep. There was a strong stench. Enemy snipers worked like monkeys or Tarzans among the tree tops. It rained almost every day, most heavily, with a record fall of 13″ in a single day. Visibility was bad in the jungle swamp.

The engineers established crazy foot bridges suspended from trees to serve as lines of communication. Amphibious tanks brought forward ammunition and supplies, and evacuated casualties. Mess outfits were near the beach, where the mud was not over one foot deep. Sleep in the swamps was difficult, but sleepers were protected from enemy patrols by barbed wire appropriately located.

Somebody found an old road across the swamp. It was unusable, but the engineers were able to repair it and then to move tanks over it. All of these preparations, due more to the terrain than to the enemy, took until 5 Jan, inclusive. The enemy had this much time to prepare the hills he was holding for defense.

On 6 Jan the Marines attacked Hill 150 with tanks and infantry. It turned out not to be a difficult objective for the enemy had selected as his principal center of resistance in this area Hill 35, which was at the southeast corner of Hill 150. This small hill was a solid mass of pill-boxes, wire, trenches, and dugouts. It took 2 days to capture it. In 3 days the enemy lost in this area 800 killed.

The way was now clear to assault Hill 660. This attack started on 11 Jan. The artillery fired a strong preparation, and thereafter furnished constant support to troops. The hill was a tough job, for it was strenuously defended. The attack was renewed daily to include 13 Jan, when success was attained.

As of 14 Jan, the total enemy dead is reported as 2,975 for the campaign. No report has been issued as to our losses.

The results of this operation are that American forces now hold, and are already using, the enemy's former airfield at Cape Gloucester. They also hold the line of hills across the neck of the cape. The enemy holds other hills to the south.

On the southwest coast, the Americans continue to hold the beachhead at Arawe. The enemy has closed in around this sector. Minor operations have occurred, during which the beachhead has been enlarged, particularly toward the east.

An intense series of air attacks continues against Rabaul, which appears to be the enemy's main base in this area. This campaign is carried out by Admiral Halsey's Naval Command. According to an interview of his chief-of-staff, the mission of the constant air attacks is to induce the enemy to evacuate this base, if he can succeed in doing so, or else so weaken his possession of this area as to make it possible of relatively easy capture.

SOLOMON ISLANDS

American troops and Marines continue to hold a beachhead on Bougainville Island at Empress Augusta Bay. This is slowly being enlarged. The enemy holds beachheads at Buka

and in the Buin—Faisi area, respectively at the north and south ends of Bougainville Island, and at Kieta on the east coast. They also have some forces, believed to be small, on Choiseul Island.

The other islands in this group are Allied-held. From them fly the planes which are bombing Rabaul.

SOUTH PACIFIC ISLANDS

An intensified bombing campaign has been in progress against the Marshall Islands, with occasional visits to other islands. The mission of bombing sometimes appears to have been secondary to that of reconnaissance. It has been ascertained that the enemy is reinforcing the islands held by him, and preparing them against an attack expected from us.

The principal islands bombed, and the dates on which they occurred, are:

1. **Wotje—Dec. 27; Jan. 10, 14, 15.**
2. **Maloelap—Dec. 29; Jan. 16.**
3. **Mili—Dec. 26, 31; Jan. 4, 8, 11, 13, 14, 17, 19, 20.**
4. **Jaluit—Dec. 27, 31; Jan. 3, 4, 5, 10, 20.**
5. **Kwajelein—Dec. 22, 24, 31; Jan. 10, 12, 15.**
6. **Kusaie, Caroline Islands—Jan. 18.**
7. **Nauru—Dec. 25, 30.**

Mili and Jaluit appear to be the principal objectives. These may well be the location of an early advance in the south Pacific. But, in the interview referred to by Admiral Halsey's chief-of-staff, he made it clear that the next objective would probably be Nauru Island.

THE WAR IN RUSSIA (December 21, 1943 to January 20, 1944)

There has been no change in the war plans of either side. The Russians are on the strategical and tactical offensive, attacking in any sector where results appear promising. New offensives in new sectors are constantly in preparation. Whenever one offensive becomes stalled another is ready to be launched elsewhere. The Germans are on the strategical defensive and usually but not always on the tactical defensive. They assume the tactical offensive from time to time, using considerable forces. This requires the Russians to maintain reserves to meet these occasional thrusts, which are always well directed toward sensitive areas.

There is no recent information as to the strength of the contending forces. The Germans are believed to have between 210 and 240 divisions in Russia, the Russians not less than 325 in forward areas. According to a speech made in November by the Hungarian Prime Minister, there were at that date 300,000 Hungarian troops serving in Russia. Allowing for corps and army troops and the services, these would represent between 10 and 15 divisions. They have been identified in line by the Russians in the sector due east from Hungary. Romanian troops are in the Crimea, there being at least one corps; no Romanian troops have been reported recently elsewhere. The Finns continue to protect the central and south part of their state with 12 to 16 divisions; only patrol activities have occurred in this area. The north part of Finland is covered by a German army of about 6 divisions, supplied by sea. To obviate this method which is subject to losses from naval and air attacks, a road is under construction from north Norway. It is not yet completed but should be during this year.

This year's winter has been the mildest within memory. Many streams as far north as the Lake Ilmen area are not frozen over—swamps remain serious obstacles, whereas usually they are not at this time of the year. Rains have occurred in the Ukraine, resulting in roads being deep in mud instead of being frozen hard. These conditions have made operations easier in some sectors, but have increased the difficulties of supply.

As they retire the Germans have been removing populations and generally leaving a waste land behind them. Partisans and guerrillas are active in German rear areas, and assist the regular troops when these arrive in the vicinity. According to accounts by war correspondents in Russia, partisans wear no uniforms or distinguishing mark: consequently in their areas the Germans shoot or hang any one believed to be a partisan. As women and some children serve in the partisan ranks, these are treated in the same manner. Neither side takes prisoners in the partisan operations.

The active front extends from Leningrad to the Black Sea. Measuring around salients it exceeds 1,500 miles, and in an air line it is nearly 1,000 miles. Operations will be considered by sectors:

North—Leningrand to vicinity of Novosokolniki (exc.).
North Central—South to the Pinsk and Pripet (Pripyat) Marshes.
South Central—South to vicinity of Cherkasi (exc.).
Souh—South to the Black Sea.

NORTH SECTOR

At the beginning of the period the line was:

Gulf of Finland (Russian beachhead around Oranienbaum)—Uritsk (German)—Pulkova (Russian)—Pushkin (?)—Kolpino (R)—Mga River (German bridgehead at Mga)—Soltsi (R)—Volkhov River (German bridgeheads at Gruzino and Novgorod)—Lake Hmen—Polista River—Utekhina (G).

The Germans were shelling Leningrad day and night, using batteries of 210-, 240- and 406-mm; 36 guns were used in all. They caused considerable damage and seriously interfered with life in the city. Nevertheless, life went on. The citizens found it convenient to walk on south sides of streets and avoid where possible those parallel to the direction of fire. People in upper stories moved downward. The government managed to furnish rations to all, and communications to the city were at no time interrupted. Outside of this artillery operation, there was no other activity within the sector, except occasional raids to secure identifications. The sector had been generally tranquil since January, 1943.

Quietly the Russians prepared an offensive. They had previously issued a communique protesting against the shelling of Leningrad, on the ground that this was a peaceful city and contained no military objectives. Troops, guns, ammunition, and supplies were assembled. Everything was ready by 14 Jan. Supplies and reinforcements to the beachhead at Oranenibaum were forwarded over the ice by night. At this season and latitude nights were about 18 hours long. The Russian commander was Gen. Leonid A. Govorov; his mission was to advance southward.

At the same time a second offensive was planned to be launched across the upper Volkhov River. For this task the Volkhov Army Group (under Gen. Meretskov) was detailed. Its mission was to advance toward the west.

Provided both forces advanced sufficiently, it would force the Germans out of that part of Russia east of Estonia and Latvia, and into those states. If either one of the offensives alone had a great success the same result could be expected.

On 14 Jan the Russians conducted a series of raids to secure last moment intelligence data. Both offensives were launched early on 15 Jan, each starting with a violent artillery preparation. Only the general outline of the battles which followed can be given at this date.

Leningrad Offensive

The troops in the Oranienbaum beachhead attacked eastward toward Peterhof, 3 miles off, and southeast across a swamp land toward Rapska, 12 miles away. The attack toward Peterhof was aided by batteries on the north side of the Gulf of Finland and on the island of Kronstadt; from both areas the range is about 14,000 yards.

A second attack was launched from the line Uritsk (which was German-held) to Pulkovo (Russian-held); axis of this attack was westward. A secondary attack was launched southward from the Pulkova—Pushkin line, to provide the left of the main attack.

Together the two attacks had a frontage of 20 miles. They were opposed (according to Russian identifications) by 7 German divisions, or an average of 1 to each 3 miles of front. The German front was strongly fortified with all the customary defenses, including mine fields, concrete pill boxes, wire, etc. Progress through this defense zone—which was about 3 miles deep—was slow. The number of Russian divisions employed has not been ascertained. It took 5 days of strenuous fighting to pierce the German defenses. By evening of 19 Jan, the first Russian objective had been reached. The two Russian attacks had joined, and had reached the line Gorki—Duderhof—Pushkin (all inclusive). The booty taken included 297 guns, including sector guns not belonging to tactical commands, and over a thousand prisoners. The Germans in Uritsk were still holding out.

In view of this situation the German High Command directed the evacuation of their line east of Pushkin to the Mga River, which had now become a dangerous salient. This was at least partially accomplished during the night 19/20 Jan. Whether the German garrison in Uritsk managed to escape is unknown; present evidence indicates that they withdrew to Volodansky, where another German garrison was holding out. The Russians captured both Uritsk and Volodansky on 20 Jan, and to date of writing there is no information as to the fate of the German garrisons. There appears to have been no interference with the German evacuation of the German-held salient toward Mga.

Volkhov Offensive

The artillery preparation for this was heavy, and is reported by the Russians as having been unusually successful. It cleared the way for the infantry and neutralized a large number of German strong points and batteries. The front of the attack was about 20 miles, divided into two segments (one each north and south from Novgorod).

This attack took only four days to pierce the German defense zone, which was of standard construction. On 19 Jan the advance was pushed beyond Novgorod on both flanks, this strongly defended place being temporarily by-passed. To protect the flanks of the two advancing forces the front was extended to a total of 34 miles. Since much of the terrain is forest, only a restricted number of armored troops was employed. The south attack had to cross the upper reaches of the Volkhov River. This having been foreseen, and the necessary materiel and means provided, this advance was not materially delayed. Both advances circled around Novgorod and by night had effected liaison with each other.

On 20 Jan Novgorod was attacked simultaneously from the west and east sides and was taken. Up to this time the Russians had captured over 3,000 prisoners (including the Novgorod garrison), 360 guns (including sector guns), and over 600 motor vehicles.

As this account closes both the Leningrad and Volkhov offensives are continuing.

NORTH CENTRAL SECTOR

On 21 December the line was:

Utekhina (G)—Novosokolniki (G)—Nevel (R)—Vitebsk (G)—Liozno (R)—Krasnoe (R)—Gorki (?)—Chausy (G)—Dovsk (R)—Rogachev (G)—Zhlobin (G)—Vasilevichi (R)—Khoiniki (R).

Nevel Campaign

At the beginning of the period a major Russian operation was in progress in this area, with the mission of reducing the German fortress of Vitebsk and the fortified area around Novosokolniki. Its subsequent mission was to capture Polotsk and advance toward the Gulf of Riga. This operation had started on 13 Dec, since when continuous attacks had been delivered. The Russian commander was Gen. Bagramyan, commanding the Baltic Army Group. He is reported by the Germans as having had about 30 to 35 divisions at his disposition. The German commander was Maj. Gen. Reinhardt.

On 21, 22, and 23 Dec, strong Russian attacks were delivered on and east of the railroad from Nevel to Vitebsk. Minor progress was made. The German defense was active, and frequently assumed the tactical offensive. On the 23d, in one of these sorties, the Germans pounced upon a tank brigade and the Russians lost 71 tanks.

On 24 Dec another major Russian attack was made, directed against Gorodok. Two task forces attacked—one from

Close to Leningrad the Soviet offensive has resulted in the capture of Krasnoye Selo (1), while Russian forces springing from the Oranienbaum area have seized Peterhof (2) and Ropsha (3). To the south the Red Army severed two railroads running north from Novgorod when it advanced to Lyubtsy (4) and Bolotnoye (5). At the same time forces closing in on Novgorod itself took Syrkovo (6). Still farther south the Russians cut the Novgorod-Staraya Russa railroad close to Sosnets (7).

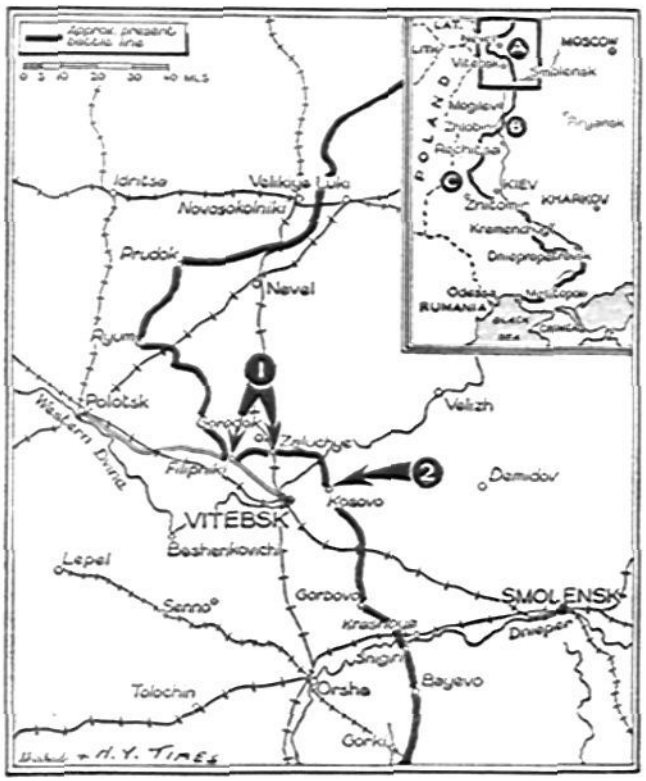
the northeast, the other from the northwest—while a third group occupied the enemy's attention by appropriate frontal attacks. The main attacks both had plenty of tank, air, and artillery support. This day's efforts succeeded; Gorodok was captured.

Continuing their offensive next day the Russians arrived at Filipniki, on the Polotsk road, 17 miles northwest of Vitebsk. Heavy fighting followed, with the Russians making advances of only a mile or two on the 26th. On this day they launched a new attack southeast from Vitebsk. All Russian attacks made slight advances. On 27 Dec the northwest attack reached the Polotsk railroad about 15 miles out of Vitebsk. This place was now encircled on three sides.

On 29 Dec a new Russian attack was made. As usual it was preceded by a very strong artillery preparation which succeeded in punching out a gap in the German front line. A column of Russian armor then dashed through. As there was much cover from forests, movements on the ground were largely shielded from air observation. The Russian tanks reached Vitebsk. Part of the tanks entered at the northwest end—the nearest to the line of departure. At about the same time another Russian armored column which had broken through in a similar manner southeast of Vitebsk, entered that section of the city.

Particularly heavy and costly street fights now occurred. These resulted in the Russians' being driven out of the city. Russian infantry which followed the tanks gained possession of a forest center of resistance on the northwest side; the infantry on the southeast side failed to hold their gains, and were ejected by German counterattacks.

On 30 and 31 Dec, continuing their attacks without intermission, the direction of the offensive southeast of Vitebsk was changed to nearly due west. This advanced the Russian lines to across the road to Orsha, and they were able to hold this despite numerous German counterattacks.



The Red Army column (1) moving down the railway from Gorodok took Zaluchye, while another section captured Filipniki, on the highway between Vitcbsk and Polotsk. Another Russian push took Kosovo (2), eleven miles west of Vitebsk. The inset shows this area at (A). Russians also attacked around Zhlobin and Rechitsa (B) and east of Zhitomir (C).

On 1 Jan the Germans passed to the general offensive on the northwest side. They used mountain divisions, equipped with skis. By 3 Jan they had driven the Russians back several miles and cleared the northwest exits of Vitebsk. The Russians counterattacked on 3 Jan due north from Nevel. They made progress, but the German offensive near Vitebsk was halted.

The Russians now changed their immediate objective to Novosokolniki. They broke into the German line. This offensive continued daily, to include 6 Jan. On this date the Russians identified new German troops in line. Judging that this meant the arrival of reserves they discontinued this attack and shifted again to southeast from Vitebsk.

This attack was launched on 7 Jan—and failed, over 80 Russian tanks being lost. It was renewed next day coupled with a Russian offensive northwest from Vitebsk. Both these attacks failed, and the one on the southeast side lost another 80 tanks.

Once more the Russians tried a new line. On 14 Jan an attack was launched southward from north of Novosokolniki. Continuing through the 15th and 16th on a front of 10 miles, on the latter day the Russians reached the railroad west from Novosokolniki near Dno. By a night attack they expanded this gain to the right and left. A continuation of this battle on the 17th was not so successful. The swamps, not frozen over, became veritable tank traps. On 18 Jan German reserves arrived, and immediately commenced vigorous counterattacks. On 20 Jan these were yet going on.

According to German reports, in this campaign the Russians during this period had lost over 1,200 tanks in 37 days of almost incessant fighting. Few German tanks appear to have operated in this area.

Berezina Campaign (*previously Gomel Campaign*)

At the beginning of the period a German counteroffensive had started south of the Berezina, against the White Russia Army Group of Gen. Rokossovsky. This had commenced on the 19th and made some slight progress. Its mission was to close a gap in the German front, by removing a Russian salient. The German commander was Gen. Harpe.

On 21 Dec the Germans attacked. They used strong artillery fire to punch a narrow gap, and then started through with a Panzer division leading with about 100 tanks in line. This went through the salient, and the Russians withdrew. All night attacks and counterattacks were made while the Russians adjusted their lines and the Germans sought to take advantage of the situation.

On 22 Dec the Germans renewed the attack with the same maneuver. The Panzer division was followed by two grenadier divisions (infantry in armored trucks). The Russians also attacked. A tense battle followed. It was continued on the next day. To relieve this situation the Russians started a counteroffensive northeast of Zhlobin, headed westward. This penetrated the German line. The Germans came right back and stopped the Russians on the 24th. On the 25th they eliminated the point of penetration and restored the front in this area. Gen. Harpe continued with his attack by slow successive advances, and reported on 31 Dec that his mission had been accomplished, the Russian salient having been reduced and the gap in the German lines closed.

Gen. Rokossovsky prepared a new offensive to drive westward from the vicinity of Rechitsa. On 7 Jan the usual preliminary raids (to obtain last-minute information) were made. Reports being satisfactory, on 8 Jan a strong offensive on a front of 20 miles was started, along the railroad from Rechitsa toward Kalinkovichi. Four days were required to break through the German defensive line in a series of tough engagements. By 11 Jan the advance had made 8 to 9 miles and reached the railroad north of Kalinkovichi. The latter place was taken on the 13th.

A second attack had started south of the Pripet River. This Russian force was particularly strong in artillery, and reports crushing its opposition in a series of artillery fights. On the 13th this force had crossed the railroad south of Mozyr. The battles north and south of this town were very heavy. The Germans hastily abandoned Mozyr on the night 13/14 Jan.

The Germans established an artillery line northwest of Kalinkovichi, behind which they undertook to reorganize their defeated units. This line was attacked by Russian artillery on the 16th, and followed by an advance of tanks and infantry. The Russians crossed the Ipa River, which was not frozen. At the end of the period this battle had temporarily halted, pending reorganization by both sides.

Minor Campaigns

On 4 Jan a major Russian attack was made west from Propoisk. It followed the standard practice of having artillery punch a gap, after which tank and then infantry divisions advanced. This offensive was pushed for 4 days; it was completely unsuccessful and was thereupon discontinued.

During this operation Russian ski troops raided far into the German rear areas. They reached a division headquarters. The headquarters defended itself and was not taken, but the Russians secured prisoners before returning to their own lines.

SOUTH CENTRAL SECTOR

The line at the commencement of the period was:

Mozyr (G)—Dernovitchi (R)—Ovruch (R)—Korosten (G)—Chepovichi (R)—Malin (R)—Radomysl (G)—Kotcherevo (R)—Brusilov (R)—Fastov (R)—Stugna River—Dnepr River (with Russian bridgehead opposite Pereyaslav).

The situation was temporarily quiet, following a German counteroffensive which had been delivered against the south flank of the 1st Ukraine Army Group of Gen. Vatutin, which had advanced westward from the Dnepr River in the area abreast of and north of Kiev. This Army Group had two active fronts—one facing west opposite Korosten (and whose mission was to advance toward Poland), the other facing southwest opposite Radomysl (with the mission of advancing south and southwest). A connecting group maintained liaison between the main groups. The Army Group appears to have had three armies in line and one in Army Group Reserve. There was also an artillery reserve under a Lieutenant General.

South Attack

Operations commenced on 24 Dec by a Russian major offensive with 30 to 35 divisions on the south side on a front of 50 miles. Weather was mild, with snow, sleet, rain, and much mud. Visibility was bad. The artillery preparation lasted only 40 minutes. Its mission included exploding mine fields, thereby reducing the time before which armor could move forward. The attack was on a broad front, with numerous columns of armor penetrating between German strong points which were later attacked separately by following troops. The Germans defended by using small tank columns of 8 to 15 machines to intercept the advancing enemy. The Russian advance was accompanied by full artillery units on self-propelled mounts. The entire attack made a substantial advance, its right being along the Teterev valley and the left near Fastov. Very severe fighting developed on the 24th and 25th. On the night of 25/26 Dec fresh troops were placed in line and attacked in the morning. By the end of the 26th the Russians had retaken Radomysl and Brusilov, and made an average advance in 3 days of 25 miles.

Now the Russians changed the attacks to the wings, the right striking toward Zhitomir and the left toward Skvira. At this time the Russians had identified their German opponents as 5 panzer divisions and 6 infantry divisions—11 in all, or about 1 division to about each 5 miles of front.

A ferocious and extended battle followed. The Russians forced a crossing of the Teterev River and advanced on Zhitomir. As customary, they divided their attack into two parts: one to by-pass the objective on the north, the other to do the same on the south. Both attacks made progress. The Russian liaison group joined in the Zhitomir fight. Seeing the advance made the Germans abandoned Zhitomir late on the 30th, passing the two enemy columns to their flanks. On the last day of the year the Russians reentered Zhitomir. At this date the line was:

Zhitomir—Kodnya—Kazatin—Pogrebische — Skvira — Fastov (all to Russia).

The Germans appear to have been outnumbered about 3 to 1, and were falling back. They seem to have accomplished this in fairly good order. The Russians report the capture of 1,000 motor vehicles and 103 guns, but few prisoners.

On 1 Jan the Russians started a new attack with its main effort on their right toward Berdichev. This reached Samgorodok, where it rested for a few days.

On 2 Jan an extension of the Russian offensive was launched from the Fastov area directed southeast, parallel to the Dnepr River. This does not appear to have met much resistance. It reached Belaya Tserkov on the 4th and Tarashcha on the 5th. On the latter day the advance in this sector was 25 miles, and seems to have been uncontested.

The Russian attack against Berdichev was renewed on 4 Jan, with main effort north of that city. This did not succeed as well as a frontal attack which entered the city while the main attack was assaulted by a strong German force and suffered considerable loss. Nevertheless the attack as a whole succeeded, and Berdichev fell on the 5th.

Other Russian troops of the liaison group from Zhitomir had meanwhile pushed westward and, meeting minor opposition, had now reached the Slucz River beyond Novograd Volynski. The Russian left reached Zhashkov on the 6th.

On 7 Jan the entire Russian line from Berdichev to Zhashkov started a major attack directed southward. This met strong resistance but advanced onward until 10 Jan, when the line was:

Novograd-Volynski—Baranovka—Polonnoe — Liubar — Sainitsa—Ilanov—Kalinovka—Zhivotov—Balabanovka—Mankovka—Tarashcha—Kagarlyk (all to Russia).

This was the high water mark for the current offensive.

By this time the Germans had assembled a force for a counteroffensive. This was now ready to attack. On the morning of the 11th a Russian tank brigade attacking south from Pogrebishche ran into a panzer division attacking to the north. This was unexpected, and the tank brigade with 12 attached batteries was destroyed. Having in this manner ascertained that a strong German attack was on the way, the Russians formed an artillery defense by massing batteries taken

from the reserve and adding them to those in line.

When the Germans renewed their advance on the 12th they were met by a tremendous fire: they failed to make gains and lost over 80 tanks. Encouraged by this success, the Russians decided to pass to the offensive. They attacked along the south front, and at the same time westward from the Berdichev area. This latter attack went through, Russian armor reaching rear areas; the Germans had a second line, and intercepted these tanks between the two lines and completely destroyed them. The Russian attack on the south front met German attacks moving in the opposite direction. Severe and confused meeting engagements resulted, with no material change in the line.

On 14 Jan the German counteroffensive made gains. It was moving on a 50-mile front from Pogrebishche to Zhashkov. The Germans followed the same plan as their previous offensive in November and early December—armored columns were preceded by reconnaissance detachments who signaled the presence and disposition of the enemy; armor was not risked until after the artillery and air forces had had an opportunity to neutralize the objective. This resulted in a slow advance by successive limited objectives. This day the Germans, taking advantage of their success of the day before west of Berdichev, dashed forward and in a surprise attack destroyed a Russian infantry brigade found in an advance position without immediate support.

On 15 Jan the German main offensive made progress on its right toward Zhashkov, but next day the advance was halted by a tremendous artillery fire screen. This required the German artillery and air force to undertake an extensive counterbattery operation, taking all of one day. Alternating in this way—an artillery fight one day and an armored attack the next—the Germans advanced in their cautious manner on the 17th and 19th, and engaged in artillery battles on the 16th, 18th, and 20th. By the latter date the German line had reached the vicinity of Zhashkov, and had by-passed it on the east.

North Attack

On 21 Dec the Germans were on the offensive in the vicinity of Korosten, using 3 panzer and 1 infantry divisions in an effort to advance eastward. This attack was not thereafter continued.

A Russian major attack followed on 28 Dec, on the front Korosten — Chernyakhov (about 40 miles) due westwardly. The usual strong artillery preparation was followed by continuous attacks. Advances were made all along the line. Special artillery preparations were fired on the 29th against Korosten itself (which fell that day), together with the whole line southward to include Chernyakhov.

Then the Germans withdrew rapidly. The disposition of their forces has not been ascertained. Only rear guards were left in face of the Russians. It is probable (but not certain) that, following the Russian attack on 24 Dec on the south front, the Germans had withdrawn divisions to reinforce their troops in that direction.

There being no special opposition the Russians advanced from Korosten, to reach Olevsk on 3 Jan and Rahitno on the 6th. The Slucz River was reached on the 10th. It was crossed north and south of Sarny on the 11th, and Sarny was occupied on the 12th. Next day the advance arrived on the Horyn River. This Russian force has not advanced since. The Russian explanation is that the mild winter with unseasonable rains has made roads next to impassable. Supply difficulties have required a temporary halt in operations.

At the end of the period the line was:

Mozyr (R)—Petrikovo (R)—Mostva River (with some Germans on the south bank)—Dombrovitsa (R)—Sarny (R)—Slucz River to Novograd Volynski (with Russian bridgehead at this city)—Baranovka (R)—Liubar (?)—Hanov (R)—Priluki (G)—Lipovets (?)—Zhivotov (G)—Zhashkov (R)—Tarashcha (R)—Kagarlyk (R) —bridgehead west of the Dnepr south of Pereyaslav.

SOUTH SECTOR

At the beginning of the period the line was:

Cherkasi (R) —Smela (G) —Medviedovka (R) —Yelisavetgradka (or Kirovograd or Zinovievak) (R) —Znamenka (R)—Medorovo (R)—Novaya Praga (R)—Petrovo (R)—Piatikhatki (R)—Miloradovka (R)—Alexandrovka (G)—Neuenberg (?)—Dnepr River to Black Sea, with German bridgehead at Nikopol. All of the Crimea was in German possession, less a Russian beachhead at Yenikale (eastern tip).

Kirovograd Campaign

Between 21 and 31 Dec, both inclusive, the Germans were engaged in minor operations around Kirovograd to readjust their lines.

On 5 Jan the Runssian 2nd Ukraine Army Group, under Gen. Konev, started a major offensive on a front of over 60

miles. The right of attack was near Medviedovka and the left south of Kirovograd. Direction of attack was toward the west. Its mission was to cooperate with the then advance of the 1st Ukraine Army Group, which at this date was making good progress and was approaching the line Lipovets—Zhashkov—Medvin.

A heavy artillery preparation started the attack. Infantry and armor followed in small columns, penetrating between enemy strong points. The heads of columns consisted of tanks and motorcycle troops who dashed as far forward as possible, under orders to disrupt enemy rear areas without regard to following troops. These advance forces, very numerous, had considerable success and materially aided in the advance of the infantry. A substantial gain was made; it was continued on the 6th.

On 7 Jan a German counterattack was delivered by a panzer division with 125 tanks in line. After minor progress this was stopped by an artillery fire screen. Russian tanks then attacked. The Germans, not having a similar artillery fire screen, failed to stop the Russians. They forced the Ingul River both north and south of Kirovograd. Circling around that city, the two forces effected a junction after dark near Libhovka. This resulted in the capture of Kirovograd on the 8th. The Germans lost a considerable quantity of materiel in this battle. The Russians reports this as including 443 tanks, 524 guns, 2,987 motor vehicles. Few prisoners were taken. What Germans failed to withdraw in time fought until killed. Some of these held out until 10th, and at least a part were able to join their own forces.

On 9 Jan the Germans attacked all along the front, with main effort on their left. It is to be noted that at the same date their offensive against the 1st Ukraine Army Group was on their right toward the area east of Zhashkov. Both of these German efforts succeeded. The left of the 1st and the right of the 2nd Ukraine Army Groups were stopped and to a minor extent forced backward. This preserved the German salient toward Cherkasi. Since this date there has been fighting in the Kirovograd area without major changes in the situation.

Zaporozhe Offensive

On 29 Dec a Russian attack was started from the Zaporozhe area, with initial gains. By 31 Dec it had reached Alexandrovka. This offensive was then driven back by a German counter-offensive which recovered Alexandrovka. The Russians retook this town on 9 Jan. A very strong attack was delivered the next day with several divisions led by tanks. Notwithstanding strong artillery and air support, this offensive failed.

Minor Operations

Strong Russian attacks have been delivered against the German bridgehead opposite Nikopol. An attack on 25 and 26 Dec was followed by another delivered by 1 armored and 6 infantry divisions on the 31st. The latter was renewed on 2 Jan. All of these attacks failed.

A Russian attempt to cross the Dnepr River at Kherson on 21 Dec failed.

In the Crimea the Russians have made repeated attempts to break out of the beachhead at Yenikale. This city is at the end of a peninsula of which the Germans hold the base. Ten attempts within 30 days have been reported, without success.

At the end of the period the line was:

Cherkasi (R)—Kamenka (R)—Ingul River to Kirovograd, with Russian bridgehead at this city—Novaya Praga (R)—Petrovo (R)—Piatikhatki (R)—Miloradovka (R)—Alexandrovka (R)—Neuenberg (?)—Dnepr River to Black Sea, with German bridgehead opposite Nikopol.

COMMENTS

1. The employment of motor-cyclists to accompany tanks—to lead attacks through defended areas, passing through gaps created by artillery fire—appears to offer good possibilities. This method used by the Russians in the Ukraine was over steppe country, where motor-cycles could rather easily operate across country.

2. The two standard types of attack are (as before).

a. Artillery punches a narrow gap, through which armor then pastes. Armor is followed by infantry in armored trucks, who exploit any successes the tanks may obtain. This type of attack requires good air cover to prevent its being intercepted without warning by superior hostile forces.

b. Artillery punches numerous gaps for small columns to pass through. These then work in and out between enemy centers of resistance, constantly supported by air and artillery forces.

In either type, initial success depends upon the artillery's providing a start for the attacking troops.

3. The artillery fire screen reported by the Russians appears to be a new name for what was previously called the standing barrage, with this difference: it fires an immensely greater amount of ammunition.

The problem in this case is mathematical. From the theory of probabilities calculate the number of rounds required to secure one probable destructive hit on a target passing through the zone of dispersion. This will vary with the size and speed of the target, but is quite independent of the range: dispersion is greater at long ranges, but the space the target has to cross is greater too. A difference exists between each type of gun and of ammunition.

It might be worth while to prepare tables showing the rate of fire required to stop tanks and other targets passing through dispersion areas. With such a table an artillery fire screen can be fired on short notice, the rate of fire and a range surely short of the target (but through which it must pass) being the required data.

The amount of ammunition required is large. Its expenditure may win a battle.

Your RED CROSS is at his side

BLOOD DONOR SERVICE SAVES MANY LIVES

The Army and Navy have requested the American Red Cross to provide 5,000,000 blood donations during 1944. This total almost equals all donations received since February 1, 1941, when the Red Cross Blood Donor Service was established.

To meet this goal 35 donor centers are now in operation. Their collections are supplemented by 63 mobile blood collecting units which visit surrounding towns within a radius of 50 miles. This gives a far greater number of persons the privilege of donating blood.

Army and Navy medical men have been unstinting in their praise of blood plasma. Surgeon General Norman T. Kirk has stated it ranked as the foremost life-saver in North Africa. Rear Admiral Ross T. McIntire, Surgeon General, U. S. Navy, has attributed in large part to plasma the fact that only 1% of Navy personnel wounded in the South Pacific have died.

To continue this and its other activities the American Red Cross is appealing for $200,000,000. This War Fund will be raised in March. Voluntary contributions are the sole means of Red Cross support. Everyone is urged to contribute to the best of his ability to keep the Red Cross in there another year.

ARMORED ARTILLERY ACTION

By Col. Lowell M. Riley, FA

In the desert

Armored artillery was organized and equipped to support tanks. As it developed in experience and grew in importance and size it derived its methods of operation from those of tank forces. Its mission is unchanged, but its manner of operation has undergone some modifications based upon changed theaters and terrain. Desert war, as it was fought in North Africa, focused attention and importance on armored warfare of a particular kind and directed the development of the use of armored artillery in the type of action common to the desert.

Desert tank battles with unlimited space for maneuver and often fought with task forces, combat commands, and divisions making wide enveloping and encircling movements, called for artillery units which could be promptly detached from the main force of the artillery to render fast-moving, close-up support to these forces. Battalions of armored artillery were organized, equipped, trained, and tested in this type of action. Their use envisaged attachment to task forces as the rule, rather than the exception as it is in the artillery of the infantry division. Its tests were designed to examine its ability in this type of fast-moving, quick-shooting operation in close support of armor.

Desert warfare ended abruptly when the African campaign was brought by allied armies to a successful conclusion in Tunisia. With it ended the immediate prospect of great movement and space for armored units. The prospect of European battle grounds for armored as well as infantry divisions pointed to their use in closer country restricted by road nets, mountain ranges, woodlands, etc. There when breakthroughs are made, armored forces will still pass through the gap and operate as far to the rear as possible, enveloping, encircling, and disrupting enemy command, communications, artillery, etc. When that form of action comes to pass, armored artillery will still use to advantage the technique in which it has specialized for the past two years.

In Sicily

In the meantime the artillery with armored divisions, and tank fire from many M-4s as well (it is all artillery in effect), will be used much as the battalions of artillery in an infantry division are used—to support normal attack and defense operations, blast the enemy out of passes, cities, and fortified positions, support river crossings, and the like. To accomplish these missions armored artillery will be employed under centralized (i.e., division or corps) control. It should be organized and equipped to do this, much as groups and the artillery of infantry divisions are now organized and equipped for centralized use. This use for armored artillery is not a trend. It is a fact which was brought into being in the campaigns in Sicily and Italy. The tests which the artillery of the armored command now undergoes emphasize the fact that armored artillery is required to accomplish all that its corresponding organization in an infantry division must do. In addition to those missions, situations will arise based upon the peculiar nature of armored action which will require the armored units to resume the role which for the past two years have considered as their "special own."

It has always been a principle of artillery tactics not to attach part of the artillery to a supported force unless the distances involved make it impossible to hold the artillery under centralized control to support the action in question. The reason is obvious, and is being demonstrated daily on the battle fronts. To quote from recent war lessons, a concentration by a battalion of artillery is more effective than three separate concentrations. To carry the idea further a concentration by all artillery of the division is more effective—more devastating to the enemy—than the separate fires of three or four battalions.

Armored artillery can still take full advantage of its superior mobility under difficult conditions of terrain. It can still take full advantage of the economy of personnel, the surety of adequate fire by its batteries of six guns. It can still make the most of the protection against enemy small arms and fragments afforded its crews by the armor of the M-7, enabling it to emplace well forward and closely support any action. None of those qualities are changed by a revised conception of the details of action of armored artillery.

The lessons of all this tend to emphasize that sound principles of artillery tactics are the same as they have always been. The fact that in armored artillery we have turned back even more closely to these principles serves only to emphasize their soundness.

Armored Artillery and Direct Fire

By Capt. Curtis K. Allen, FA

All armored artillery must be able to defend itself against any tank attack. In the past warning systems have been established and are absolutely necessary, but no matter how elaborate the warning system is it will accomplish only one thing: elimination of surprise. After that it is up to the individual gun crews to defeat the attack. This can be accomplished only by fast, accurate shooting. All gun crews should strive to make the first shot a target hit. It can be done. Making the *first* shot a target hit should be a rule, not the exception. A gun crew is not properly trained if it cannot hit any tank, at a reasonable speed, at any range up to 1500 yards by the third round.

The Initial Round

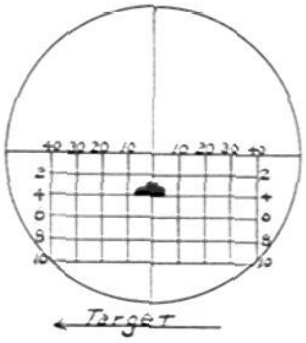
The system used for laying the piece for the initial round is based on the time of flight of the projectile, which automatically takes into account the range, speed, and direction of the target. The two-man direct laying system is used.

When the first target appears the chief of section estimates and announces the range. From the announced range the gunner knows the time of flight. He lays the center hair of the sight reticule on the target and tracks it a short time. Suddenly he stops traversing and immediately counts the time of flight. While he is counting the target is moving from the center hair line past one or more of the 10 mil lead squares. The distance the tank has moved in the sight is the distance it will move while the projectile is in flight. This accurately measures the amount of lead necessary to hit the target. This lead is then applied in the proper direction.

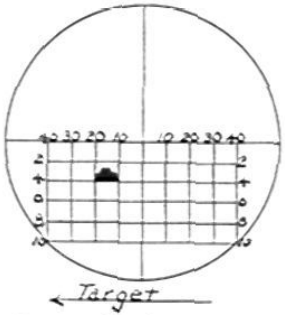
For example, assume we are firing shell HE, M48, charge 7. The times of flight for the critical ranges are as follows:

500 yards	1 second
1000 yards	2 seconds
1500 yards	3 seconds

This table is memorized by the gunner, and is the only table he need remember. If the chief of section announces a range of 800 yards a quick interpolation results in a time of flight of 1½ seconds. So the gunner immediately knows the time of flight. He tracks, stops and counts "One thousand and one, one thousand." At the expiration of the time of flight the gunner sees the tank has moved 1½ lead squares. The lead is applied in the proper direction and the gunner is ready to command "Fire."

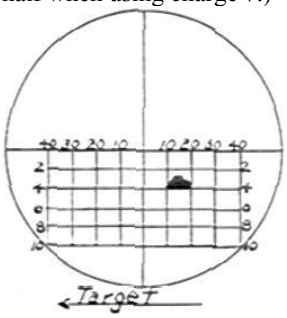


Sight picture during initial tracking

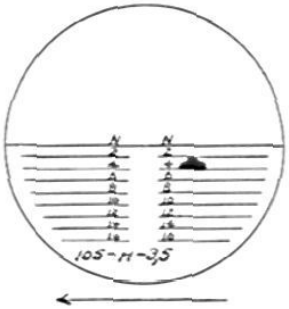


Position of tank at expiration of Time of Flight

While the gunner is tracking the target the No. 1 cannoneer sets the 400-yard range line of the elbow telescope at the base of the target and calls "Set." (Since the elbow telescope is designed for charge 5 it is proper to reduce the range by one-half when using charge 7.)



Initial lead applied in the proper direction

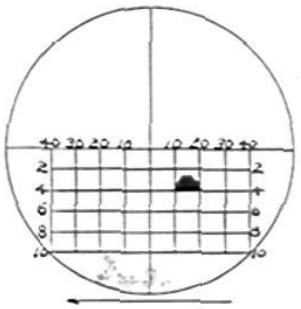


Initial range properly set for the announced range when using charge 7

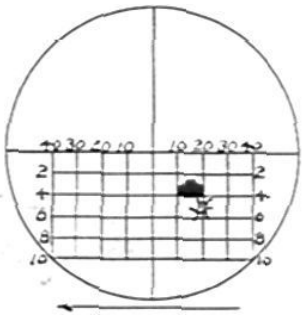
The gunner lays only for direction and automatically corrects the deflection without command. He disregards the elevation setting as that is the duty of No. 1. Since the gunner has the more difficult task (of establishing the correct lead) he gives the command to fire, but only after No. 1 has called "Set." A properly trained gun crew will be fast enough so that the gunner will not have to wait for any of his cannoneers.

Subsequent Rounds

The first round should be a hit, but if it is a miss the second round *must* be a hit. During the counter-recoil of the gun or immediately afterward, the gunner must relay and start tracking *before the projectile reaches the target*. The gunner should never take his eye from the sight, since the tracking must be continuous. (The piece and the gunner are on the same mount, therefore there is little danger to the gunner providing the sight has the proper rubber eyepiece.) During the flight of the first projectile the target is tracked with the same lead as originally measured. If the first projectile misses the target, it will seem to burst on or strike some part of one of the lead squares. The gunner immediately places that part of that particular lead square on the center of the target (disregarding elevation) and is ready to fire the second round. All subsequent rounds are fired in the same manner.



After recoil and before the projectile reaches the target the same lead is used. Tracking must be continuous.

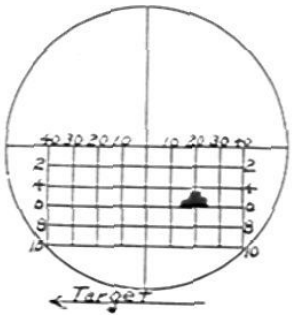


First round strikes front edge of second lead square

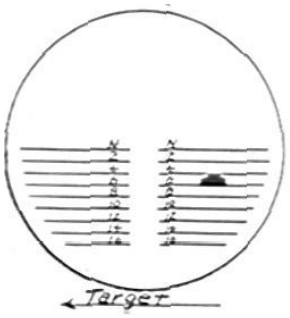
The chief of section senses and announces the range. He generally makes a 200-yard range bound. Cannoneer No. 2 fires the piece so that No. 1 can keep pace with the gunner. During firing and dry runs the commands should be given in a definite rhythm as follows: *Tank direct front — 800 — Set — Fire — 1000 — Set — Fire — 900 — Set — Fire . . . .*

If the chief of section estimates the range within 200 yards and the gunner counts the time of flight within ½ second, the first round will be a hit.

One point that must not be forgotten is to explain to the gunners that a tank approaching from the direct front has no lead. The chiefs of section also must understand that such a target tends to decrease the range as time elapses.



New lead is established from the previous round



Elevation is set for announced range of 1000 yards

SUB-CALIBER MOUNT FOR 105-MM HOWITZER M2A1

By Lt. Paul Vaughan, FA

Our composite battery composed of two 105-mm M2A1 and two 155-mm M1917 howitzers organized for amphibious demonstration and training purposes keenly felt the need for unit training. Service of the piece in the gun park was not enough and without an appropriation for ammunition actual service practice was precluded. However, a sub-caliber mount for the service automatic pistol, cal. .45, was designed and used effectively with targets set out in water.

Figure 1 shows the mount disassembled. Two lengths of 2×4 lumber were carved out to fit the pistol grip. When bolted together and rounded out, tube rests were attached to the inner 2×4. When assembled the mount was fastened to the right side of the muzzle of the 105 howitzer by two metal straps and cap screws. No provision was made for boresighting adjustments, but firing showed the deflection correction at intermediate ranges to be less than 10 mils.

Details of assembly provide for a wire lanyard passed over the trigger and through a ¼″ hole bored at the oblique through the outer 2×4. Provision was also made for the insertion of a clip release tool inserted through a ½″ hole drilled through the inner 2×4. The safety grip was taped down.

Floating targets were set out in a sheltered salt water bay at ranges varying from 400 to 1,000 yards. Excellent splash sensings were obtained. The firing table was shot in using a false site of 200; at 500 yards a range *c* of 6 mils was used, although the actual change in elevation to move a splash 100 yards was 12 mils. Dispersion in deflection was negligible, but range dispersion was noticeable in large-T problems; but for training the battery enlisted personnel in forward observation and axial bracket adjustment of fire, this mount proved effective and instructive.

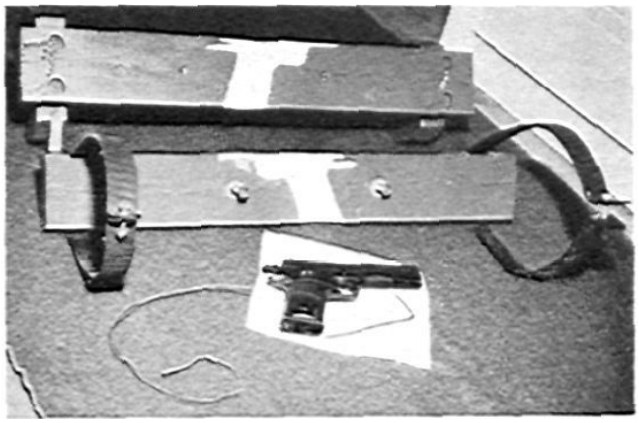


Figure 1

Figure 2

THE JOURNAL OVERSEAS

"My subscription to the JOURNAL ran out while we were in action and since then I kept putting off the renewal, due of course to the fact that I could 'most always borrow the current copy from practically any of my fellow officers. Now that we so often refer to some article in the JOURNAL as being the authority for having done something, I will have to keep my own copies in my tent.

"May you continue to publish the extremely helpful organ of our thunderous arm."

—LT., FA (in the Southwest Pacific)

ROUTES INTO EUROPE

A Study in Terrain

PART X—SOUTH FRANCE

By Col. Conrad H. Lanza

From an invasion point of view, the south coast of France divides itself into three sections:

***a*. Southwest, from the Spanish border to Cette (or Sete). This area lends itself to an advance inland toward the Garonne valley, and to occupation of southwest France.**

***b*. Central, from Cette to Fréjus. This section includes the great ports of Marteille and Toulon, which would form the base for an advance inland up the valley of the Rhone.**

***c*. Southeast, from Fréjus to the Italian border.**

SOUTHWEST SECTION

In a straight line it is 75 miles from the Spanish border to Cette; measured around the coast it is 125 miles. At the south end the Pyrenees Mountains, high and difficult, stretch eastward, forming the boundary between Spain and France. Near the north end of the section, 25 miles inland and parallel to the coast are the Mts. de l'Espinouse and the Garrigues Mountains, forming an obstacle to an advance from the coast to the north or northwest. Opposite the center of the section is the valley of the Aude River, which affords easy access westward toward Carcassone, Toulouse, and the Garonne valley.

An invasion of this sector would dovetail well with one at the south end of the Bay of Biscay. The combined objectives would be to clear south France and establish a front along the line of the Garonne and Aude Rivers, facing toward the north.

Except near the Pyrenees the coast is low and bordered by sand dunes, in rear of which are marshes. The coast has been slowly advancing into the sea; towns which used to be on the water are now 1 to 3 miles away.

Coming out of Spain are a road and a railroad bordering the shore, the main routes from Barcelona into France. They cross the frontier at Cape Cerbère, long recognized as the dividing line between the French and the Spaniards. Five miles to the north is Banyuls-sur-Mer with its small bay with beach.

Two miles further is Port Vendres. This is an excellent harbor capable of serving the largest transports. There is a beach here too, but it is small. At the south end of the harbor and covering it is Cape Béar, 655 feet high and fortified. On the north side is Fort St. Elme, also on high ground. Just beyond this is the small port of Colliure. In rear of both Port Vendres and Colliure are hills on which batteries are posted to fire over the towns onto the sea.

Port Vendres is the best available base in this area but its harbor cannot be entered until the forts protecting it are taken or neutralized. Preliminary landings at Banyul-sur-Mer and near Colliure, supplemented by use of parachute troops, are indicated as preliminary operations leading to the capture of Port Vendres.

Twelve and a half miles from the Spanish border is Argelès-sur-Mer. Although the name indicates that the town is on the sea, it is in fact 1½ miles inland. Here is a very good beach, suitable for an invasion landing.

Nineteen miles above the border is Elne, now 3 miles inland and located on a hill. The main road and railroad from Spain pass by. This place is prepared for defense against an attack from the direction of Port Vendres or from a landing on beaches close by.

Twenty-seven miles from Spain is Perpignan, the principal city of this area. It has about 40,000 people and is an important road center. The Tet River coming from the Pyrenees flows by Perpignan eastward to the sea, which is 7 miles off. Like most rivers in the vicinity, in summer the Tet is nearly dry. Just south of its mouth is Canet, which has a beach a mile long. A good road leads direct to Perpignan. At the south end of the beach is a swamp parallel to the sea, 3 miles long and from 1 to 1½ miles wide. It is separated from the Mediterranean by sand dunes. A secondary road follows the coast, bypassing Perpignan.

North from Canet and 6 miles from it is a very good beach at Le Barcares, with a road leading into the interior. In this 6-mile space are neither roads nor beaches. There are a number of small streams (usually dry in summer) and numerous irrigation ditches, forming a fertile, cultivated area. This would be difficult for motor vehicles to traverse.

North from Le Barcares a line of sand dunes borders the sea, and immediately in rear of them is a large swamp 10 miles from north to south and 2 to 3 miles wide. At the north end of the swamp is Cape Leucate, well known as covered with white rocks. Just above the cape is a good beach which is a resort center. Then another string of dunes with swamps behind them extends to La Nouvelle, 26 miles from Perpignan. This is a small port with a canal 1¾ miles long leading from the sea to a combination lake and salt marsh. The canal has been dredged, and its jetties are quays alongside which medium ships can lie; at its outer end is a good sand beach.

Fifteen miles further north is Narbonne, 66 miles from Spain. These 15 miles have a coast of dunes bordered by salt marshes 2 to 4 miles wide; no suitable landing places exist in this area. Narbonne is a city of 30,000 people. It is 9 miles from the sea and the junction point of the lines of communication extending from Barcelona in Spain northward, with lines extending westward to Toulouse and the Bay of Biscay. Extending southwest from Narbonne and forming an angle of about 45º with the coast are the Corbières Mountains. They continue on until they join the Pyrenees of which they are a spur. Narbonne is the first point where good communications extend westward. Although there are neither railroads nor main roads across the Corbières, there are numerous secondary roads and trails. The mountains are not high but they are wooded and form an obstacle to an advance.

Sixteen miles northeast from Narbonne is Béziers, with 50,000 people and 8 miles from the sea. Narbonne and Béziers are desirable as bases for an advance westward up the Aude valley, which lies between them. The coast opposite these cities can be landed on. An advance inland would be difficult as the country is thickly cultivated and much cut up with irrigation ditches, the Aude and Orb Rivers, and intervening small streams. An invasion landing at this place should if possible be coordinated with another made to the south and advancing

northward from Perpignan.

The type of coast found opposite Béziers continues on for some 14 miles to Agde, forming in all nearly 30 miles of coast where landings are practicable although subject to difficult country in rear of beaches. Agde is a small port. It is defended by fortifications on an island off the harbor and others on an extinct volcano 350 feet high at the southeast end of the town. Lava from this volcano furnished the material for building Agde.

Cette is 15 miles beyond Agde at the end of this section of the coast. The road and railroad connecting these two places runs along a tongue of land covered with sand dunes which separate the sea from a salt lake 11 miles long, 3 to 5 miles wide, some 15 feet deep, and connected with the Mediterranean by canals. On the borders are extensive oyster beds. Cette is at the extremity of the tongue of land referred to. At the west end of the city, but still on the tongue of land, is an isolated hill 550 feet high. Cette is a port which can handle large ships; invasion landing craft can land at numerous places along the tongue of land.

Cette can not be utilized as a base unless a considerable area around is cleared of the enemy. If the mission of the invasion is to advance up the valley of the Aude, Cette alone might be occupied in order to deny it to the enemy and for minor use. It would not be easy to advance directly from Cette into the interior on account of the large swamp and marsh surfaces which limit offensives to relatively narrow sectors. It would be necessary to advance from Béziers northeastwardly between the Garrigues Mountains and the salt marshes. This front of under 20 miles would require a minimum of 10 divisions, assuming that the enemy would seriously oppose occupation of this area.

For the entire southeast section, best locations for invasion landings are the beaches from opposite Narbonne to Agde and the small beaches south of the Tet River. In all cases parachute troops dropped in rear of enemy defenses would further the probable success of landings.

Central Section

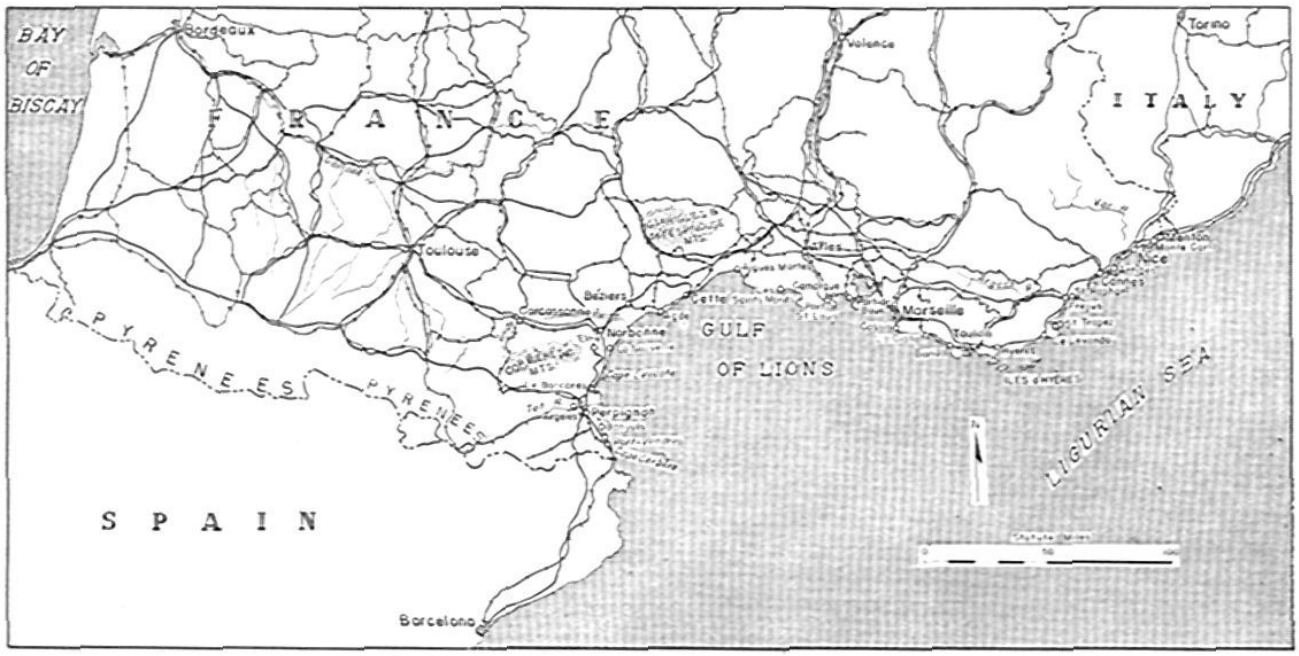
Eastward from Cette, as far as the delta of the Rhone River, are 26 miles of coast consisting of tongues of land covered with sand dunes separating the Mediterranean from a succession of lakes and marshes. At the end of this stretch is Aigues Mortes (Dead Waters), which is a good descriptive name of the vicinity. Landings can be made almost everywhere on this stretch, but exits from the narrow tongues of land are restricted to a few places between marshes—which could be blocked by minor forces. The lakes are navigable as a canal for small craft. At Aigues Mortes the canal connects with the sea. This entire region is noted for mosquitoes.

Aigues Mortes lies 3 miles inland. It is a village of 4,000 people, with a remarkable ancient fortification, rectangular in shape (600 yards by 330 yards). The walls are thick and 30 feet high, with good field of fire over the surrounding country. It is possible, but not known, that the enemy may have reconditioned this work as a modern defense; its construction would lend itself to such conversion.

Fourteen more miles of the same kind of coast lead to Les Saintes Maries at the mouth of one of the exits of the Rhone. Rivers, canals, lakes, and marshes cover this country. There would be no special difficulty as to landing on the beaches, but there would be as to advancing inland.

Just east of Les Saintes Maries is the delta of the Rhone. The head of the delta is near Arles, 23 miles from the sea. At this place the Little Rhone diverges to the west to enter the Mediterranean near Les Saintes Maries. The Grand Rhone (as its name indicates) is the major stream, and this leads to the sea at a point 27 miles east-southeast from the mouth of the Little Rhone.

The space between the Little and the Grand Rhone is the Isle de la Camargue. Five-sevenths of this isle is swamp or desert, the remaining two-sevenths is low and cultivated. The principal swamp is Vaccarès at the south center of the isle, 12 miles from east to west and 7 from north to south. The water in this swamp averages about 3 feet in depth and is nearly stagnant. Mosquitoes are a pest, especially during the autumn. Except for a small suburb of Arles, which is just across the river, there are but few habitations on this isle. The sand dunes bordering the sea are largely planted with trees, affording cover to defenders. It would be possible to land on this delta but most difficult to advance inland thereafter. The



island has two railroads extending from Arles and bordering respectively the Little and the Grand Rhone.

Four miles up the Grand Rhone, on the east bank is the small port of St. Louis, which has rail connection with Arles. This port is surrounded by marshes in an unhealthy site, but could be used for base purposes if an advance up the Rhone valley is contemplated.

Ten miles to the east across the Gulf of Fos is Port-de-Bouc, another small port surrounded by swamps and marshes; this also has a railroad to Arles. The east side of the Grand Rhone lying north of the Gulf of Fos is the great Chalk Plain, which is nearly sterile. Those few sections which have been irrigated are fertile, the balance is arid. In winter and spring this entire region is subject to strong northwest winds known as the *mistral,* which stir up thick clouds of chalk dust and sand and reduce visibility to short distances. The main railroad line from Arles to Marseille is protected by a windbreak of closely planted trees to keep the line reasonably clear.

East of Port-de-Bouc is the swamp of Berre, 14 miles from east to west and 6 miles wide. The water is deep in places. On the south side it is separated from the sea by a tongue of land extending westward from near Marseille; this tongue is rocky, having hills 700 feet high. The hills are pierced at the east end, near l'Estaque, by a tunnel for the main railroad from Arles to Marseille; the exit of this tunnel is the entrance into Marseille.

Marseille is the principal port of France and in every way suitable for a major base. This city of about 600,000 people is built at the foot of a series of hills which rise around it in the form of an amphitheater. The port was equipped with numerous modern covered piers capable of taking the largest ships. There were complete equipments of cranes and other facilities, with railroad sidings to all piers. It is to be expected that the enemy has, or will, destroyed this great port. From the sea Marseille is defended by batteries on hills to the north and south—the bay faces nearly west-southwest, with much of the harbor practically due west. Several small islands immediately opposite the city contain other batteries. These include the Isle of If, made famous by Dumas's story of the Count of Monte Cristo. All old defenses for this port have been overhauled and strengthened since the German occupation.

The main port is sheltered by a massive breakwater extending north and south with suitable openings for ships to pass through. Facing the breakwater are the piers. In rear of these is a wide marginal street through which railroad tracks extend. The far side of this street was solidly built up with houses 3 to 5 stories high. The inhabitants of this quarter of the city are seafaring people noted for being rough. The Germans have evacuated a large part of this unruly population, the males of suitable age being assigned to labor battalions elsewhere. The buildings are reported as largely destroyed, together with the upper parts of some of the piers. Having thus improvised a foreground, infantry mortar and machine gun nests have been liberally planted among the ruins. Artillery, with their OPs, are on the hills in rear.

If a landing is made within the city of Marseille either from the sea or by parachute troops, street fighting is liable to be difficult due to narrow passageways. There are only a few broad streets, nearly parallel to the water front, which permit artillery fire to be directed along them for distances up to a mile. The fortifications north and south of the city, and on the islands, cover the coast for a distance of at least 6 or 7 miles on each flank. Even within this distance the number of places along the continuous rocky shore where landing craft can beach themselves is restricted.

North from Marseille is the tongue of land already referred to which is known as the Chain de l'Estaque and has a number of small beaches along the south side. Others are on the north side near the outer end, where there is the small port of Martigues. The neck of this tongue of land is 7 miles wide and hilly, and limits the number of troops that could be employed. Unless the fortifications of Marseille are first reduced this neck of land could not be shelled by naval ships. It could, of course, be bombed.

On the south side of Marseille, across a promontory only ¼ mile wide, is the Bay des Catalans with a beach 300 yards wide. This is covered by fire from three sides. Further south are a series of beaches, none over 200 yards wide, which for the first mile are at the foot of cliffs and for the next 2 miles along a low, rocky shore. Three miles from Marseille is the valley of l'Huveaune River. On the south side are very good beaches with excellent roads leading inland. This part of the coast is under fire from the permanent coast batteries of Marseille.

Six miles south from Marseille is the 1,300-foot-high Cape Marseilleveyre, where the coast changes direction toward the east. There are only a limited number of beaches beyond this cape, near Cassis and La Ciotat. The latter place is the best landing area on this coast. It happens to be just halfway between Marseille and Toulon, and a landing here could be directed toward either of these objectives. Good lines of communication extend in all directions. If the area Cassis—La Ciotat is developed into a beachhead operations can then be undertaken to either west or east according to the situation.

Toulon, with a population of 100,000, is 40 miles by rail from Marseille. It was the leading French naval base, and has a fine and ample bay now encumbered with wrecks. Toulon would be suitable for a major base. The entrance to its bay is covered by fortified islands; there is also a breakwater with narrow entrances and a difficult turn which block access to an invasion party landing directly in Toulon. There are numerous small beaches around the bay, but they are under fire of the fortifications constructed by the French and presumably improved by the Germans. The land side is also covered by a series of strong points.

To capture Marseille it would probably be necessary to take Toulon first, and to take this place it will be necessary to land some distance to the east and west.

La Ciotat has already been suggested as a landing place on the west side of Toulon. Two other locations are possible, closer to Toulon: at St. Cyr and Bandol, both with small harbors. All are likely to be strenuously defended, the generally rocky coast being very favorable for this.

Fifteen miles to the east of Toulon is Hyères, with an excellent bay which could handle large ships. Its entrance is covered by the Isles of Hyères, which are held by the enemy and which would have to be reduced before the mainland could be reached. All around the bay excellent beaches are available after the entrance is forced.

Hyères is approximately 140 miles from airfields in Corsica, and it would be possible to furnish air cover for a landing in this area. Air distances to Toulon and Marseille from Corsica are 155 and 195 miles, the latter being somewhat far for fighter protection.

An alternative to attacking Hyères directly would be to land east thereof, which would be still nearer to the Corsican airfields. beaches exist at Le Levandou, Cavalaire and St. Tropez, which by road are respectively 13, 24, and 35 miles

from Toulon; that at Cavalaire is the best, but all are excellent.

From St. Tropez are a shore line road and railroad to Toulon. Two other motor roads join the same places by inland routes. The more northerly crosses the Maures Mountains, the other partly crosses them; these are a detached chain, not over 2,500 feet high and densely wooded. Roads lead directly north across the mountains to the valley of the Argens River. Should the enemy hold the mountains in strength they can be turned by following the valley of the Argens, which empties into the seat at Fréjus, another possible landing place.

In the Central Section Marseille and Toulon are the great initial objectives for an invasion. As both of these important places are strongly defended against a direct attack, original landings would probably be necessary outside of the fortified areas. Best chance of success appears to attack Toulon first, by landing at La Ciotat and vicinity to the west, and east of the Bay of Hyères as far as Fréjus.

EAST SECTION

In an airline this section is 50 miles long from Fréjus to the Italian border. Although it includes the large city of Nice, there are no important military objectives in the section and no desirable routes leading inland. The coast is closely bounded by mountains with very steep slopes. This has resulted in a very mild climate in winter and a temperate one in summer. It rarely freezes. The entire area is a vast resort center, quite solidly occupied by buildings, gardens, and parks. Quarters are available for a large number of people in excess of the local population. Due to this feature and the climate, this is a natural staging and rest area which could usefully supplement operations elsewhere. It could also be used to furnish supplementary bases.

Starting east from Fréjus, two miles away are very good landing beaches at St. Raphael. The shore road to Nice is the Corniche d'Or, famed for its scenic beauty. Along this shore follow the towns of Bouloris, Agay, and Théoule, each with an excellent beach. Then comes Cannes, a famous resort 22 miles from Fréjus. The Corniche d'Or is paralleled by a railroad. At places the mountains push into the sea and road and railroad pass through tunnels; they are consequently susceptible to being readily interrupted by demolitions. An alternative road and railroad parallel the coast about 13 miles inland. An interruption of the coast road will not prevent the enemy from accomplishing east-west movements. Both Fréjus and Cannes have a cross connection with the alternative routes. This stretch of coast is bordered by the Esterel Mountains; though not over 2,000 feet high, they seem higher, for in many places they are almost precipitous and a difficult obstacle. They separate the shore lines of communication with the alternative inland one. There are no roads across the Esterel Mountains, but there is a ridge road from Fréjus to Cannes which would enable the enemy to post and serve batteries and other troops up on the mountains.

Cannes, on an open bay, has about 3 miles of excellent beaches. It has a port suitable for launches, motor boats, and similar small craft. In good weather (which is customary during most of the year) large ships can anchor offshore. It would be a suitable debarkation point.

Six miles east of Cannes is Antibes, with good beaches and a small port. To the west of it is Cape Antibes, which projects into the sea some two miles. Onto this peninsula it would be possible for the enemy to bring artillery which would have enfilade fire along the coast in both directions. The cape is covered with buildings and gardens and so offers extensive opportunities for camouflage of positions. Five miles beyond Cannes is Cagnes, another available landing place.

Nice, just beyond Cagnes, is a city of 150,000 people. Its tourist capacity is 65,000 additional. The beach, which is excellent, is 1½ miles long and is opposite the center of the city. Minor beaches extend to the right and left. Nice lies in an amphitheater of hills which extend into the sea as promontories on both flanks. The bay approach is therefore covered by fire from three directions. As a port Nice has only minor value; it is suitable for small craft only.

The Corniche d'Or ends at Nice, and so does the alternative inland route which joins the shore road at this city by descending the valley of the Var. Following up the Var further northward is a third line of communications, both motor road and railroad, leading to all points in France north and west. The enemy is well provided with communications in this region and is by no means dependent upon the scenic coast road, although the latter is certainly useful.

Two roads lead eastward from Nice. The Little Corniche follows the coast closely 21 miles to the Italian frontier. The Grand Corniche, which is the road which Napoleon built, is about 2 miles inland as far as Monte Carlo. It then approaches the Little Corniche and the two finally join near Menton, about 2 miles from the frontier. The Grand Corniche is about a mile longer than the Little Corniche and has some heavy grades. There are numerous cross connections between the two roads.

Just east from Nice is Cape Monthoron. On the far side is a deep narrow bay at the head of which is Villefranche, a suburb of Nice. On the east is a two-forked promontory with the capes of Ferrat and St. Hospice. Good roads extend into all capes, which afford almost ideal locations for batteries to enfilade the coast. The entire coast is closely bordered by houses, gardens, and vegetation which give maximum cover.

Monaco is 14 miles by road from Nice. It is nominally an independent state, and supposed to be neutral in the current war. The railroad and Little Corniche road go through this tiny state but the Grand Corniche goes around it. There are three small towns in Monaco, of which Monte Carlo has a world-wide reputation. La Condamine, which is adjacent, has a port suitable for yachts and similar vessels and a beach about 200 yards long.

Six miles beyond Monaco is Menton, which is just inside the frontier. Its excellent beach is some 2 miles long, and there is a port for small craft. This town is long and narrow: the mountains go right up behind it. Besides the shore road, roads extend north into the mountains following stream lines. No roads parallel the coast east of the west exit of Menton.

This town is a great resort. It has a population of 15,000 and a tourist capacity of as many more. The water offshore is shallow so it would be possible for transports to lie off and debark. On each side of Menton are promontories suitable for defense purposes.

SUMMARY

South France as a landing area for an invasion presents but two major objectives.

A landing at the southwest leads to the Garonne valley, and eventually to occupation of France north of the Pyrenees Mountains. This landing requires a complementary landing in the Bay of Biscay for maximum chance of success.

A landing in the Central Section leads to an advance up the Rhone valley. The preliminary capture of Marseille and Toulon is indispensable for this.

An advance up the Rhone valley under conditions existing at date of writing would probably meet strenuous opposition from strong enemy forces, who have prepared defensive lines at intervals. Both sides of the Rhone have a good railroad and motor road. One hundred miles from the Mediterranean, south of Valence the valley narrows to a width of some 10 miles. At other places high ground approaches the river on one bank only. All of these probable positions for the enemy's defense can be turned. There are excellent roads on both flanks. All that is necessary is to have enough troops to contain the enemy in the center while moving around one or both of his flanks.

No matter what plan is followed for an invasion of south France, strong forces will be needed. Latest estimate of enemy strength in France is 35 divisions in north France and 10 to 15 in south France. Unless both north and south France are attacked at the same time the enemy can rather quickly reinforce one sector from the other. Reinforcements can also reach south France from Italy or from Germany. How many troops could be brought up from these countries is problematical and would depend upon the situation at the time.

JUNGLE COMMUNICATIONS

By Lt. Col. John W. Ferris, FA

Artillery communications presented its share of problems along with every other phase of operation in the jungles. We have always assumed that wire furnished our most dependable means of communication—and this conclusion has been verified. The installation and maintenance of wire lines, however, introduced many aggravating incidents that necessitated numerous additional hours of work by communication details. Some of these occurrences could not be forestalled. Some could have been prevented or lessened in scope by more careful planning in the initial stages of any particular operation.

No doubt most personnel commenced operations in the jungle with the feeling that the books were all wrong and that they as pioneers would be forced to blaze new trails both literally and figuratively. Possibly this misconception brought about many of the resulting difficulties. Routes of advance or withdrawal were greatly restricted due to limitations in terrain. Axes of communication were as a rule confined to these few natural or prepared passages.

On Guadalcanal, the beach road furnished the one and only supply route for two divisions. The easy and thoughtless solution was to place all wire along this road. Practically without exception, this plan was adopted by all organizations. At one critical road junction and stream crossing over 200 pairs of field wire were counted. As the action progressed the road was widened and improved, dumps and bivouacs were established along its course, and trees were cut in many places to provide materials with which to construct corduroy road and thus build a more lasting highway. All of these functions destroyed wire lines. Tracing one's own circuits became impossible. When breaks occurred, complete new lines provided the fastest and most satisfactory means of regaining communications. Aside from reestablishing communications, this also added to the maze of wire already in place. After the action had been completed, reconnaissance disclosed a bare ridge paralleling the beach road at a distance of from 500 to 700 yards. A road over this ridge was impractical, but it would have furnished an excellent wire route. Labor in maintenance would have been greatly reduced, failures in wire communication would have been minimized, and, in the case of one field artillery battalion, over 15 miles of wire would have been saved in the initial installation. Reconnaissance and planning have definitely not been outmoded.

The engineer bulldozer became the greatest menace to wire lines. The engineers had one of the most difficult tasks of any branch. It was their problem to provide roads (mainly jeep trails) over which all supplies could be transported to the infantry and over which all casualties could be evacuated. In an advance the infantry usually followed Jap withdrawals down narrow trails. Both infantry and artillery wire followed these advances down the same trails. The single track road followed next in line. It followed both trail and wire lines. Unfortunately, it was necessary to cut trees and widen the trail in order to provide space for vehicular passage. Men and time were not available for the engineers to protect or even attempt to spare wire lines. Many were thus destroyed. One and only one solution to this problem has presented itself. An artillery wire crew has to work with each dozer along these lines. It was and is our problem to keep the wire in, and the means necessary must be employed. These roads were soon widened by turn-outs and by detours installed to allow vehicles to pass the never-ending mud holes. In most cases wire initially had to follow the trails directly in order that communication keep up with the advance. As roads were widened, however, these lines were endangered by vehicles and by falling trees. For this reason, as soon as initial installations had been completed it became advisable to duplicate lines along roads to the rear by new lines at least 50 yards off of these roads. All wire had to be placed well overhead in order to avoid breaks inflicted by vehicles, patrols, and individuals.

Are our soldiers trained to protect their own communications? One would wonder. On some occasions, sections of field wire were cut out to provide guys to replace lost tent ropes, lines for laundry, and other gadgets which the individual felt would be beneficial to him. Anyone would say "absurd," but these things actually happened.

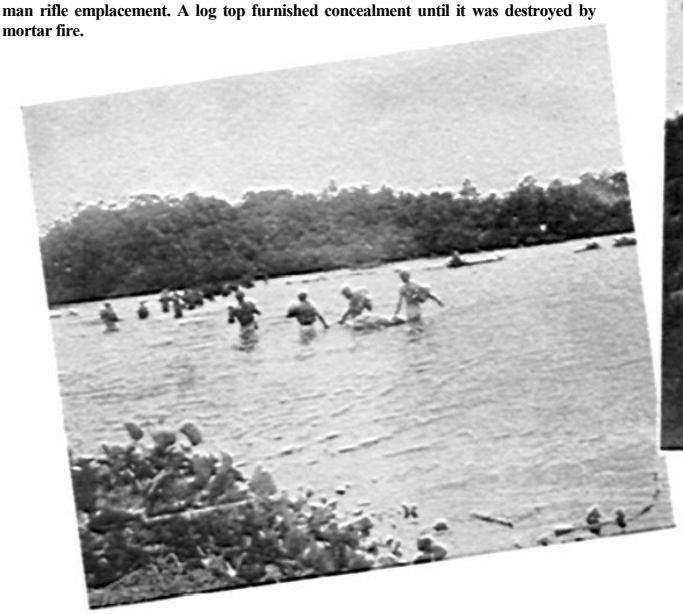
On many occasions artillery battalions were placed in position on small islands just off the shore of the main island under attack. Naturally, wire had to connect the two islands. W-110 wire worked well if new wire without splices was used. The tide dragged it along the bottom at times and wore out the insulation; if this happened, the whole length had to be replaced. Later the artillery was issued two-pair cable by the signal corps. This cable comes in 400-yard lengths with watertight connections on the ends. By placing a forward switching central on the main island, three circuits (one phantom) were provided between the artillery and its supported infantry. This satisfied our purposes in a very fine manner. In one position this cable functioned over a month before displacement without causing any difficulty. Over two miles of cable were used in this position.

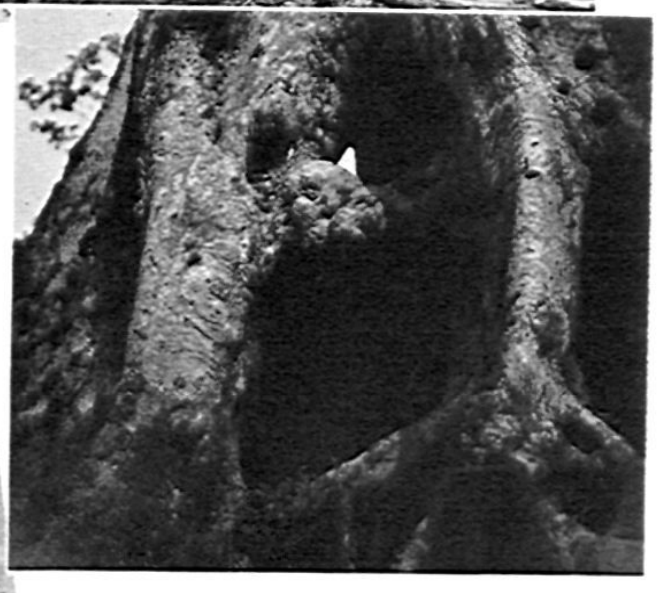
The major unexpected wire difficulties encountered in the jungle have been mentioned. The ones we have been taught to expect were also present. How were they all overcome? First, by planning. Second, by hard work. One battalion on New Georgia used about 100 men to install and maintain over 100 miles of wire in one position occupied. This was the exception, not the rule. Any steps that had to be taken to insure wire communication, however, were taken. Wire camps were

TROPIC BATTLE CONDITIONS

Above, Bare, grassy slopes like this were found prevalent in the uplands of Guadalcanal. To some extent they exist on other Pacific islands, but in general they are on the rare side. When encountered they facilitate tremendously the movement and supply of troops, and automatically provide excellent fields of fire. Right: Jap pillboses like this one on New Guinea (a huge one, captured with the aid of tanks) are concealed by cocoanuts, cocoanut sprouts, sand, and logs. Despite their size they blend with and melt into their surroundings.

Above: Dank, dense jungle will be our more usual fighting terrain on most of the coming oriental operations. Visibility is often reduced to 20 yards or even less. The Japs have ample opportunity to conceal dugouts and strong points. An emplacement like this, for example, can be located only by intimate observation and can readily be passed by without discovery. Right: Part of this tree's base was dug away to form a 1-man rifle emplacement. A log top furnished concealment until it was destroyed by mortar fire.





Above: Here is the back of a banyan tree, used as entrance to a rifle emplacement. The entrance proper starts from the roots, but only a small man could get up through them to fire from the other side. Left: Island streams are frequently shallow, at least near their mouths. There, however, they usually widen out considerably. Improvised ferries are a great help in moving even personal equipment across.

established along the lines. A pool of men under the assistant communication officer was maintained forward, usually at a forward switching central near the infantry regimental CP. Wire personnel with liaison sections and forward observing parties were increased in number to the extent necessary to uphold their phases of communication responsibility.

Radio is still a partially undetermined factor in jungle communications. The SCR-193 and SCR-284 have so far been the only sets upon which dependence could be placed. It has been necessary at times to use enlarged details to pack 284s into areas inaccessible to vehicles. Again, in order to be assured of communications, the work required must be secondary in consideration. At times the 194, the 511, and the 600-series worked, but communication plans cannot be made on possibilities. The 193 provided a fine base set for air-ground radio and for 284 liaison nets in the forward areas. The 284, in turn, was sure except when affected by dampness. The forward wire crew pool usually had replacements for this set in their stock of reserve equipment.

Runners were about the only other means of supplementary communication employed. Possibly communication personnel were at fault in not attempting the use of flags and lamps. Most certainly, occasions might arise when their use would be invaluable.

All signal equipment had to be serviced much more frequently than might normally be expected. Dampness was a menace to proper operation of all electrical apparatus. Aside from radio, the issued articles performed in an excellent manner. 110 wire stood up wonderfully well. 130 wire was valuable only for the uses intended; namely, for short observers' lines that were to be used only for short periods. Battery life is greatly curtailed. Spare batteries for all operators become an even more important consideration than under ordinary conditions. Due to the fact that practically all wire had to be laid by hand and also elevated, RL-27's and climbers, as authorized in our present tables, were insufficient in number.

In communication planning nets, it was natural to attempt to adopt wire and radio nets that would best satisfy the tactical needs and also most efficiently and simply solve the problems of time available and labor required to make the installation.

In the attack, practically all regimental fronts were reduced in length from those we have learned to consider normal. This tended to simplify artillery wire nets and also to modify artillery liaison and forward observer usage. Battery concentrations became practically unknown. As a result, battalion planned all fires and coordinated the work of all personnel who worked with the different echelons of the infantry. Forward observers rarely worked directly with their batteries, but rather with a patricular infantry battalion under the artillery battalion liaison officer. The liaison officers were, in turn, directly under the artillery battalion commander who performed the mission of command liaison with the infantry regimental commander. Thus all the work of artillery personnel with the infantry was closely coordinated in the forward areas, and likewise fire support was more efficiently and effectively placed.

It was unusual when the entire artillery CP might have wisely been placed with the infantry regimental CP. By divorcing the battalion commander from the fire direction center, however, the close contact demanded in command liaison could well be obtained. The CP as represented by the artillery battalion commander was with the infantry regiment. Yet the FDC, which is the department of the artillery CP that complicates communications, remained in the artillery area. Thus the contact function and the technical function of firing were maintained with the retention of comparatively simple communications.

The wire net that developed in solving this somewhat unusual organization is interesting. In the first place, a forward switching central was normally installed with the infantry regimental CP. This saved greatly in the amount of wire necessary to connect forward and rear areas and also lessened the possibility of complete wire failure between the two areas. Most wire failures resulted in the space lying between the infantry and artillery areas. The switching central was readily tied into the infantry wire net. The forward pool of men and equipment obtained both food and protection from the infantry installation. And the artillery battalion commander was provided with a communication center for work with both observing personnel forward and with the artillery battalion area in the rear.

Lines were laid from the forward central to the battalion commander (CP) and to the artillery battalion liaison officers. The locations of the latter became wire heads for the forward observers working in the respective battalion sectors. Forward observer parties laid their own lines, using W-130 wire. Battalion laid and maintained W-110 into the liaison sections. All personnel working with the infantry were closely linked together in this net. Situations and situation changes were rapidly relayed to proper personnel. The planning of fires to give the most effective support was simpler. This close coordination with the infantry was also of benefit to them in that information was more rapidly assembled for their, as well as our, uses.

Radio was tied into the above net in various ways. A 284 was always installed at the forward switching central. By use of remote control, this set could relay to the rear messages from any personnel in the forward area. 284s were also frequently placed with liaison sections. These were available not only to the liaison officers, but also to forward observers by use of remote control since their wire heads were with the liaison sections.

One should never assume that any communication plan such as that described above furnishes a solution that will work under all conditions. For instance, in the situation described there were no OPs as no observation was available. Communications must always be developed around a particular situation. The above is merely a variation in plan that, in turn, may be modified to better meet other similar situations. Most certainly, in the situation described, the artillery CO has the most flexible wire net possible with which to solve his support mission.

Few hard and fast rules may be adopted to satisfy all communication plans. Below are listed some guides that apply in practically every case in jungle operations:

1. Any plan must first solve the tactical situation.

2. Install and maintain wire no matter what may be required in the way of men and materials to accomplish this purpose.

3. Place all wire overhead and away from roads.

4. Supplement wire with radio that will work. Take full advantage of remote control facilities.

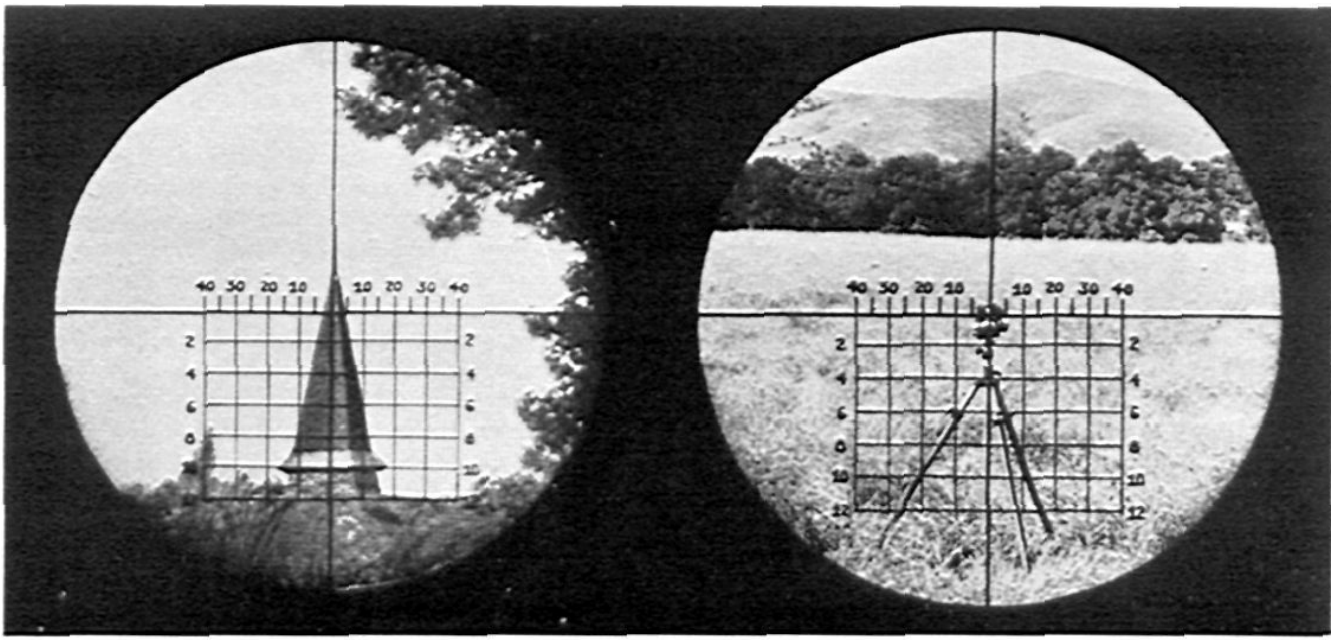
5. Make artillery communications work. This requires constant maintenance. Never plan to fall back on infantry wire to accomplish a mission, although of course this may become necessary.

6. Communication officers must plan carefully and sections must work diligently, in order to provide communications which are absolutely necessary if we are to properly fulfill our support mission.

USE YOUR TRAINING FILMS!

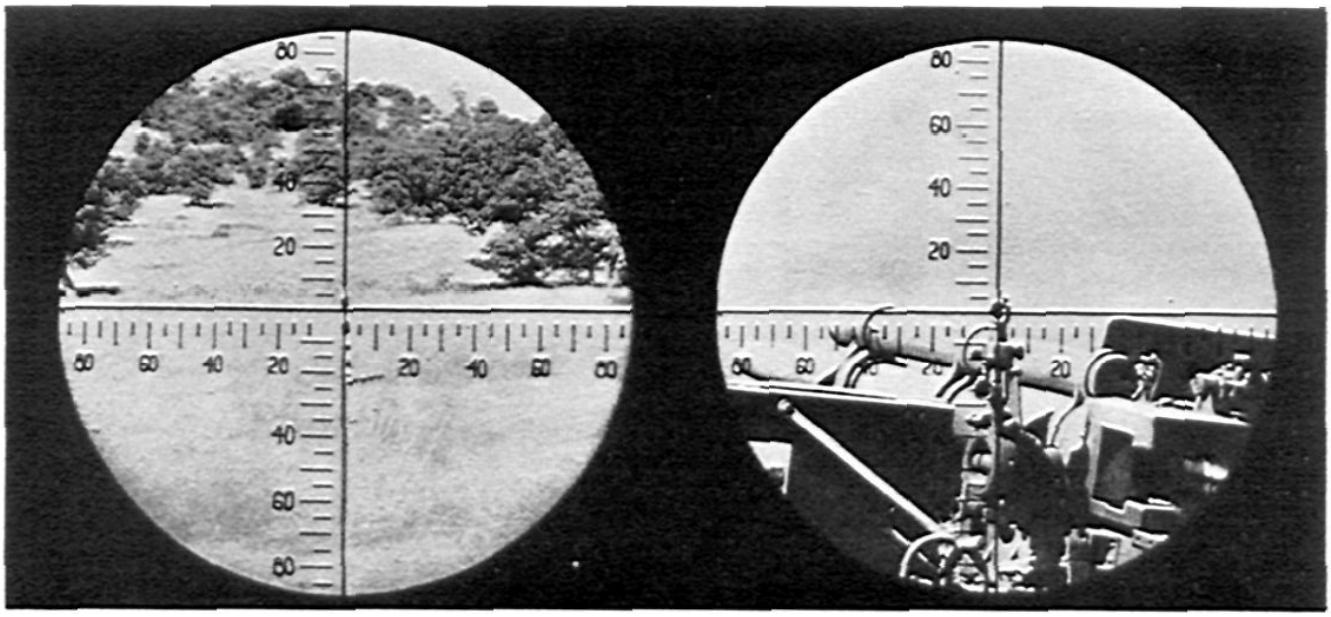
Under supervision of the Visual Aids Branch, HQ AGF, the Signal Corps has done an amazing job of producing training films. Every film offers a self-teaching course of the subject shown. You learn by seeing. Not only do the films give a clear over-all picture but they emphasize accuracy in every intimate detail of the subject being taught.

As proof of accuracy in specific detail note the pictures below which are taken from Training Film 6-1227, *Laying a Field Artillery Battery*.



Looking through the sight of a 105-how, with the piece properly laid by aiming point (church steeple) and deflection.

View of the aiming circle as seen by the gunner through his sight when either laying his piece or checking his deflection.



Sighting through an aiming circle directed along the orienting line when laying the battery by base angle.

Here is the proper way to line the cross-hairs of the aiming circle on the sight of the 105-how.

Where Shall We Put the Fifties?

By Maj. Harold J. Bluhm, FA

According to the latest Tables of Organization and Equipment, each battery is authorized 4 cal. .50 machine guns and 4 AA ground mounts. An additional machine gun and mount has been authorized for headquarters battery to be used for the protection of the landing field for the liaison planes.

All of our training as artillerymen has emphasized the necessity of locating our weapons so that we can accomplish our mission. Stated simply, the primary mission of the cal. .50 machine guns is to protect the unit from offensive action by enemy aircraft. We can accomplish this in several ways:

(1) By destroying the enemy aircraft.
(2) By causing them to abandon their mission.
(3) By decreasing the efficiency of their operations.

Types of attack to which we may be subjected fall into three classes:

(1) *Dive Bombing*—This is a favorite method of attack against artillery positions, and has been developed to a high degree of accuracy. The pilots dive their planes directly at the target and generally out of the sun, pulling out approximately 2,500 feet from the ground. The bomb is released just prior to the pull-out and the pilot may then climb out of range or dive again to treetop level and leave the area or return to strafe the posititon.

(2) *Low-level Bombing*—As the altitude of the attack is decreased, accuracy of the bombing is increased. This type of attack, however, is seldom used at altitudes of less than 1,000 feet, to allow time for the long axis of the bomb to become approximately vertical before it hits the ground. Thus it does not ricochet off the objective, and the attacking plane will not be damaged by the explosion. As this is precision bombing, a bombing run of approximately 10 seconds is required. In this type of attack the plane may approach at a very low altitude and not climb to bombing height until it is time to make its bombing run.

(3) *Minimum altitude attack*—This method of attack is frequently employed by aircraft flying at treetop height. It includes skip bombing, strafing, and chemical attacks.

When skip bombing, the pilot releases his bombs at a low level and depends on a delayed action fuze or the slowing effect of a parachute attached to the bomb, to allow the plane to be out of the danger area when the bomb explodes.

When strafing, the plane must be low enough that the objective is within effective range of its machine guns.

Chemical attacks must be carried out as low as possible to reduce the amount of diffusion.

Minimum altitude attacks will therefore be carried out at a much lower level than precision bombing and will generally be made by faster flying aircraft.

Now let us see what the cal. .50 machine gun can do. It fires a projectile with a muzzle velocity of approximately 2,900 feet per second. The armor-piercing projectile has a maximum range of 7,200 yards. The tracer has a maximum range of about 3,500 yards, but is tracer element burns out at approximately 1,800 yards; this definitely limits the amount of usable range in AA fire, as the adjustment must be entirely by individual tracer control (ITC). Dispersion and difficulty of tracking further limit this usable range so that on an incoming course (target flies directly at the gun) the maximum effective range is considered to be about 1,200 yards. On a crossing course (target at right angles to the line of fire) the maximum effective range is only 600 yards.

This discrepancy is readily apparent when we consider that the deflection dispersion is much less than the range dispersion; an oncoming target will be flying through the range dispersion cone, while on a crossing course the range dispersion will carry the projectile above and below the target and only the deflection dispersion (which is small) will operate along the length of the target. Further, on a crossing course, the target is traveling at a high angular speed, requiring the gunner to make continuous and rapid changes in deflection so the human element will enter into the problem and further reduce the effective range.

As oncoming targets can be fought more successfully than crossing targets we must, if possible, *locate our machine guns so that attacking aircraft will be oncoming targets.*

Let us analyze the probable attacks a little further so that we may see how we can best utilize our machine guns.

Low level bombing—In order to accomplish our mission against any bombing attack we must bring effective fire to bear on the attacking plane before it releases its bombs. Our mission is to protect the battery and not necessarily to bring down planes. Any machine guns that are located in such a position that they cannot fire effectively on the plane until after the bomb has been released will not accomplish this mission. It is of course desirable to bring down any enemy planes that we can, even though they have dropped their bombs, but our primary thoughts must be devoted to the task of preventing the enemy from accomplishing his mission.

In order for the bomb to hit the target it must be released before the plane is over the target. The distance away can be roughly determined by multiplying the ground speed of the plane in yards per second, by the time of fall of the bomb in seconds. This will give us, in yards, the distance from the target where the plane must release its bomb to hit the near edge of the target. This is called the initial bomb release line (IBRL).

The approximate ground speed of a plane in yards per second can be determined by dividing the speed in miles per hour by 2.

The time of fall in seconds is determined by the formula $\sqrt{2H/32}$, where H is the height of the plane in feet and 32 is the acceleration of gravity. As an example, let us assume that a plane traveling 200 mph at a height of 1,000 feet is making a bombing run; where is the IBRL? Using the formula, we see that the speed of the plane is 100 yards per second and the time of fall of the bomb is 8 seconds. Therefore the IBRL will be 800 yards from the battery.

Prior to releasing the bomb, the bomber will make a bombing run for approximately 10 seconds. Using the same rate

of 100 yards per second, he would have been in this run (which is called the "Critical Zone") for 1,000 yards prior to reaching the IBRL. In this zone the bomber must fly a constant altitude, constant speed, rectilinear course to allow the bombadier to adjust on the target. During this run the course of the plane can be predicted and the plane is, therefore, a good target.

At first glance it would seem logical for us to place our machine guns 800 yards away from the battery in order to fire effectively on the plane before it releases its bomb. But as we do not know the direction of attack we would have to put our machine guns around the battery on a circle 800 yards in radius. Under these conditions no more than one machine gun can anticipate a plane approaching on an oncoming course, and the guns will not be mutually supporting. The other machine guns firing at the plane on a crossing course will be beyond their effective range. Should two guns be in a direct line with the approaching plane but on opposite sides of the circle, the far gun would be 1,600 yards from the IBRL and again out of the effective range of the weapon.

If, however, we locate the machine guns in the immediate vicinity of the howitzers, all planes attempting to bomb that position must, of necessity, approach all machine guns as an oncoming target. As previously stated, the effective range of the weapon for this type of course is 1,200 yards, so effective fire can be placed on the plane 400 yards before it reaches its bomb release line. Further, deterrent fire can be placed outside of the effective range of the weapon and the appearance of the tracers in the sky in front of the plane may cause the pilot to abandon his mission or take voiding action—which, in either case, will accomplish our mission.

Dive Bombing. A dive bomber approaches the position from an angle which may be as steep as 80º. If we have our guns any appreciable distance away from the battery the dive bomber will be a crossing target to all weapons, and if, as previously stated, the maximum range for this type of course is 600 yards, no weapon will have the target in its effective range at any time prior to the release of the bomb.

On the other hand, if the machine guns are now located at the battery position, the dive bomber must attack them as well as the battery position and will present an oncoming target for all weapons. This will enable all guns to concentrate their fire on the airplane before it releases its bomb.

Minimum Altitude Attack. This type of attack is characterized by the low altitude and high speed at which the plane flies, and the suddenness of the attack.

Again, as we cannot anticipate the direction of attack, we must locate our machine guns in the vicinity of the howitzers in order to place effective fire on the attacking plane. Bombs released at this low altitude will be released close to the objective, or if the plane is strafing its attack will have to be made within the effective range of the plane's machine guns and, consequently, ours too.

Another hazard which must be considered in this type of attack is the low altitude. If our machine guns are located away from the battery we may endanger our howitzer position when we fire on a low plane which is crossing over the battery.

So far in this discussion we have been concerned solely with the problem of placing effective fire on an attacking plane. But there are other factors which we must consider:

(1) *Ground Defense*. Machine guns located in the vicinity of the battery will be more valuable for all-around defense than guns located at a distance which may, because of this distance, require additional small arms protection. If the attack should come from an unfavorable direction, machine guns at a distance may be of little or no value. Machine guns at the battery position should be an integral part of the ground defense and, where the terrain permits, should mutually support each other.

(2) *Replacements*. Rapid replacement of casualties at the machine guns will be increasingly difficult as their distance from the howitzer position is increased. Machine guns located at the battery will not require machine gunners to remain constantly on duty, but could be manned without delay by personnel from the gun squads from which most of the gunners must be provided.

(3) *Communications*. Warning systems can be more efficiently established and operated when the machine gun positions are close to the howitzers.

* * *

Throughout this discussion we have advocated the battery position as the most efficient and practical location for the machine guns. Their exact location would depend, of course, on the terrain, the mission, and location of nearby units and their defense.

The exact distance from the howitzers can hardly be reduced to a linear measurement. It might be better to say that the machine guns should occupy the position along with the howitzers and that a machine gun, except in unusual circumstances, should not occupy a separate, isolated position away from the battery.

CAMOUFLAGE—how not to do it! Nicely dug in, and under a well-stretched net. The spoil, though, will show clearly even through the net, and make a perfect target. Also, why so close to the cross-road, and why is the vehicle parked so close to the position?

FLASH BASE OBSERVATION

By Lt. Clifford R. Moore, FA

The system outlined in "Surprise Fire with the Observed Fire Chart" (p. 913 of this JOURNAL for December, 1943) is similar to the "flash base" method as taught in the survey course at the Field Artillery School. That name is due to its similarity to methods employed by flash-sound detachments. It is of special value in counterbattery location by medium artillery. Not only is the method applicable for an observed fire chart, but it is sufficiently accurate to be used with a grid sheet survey, map, or photomap firing chart.

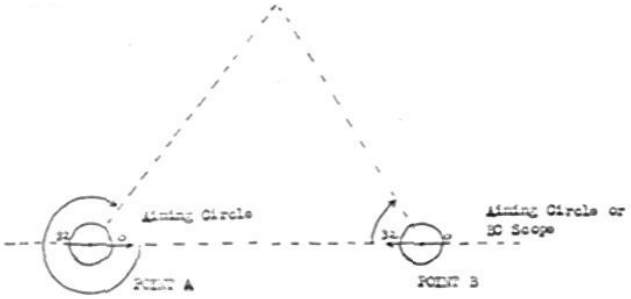


Figure 1

In establishing the base two factors must be considered: the target angle of intersection must be at least 150 mils and the referring point as nearly as possible axial to line of fire. The latter is necessary so that any error in computation will be in range rather than in deflection. After determining the base, the instrument operators at Points A and B (Fig. 1) orient their instruments: the right (or Point B) operator sights on Point A with the 0 on the instrument to his body, the left (or Point A) operator sights on Point B with the 32 on the instrument to his body. Thus (Fig. 2) the right operator measures the interior angle, and the left operator the exterior angle. Subtracting the interior angle from the exterior angle yields the vertex or target angle. The distance A—C (or B—C, depending on which station is reported as the reference) may be quickly computed by means of the mathematical slide rule or logarithmic tables.

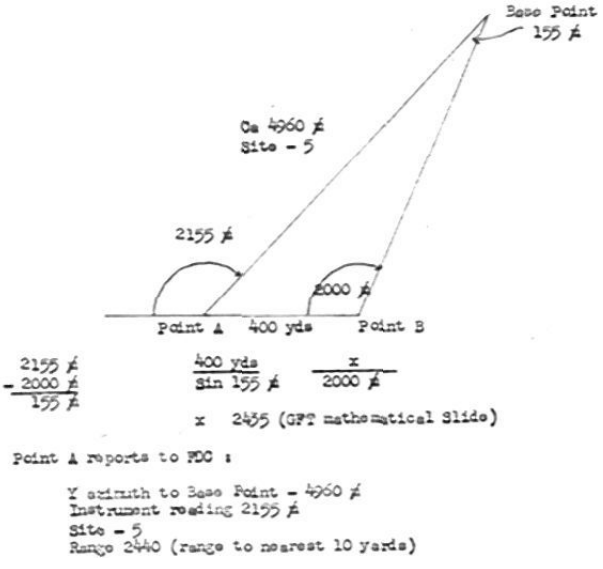


Figure 2

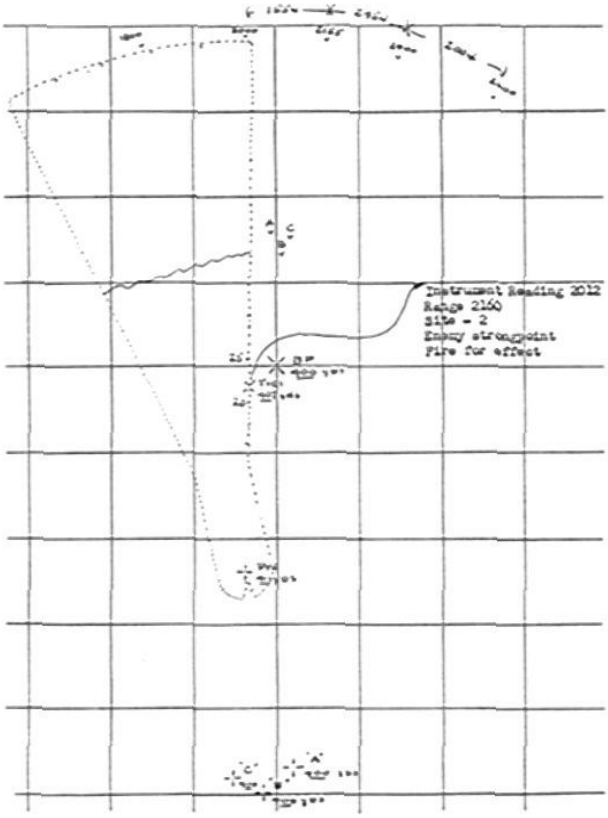


Figure 3. Observed fire chart set-up to fire flash base missions.

To check orientation of instruments, each operator should record the reading to the base point, check points, and other identifiable reference points. This is especially necessary in case smoke or dust obscures vision between the two observing points.

FDC needs to know the location of one end of the base, preferably the left (or Point A) observation post. The instrument operator there measures the compass and site to the base point. Thus, in Fig. 2, Point A reports to FDC: "Point A reporting, Y-azimuth to base point 4960 mils, instrument reading 2155 mils, site —5, range 2440." (Ranges are reported to the nearest 10 yards to facilitate rapid plotting with a range-deflection fan.) HCO and VCO plot 2440 yards on the back-azimuth of 4960 mils. In addition the line Point A—BP is extended, and numbered with the instrument reading. Additional control lines in even multiples of 200 mils, vertex at Point A, are drawn to facilitate rapid plotting. VCO computes the altitude of Point A. In Fig. 2, Point A is 11 yards higher than the base point. On an observed fire chart it is assumed that the base point and batteries are at the same elevation. Accurate site control is now available, with the firing chart set up as in Fig. 3.

Communication between the two OPs is simple. Point A has normal radio and wire communication with FDC. An additional telephone and necessary wire connect Point B with

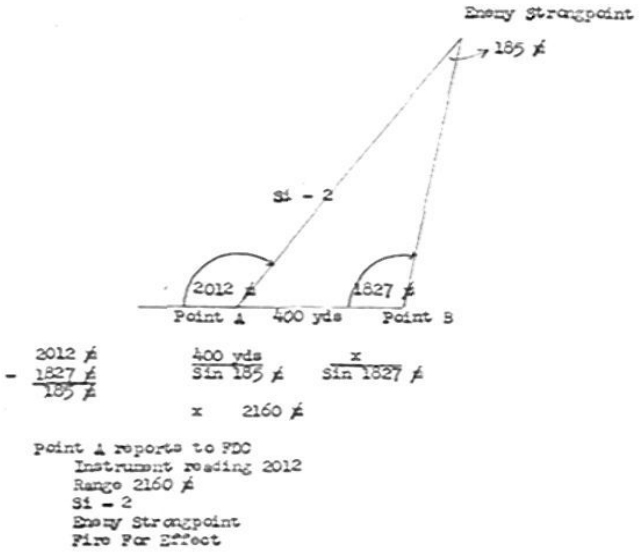


Figure 4

Point A. A T-splice lets Point B be in direct contact with FDC. If both posts are manned by battalion personnel, 2 aiming circles are available for use. If the posts are manned by battery personnel the aiming circle should be at Point A and a BC 'scope at Point B. A mathematical slide rule at each post permits a ready check on computations.

To continue our situation, Points A and B locate a target (Fig. 4). Point A reports to FDC: "Instrument reading 2012‴, range 2160 yds., Si—2, enemy strong point, fire for effect." HCO and VCO plot the location as in Fig. 3. Ordered to fire upon the target by the battalion commander, S-3 assigns 101 as the concentration number. Range and deflection are then measured by HCO and VCO from the battery positions and reported to the computers.

Thus a battalion or battery has available a means of delivering a heavy accurate volume of surprise fire upon a target within the OPs' zone of observation. This method further meets of the recommendation found in WD Publication *Lessons from the Tunisian Campaign:* "At least two OPs in each battalion should be surveyed in order to provide means for combined observation."

T Os & T Es FOR FA AS OF 4 FEB 44

(Figures in parentheses indicate number of published changes)

Higher Headquarters Batteries:

6-10-1 15 July 43—Inf Div (2)
6-12 20 Oct 43—Group (2)
6-20-1 10 Jan 44—Brigade
6-50-1 27 Dec 43—Corps Arty
6-110-1 1 Apr 42—Cav Div (3)
6-160-1 15 Sept 43—Armd Div (1)
6-200-1 5 Sept 42—AB Div (1)
6-212-S 18 Aug 43—AB Group

Battalion Headquarters Batteries:

6-26 15 July 43—105-mm How (2)
6-36 15 July 43—Medium (4)
6-46 1 Apr 42—H-Dr (3)
6-56 2 July 43—Hv (1)
6-76 1 Apr 42—Obsn (1)
6-156 4 May 43—Pack*
6-166 15 Sept 43—Armd (2)
6-176 28 July 43—Pk Trk-Dr*
6-216 5 Sept 42—Prcht*
6-226 5 Sept 42—Glider*

*Combined Hqs & Hqs and Service Battery.

Batteries:

6-27 15 July 43—105-mm How, Trk-Dr (3)
6-37 15 July 43—155-mm How, 4.5″ Gun, Trk-Dr (Med Arty) (2)
6-47 1 Apr 42—75-mm Gun, H-Dr
6-57 31 July 43—155-mm Gun, Trk-Dr (Hv Arty) (2)
6-67 2 July 43—8″ How, Trk-Dr (Hv Arty) (1)
6-77 1 Apr 42—Obsn Btry (1)
6-97 18 Aug 43—240-mm How, Trk-Dr (Hv Arty) (1)
6-117 1 Apr 42—75-mm Fld-How. H
6-127 29 Sept 43—155-mm Gun, SP (1)
6-157 4 May 43—75-mm How. Pack
6-167 15 Sept 43—Armored (1)
6-177 28 July 43—75-mm How, Pack, Trk-Dr
6-217 5 Sept 42—75-mm How. Prcht
6-218 5 Sept 42—AA and AT Btry, Prcht
6-227 5 Sept 42—75-mm How, Glider
6-327 26 July 43—105-mm How, Trac-Dr (1)
6-337 3 July 43—155-mm How, 4.5″ Gun, Trac-Dr (Med Arty) (1)
6-357 31 July 43—155-mm Gun, Trac-Dr (Hv Arty) (1)
6-367 2 July 43—8″ How, Trac-Dr (Hv Arty) (2)
6-397 18 Aug 43—240-mm How, 8″ Gun, Trac-Dr (Hv Arty) (2)

Service Batteries:

6-29 15 July 43—105-mm How, Trk-Dr (2)
6-39 15 July 43—Med Arty, Trk-Dr (2)
6-49 1 Apr 42—H-Dr
6-59 2 July 43—Hv Arty, Trk-Dr (2)
6-129 29 Sept 43—155-mm Gun, SP (1)
6-169 15 Sept 43—Armored (1)
6-329 26 July 43—105-mm How, Trac-Dr (1)
6-339 3 July 43—Med Arty, Trac-Dr (1)
6-359 2 July 43—Hv Arty, Trac-Dr (2)

Medical Detachments:

6-10 15 July 43—Hq, Inf Div Arty (2)
6-12 29 Oct 43—Group
6-25* 15 July 43—105-mm How, Trk-Dr (2)
6-35* 15 July 43—Med Arty (2)
6-45 1 Apr 42—H-Dr (3)
6-55* 31 July 43—155-mm Gun, Trk-Dr (1)
6-65* 2 July 43—8″ How, Trk-Dr (2)
6-75* 1 Apr 42—Obsn Bn (1)
6-95* 18 Aug 43—240-mm How, Trk-Dr (1)
6-110 1 Apr 42—Hq, Cav Div Arty (4)
6-115 1 Apr 42—Horse Arty (3)
6-125* 29 Sept 43—155-mm Gun, SP (1)
6-155 4 May 43—Pk Arty
6-165 15 Sept 43—Armored Arty (1)
6-175 28 July 43—Pk-Trk-Dr
6-200 5 Sept 42—Hq, AB Div Arty (1)
6-215 5 Sept 42—Prcht
6-225 5 Sept 42—Glider
6-325* 26 July 43—105-mm How, Trac-Dr (1)
6-335* 3 July 43—Med Arty, Trac-Dr (2)
6-355* 31 July 43—155-mm Gun, Trac-Dr (1)
6-365* 2 July 43—8″ How, Trac-Dr (2)
6-395* 18 Aug 43—240-mm How, 8″ Gun, Trac Dr (2)

*Common T/O and E.

HERE THEY GET WINGS

By Lt. Morris Bart, FA

The shout of *Contact!* replaces that of *On the way*, and you'll hear more about "check rides" than RSOP's here at this unique school where Field Artillery officers first sprout their wings. Known as the 2nd Army Air Forces Liaison Training Detachment, Pittsburg, Kansas, it's the only school in the nation to train FA liaison pilots. Long on results but short on publicity, little has been written about this basic training which teaches officers to pilot aerial OPs in 60 hours of flying time. From here the flying artillerymen go to Ft. Sill for advanced training in the "grasshopper" planes before being assigned to line outfits as the eyes of the Artillery.

This detachment is a unit of the Army Air Forces Central Flying Training Command with headquarters at Randolph Field, Texas, which in turn is a component of the Army Air forces Training Command at fort Worth. Field Artillery captains and lieutenants, however, are the sole students here. When you fall out before daybreak on the first morning to the command *Flight, attention*, you know you're in a different branch of the service. The school itself is a civilian enterprise under contract to the War Department. The instructors are civilians also, and rate a "sir" the same as any superior officer.

Men from all types of outfits are here. In the hotel mess hall you'll see men from overseas, armored divisions, pack outfits, men fresh from OCS, and others from replacement training centers. There are quite a few "eliminated" cadets with flying experience who transferred to the FA via OCS.

The working day is divided into two parts. Either you fly in the morning and go to classrooms for academic work in the afternoon or vice versa. Instruction is planned to keep you plenty busy, but the work is neither a rat race nor a bed of roses. The first day, about all the instructor will do will be to point out one of the small L-4's and say, "Gentlemen, this is an airplane." And from there on it gets more complicated.

During the 60 hours which you fly during the course, about half are with your instructor. He'll show you all kinds of maneuvers, traffic patterns, and safety precautions. The other hours you're on your own to go up and practice.

An instructor prepares to swing the prop. This student officer, who will complete 30 hours of dual and 30 hours of solo flying, is ready for his first solo flight in the Cub L-4.

Classes are held six days a week in the modern Pittsburg high school, with exams every Saturday. here a class listens attentively while the instructor explains the mechanism of a Cub aircraft engine. Degrees replace mils at the ground school.

Toward the end of the course there's a cross-country trip of several hundred miles, and each class usually has at least one man lose his way and land in a farmyard.

There are three hours of classroom work each day, including one hour of the ever-present calisthenics. During the course you'll study 30 hours of navigation, 8 of Civil Air Regulations, 20 of the theory of flight, 18 of weather, 9 of aircraft identification, and 20 of engines.

The one big worry which the students have to sweat out are the check rides (or flying examinations). An Army Air Forces pilot of the Flying Training Command will let you take him up and demonstrate what you've learned at the end of 20 hours of flying instruction, and again at the end of the course. You either fly correctly or you're "washed out" and returned to your former outfit. If you do pass everything, you get ready for the traditional graduating class party at which instructors and students make merry. At that time the silver Air Forces pilot's wings with an "L" superimposed over the shield are pinned on the proud graduates, thereby rating them as Liaison Pilots.

All officers draw flying pay while attending the school.

There are some of the restrictions of cadet training imposed here, including bed check, marching to class, various formations, strict discipline, and respect to instructors.

A remarkable safety record has been maintained, due in part perhaps to the elimination of men just as soon as it is apparent they do not have flying ability. The flight surgeon keeps a close watch on the students, and even a slight cold is liable to "ground" you. Airsickness cases have been cured in nearly every instance.

Pittsburg itself is not a crowded Army town, and merchandise and various services are readily obtained. There is an officers' club downtown. The hotel which has been taken over by the Artillery pilots has assigned four or more men to each room. In each room is a telephone. The dining room is operated exclusively for the officers, cafeteria style.

Because of the rigid training schedule the eight weeks' course here seems very short, and you've graduated almost before you have time to say "Off we go into the wild blue yonder. . . ."—to help *Keep 'Em Rolling*.

MORE ON USES OF LIAISON PLANES

By Col. C. N. McFarland, FA

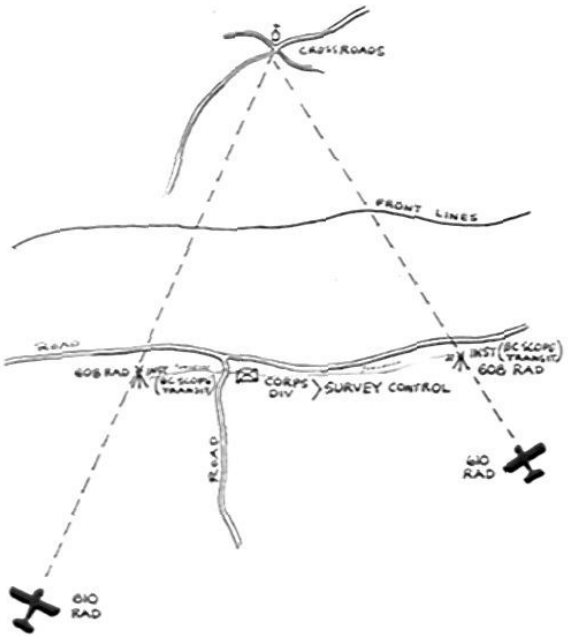
TARGET AREA SURVEY

In Florida and Louisiana areas, normal target area survey is practically non-existent, but the 8th FA Obsn Bn conducted some interesting experiments using the cub planes.

Two known points were selected about two miles apart and an instrument and radio established at each. Two planes were used, with radio communications with each other and with the two points. Direction was established for each instrument from survey.

The two planes, flying together about midway between the points and back of them (i.e., over friendly territory), selected a point in the target (enemy) area by mutual agreement. Each plane then flew a course for his instrument operator in such a manner that the instrument operator on signal took a reading on the center of the plane when the plane was lined up with the selected point in the target area and the instrument. Three readings could normally be taken on each run and a mean direction obtained. A system such as Start tracking—1—2—3—Mark was used between plane and instrument operator. Using as targets prominent cross-roads, buildings, or clear junctions of fields and woods, a *P* location accuracy can be expected on targets 6,000-8,000 yards from the instruments. Readings on the plane were usually taken from 2,000-1,000 yards from the instrument.

TARGET AREA SURVEY



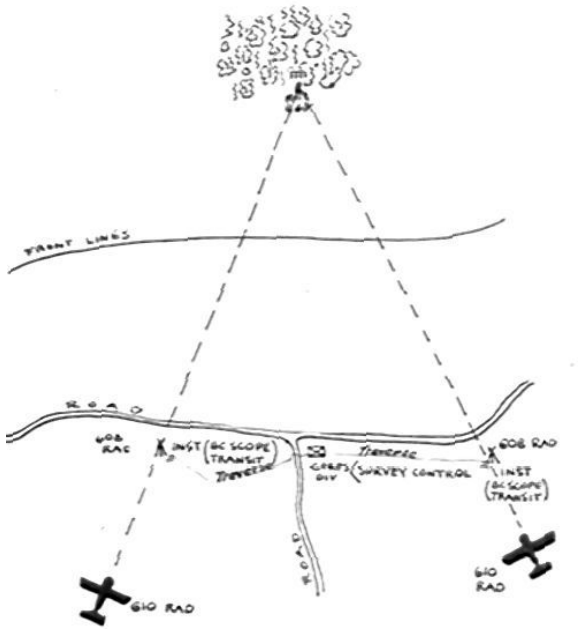
When the accurate location of an instrument could not be determined readily, readings were taken on a plane flying successively three different lines of instrument—known point; the resulting readings were used for a tracing paper resection to determine the location of the instrument. Results within 50 yards were obtained by this method on several occasions.

The T/E white-and-cerise vehicle panel proved useful in marking for the plane the instrument's location.

FLASH SPOTTING AND LOCATING

The same idea was tried during artillery firing at Camp Gruber, with gun flashes taking the place of a fixed target in the target area. Excellent results were obtained.

FLASH SPOTTING



With the instrument set up and oriented and two planes on call from nearby landing strips, the planes were able to take off upon the sound of firing, make 3 to 5 readings on a battery actually firing, and land within 20 minutes, the readings being radioed to the headquarters CP and recorded well within that time.

With a good vertical photo, it was also possible for one plane to pin-prick by inspection the location of a battery firing, and to drop a marked photo within 20 minutes after receiving information that a battery was firing from a general area. This sometimes required the pilot to fly at 4,000-6,000 feet, however, to be sure of his identification of the spot on his photomap—something which might prove dangerous in combat. But if a recent oblique of the area were available, it is believed that such heights would not be necessary.

POSITION AREA SURVEY

In Florida it was necessary at times to accomplish a 30- to 40-leg traverse to get survey control from known points on a road through the pine forest to the battalion position area.

In several instances aerial survey of the position was accomplished in situations such as this with excellent results.

This was accomplished by taking simultaneous readings on a plane from 2 known points on the road, the plane signalling by radio when over the selected point in the position area. An instrument operator marked this point, the pilot dropping a weighted message bag at the exact instance he called for the

reading. The instrument operator on the ground allowed from 0-15 feet for drift of the bag during its descent. The plane, when flying for this simultaneous reading from 2 instruments, flew into the wind as slowly as possible.

Direction in the position area was then established by having the instrument man in the position area sight on the plane when it reported that it was in line with the position area instrument man and one of the instrument men on the road.

Although difference in elevation between the known points on the road and the battery positions in Florida usually was negligible, the elevation of the position area could readily be determined with reasonable accuracy by one of the instrument operator's taking a reading for site when the plane was over the position area, and the pilot's estimating his height in feet above the ground—which could be done readily as the plane usually flew but a few feet over the tree tops.

Coast and Geodetic Survey specialists scream about the inaccuracies of this type of survey, but it is claimed that in certain types of terrain, such as Florida and Louisiana, it beats nothing. Further, deponent saith not.

POSITION AREA SURVEY

RETURN OF THE GUNS

By Brigadier E. C. Anstey, D.S.O.

Member of the Historical Section of Britain's Committee of Imperial Defense; Military Correspondent of the London *Sunday Times* and *Daily Sketch*.

A complete study of the development of tactics in the war will have to await calmer times for the knowledge, judgment, and leisure it demands. One-sided examinations are misleading. A view from the enemy's side throws a fresh light on both success and failure. At no time is dogmatism admirable; in the middle of the war with which it deals, it is premature and unjustified.

Concerning Allied tactics in Africa and Sicily, however, we can make some tentative assertions with the encouragement that complete victory gives. But it must be emphasized at the outset that the conditions in each campaign were peculiar. The monotonous trench warfare of 1914-18 tinged the subsequent study of tactics; the complexity and specializations of the present conflict tend to confuse our judgment of its nature. A future treatise on tactics will have to cover the peculiarities of fighting in open European country in winter and summer, and mountain, desert, jungle, amphibious, and island warfare. Africa and Sicily were chiefly, but not altogether, desert and mountain warfare.

The development of desert tactics from Sidi Rezegh to El Alamein would need a chapter to itself. In the main it would be the tale of the rise of the tank until the tank-versus-tank battle threatened stalemate. Rommel solved the problem by combining tanks with mobile guns which eventually became self-propelled guns. Partly through their use he won the Battle of Knights-bridge and rushed the incomplete defense of Tobruk, forcing the British withdrawal to the borders of the delta of the Nile.

But caution is necessary in drawing conclusions from Rommel's victory. Undergunned British tanks, shortages of equipment, deficiencies in antitank guns, and lack of training with those they had just received—all were contributory factors. Never again did the tank bear the brunt of a battle; the antitank defense was becoming too powerful for the tank to face. Gen. Montgomery realized this as Rommel never did, and Rommel paid the penalty.

This was evident in September, 1942, when Rommel tried to attack at El Alamein with massed tanks and guns in the same way as he had done at Knightsbridge. He failed to draw the British into his obvious trap, was pounded by the guns of the defense, threatened with encirclement, and withdrew discomfited and heavily punished. The lead passed to Montgomery. How was he to play his hand in the face of the powerful defenses with closed flanks the Germans had built in the desert? This was not desert warfare in the usual sense of the term. Rather, it resembled the trench warfare of the First World War.

With HE and also with AP shot (without HE, but with tracer), British 25-pdrs. at El Alamein gave magnificent support . . .

There were four dominant factors on which Gen. Montgomery based his plans and tactics. In the first place, with the simplicity that marked all his generalship, Rommel had disclosed his defensive plan. He had strengthened his wings, weakened his center where the ground favored attack, divided his tank forces between each wing, and prepared to close them on the British as they fell through the trap in the center. Montgomery determined to do the unexpected—he prepared to assault the strongest part of Rommel's line near the sea.

Secondly, communications and water limited the Axis strength, which had no reserves on which to call. If German and Italian units got tired under protracted fighting they could not be relieved. The old "roulement" system of World War I under which exhausted troops were withdrawn and replaced by fresh divisions from other sectors could not be applied in Africa. There was no need, therefore, for a quick break-through before help could arrive to stiffen the defense. It would be possible, Montgomery thought, to exhaust the enemy by a deliberate and sustained attack.

Thirdly, Rommel was imbued with the German passion for counterattack. It is a fine spirit when kept within bounds. Carried to excess it is a weakness which Gen. Montgomery decided to exploit by a system of short, limited advances, followed by quick consolidation under massed artillery protection to defeat the inevitable German counterattack.

Finally, the rearmament of Britain's tank units with Shermans, the arrival of large numbers of 6-pounder antitank guns, the high training given to detachments in their use, and the fostering of close cooperation between tanks, guns, and air, promised to win the tank fight which would follow the ultimate breakthrough.

Montgomery's plan of battle was brilliantly successful. It called for hard fighting, a call to which the troops responded magnificently. Instead of tanks' opening the battle as they had done in Poland and France against a defense of the 1918 variety, they ended it. Rommel was surprise by the direction of the attack against the strongest part of his line, and puzzled by its form. He refused to amend his dispositions, clinging to the belief that it was a feint and that the British would still be foolish enough to attack where he wished them to.

. . . to their supported infantry, of whom this New Zealander is a splendid example.

As Montgomery had foreseen, Rommel frittered away both infantry and tanks in local counterattacks which failed to check the methodical advance and entailed losses which were ultimately fatal to the German-Italo forces. When the German commander eventually began to mass his tanks toward his left, the Imperial Air Forces handled them roughly. Montgomery bored his way through the maze of trenches and pill boxes. The battle lasted ten days.

At last open country was reached. The breach was widened and tanks and guns poured through. But even now the whirling, swiftly-changing, maneuvering tank fight in which Rommel excelled was denied him. The British had realized that in the desert, at any rate, the tank was no more than a mobile armored gun. From hull-down positions, backed by a powerful antitank artillery in close attendance, the British forced the flight into the shape of an artillery duel in which the German Panzers were finally shot to pieces. Not more than 28 German tanks escaped.

With the defeat of the Panzers all Axis units were lost except those who could get away in trucks and lorries. The Italian divisions, from which the Germans filched their transport, were surrounded and captured almost to a man.

El Alamein was the first complete defeat inflicted on the German Army in the war. It came as an immense shock to the Axis. The event had been counted impossible. Rommel was himself to show that he had not appreciated the tactics that defeated him. Inside a tank he was a hero; outside it be was a mediocrity, and his generalship was poor. He still pinned his faith to the massed tank attack.

This was made clear by his foolish attack on the Eighth Army at Mareth after the German thrust through American covering forces had been checked and then driven back at Kasserine. On the other hand the Allies exploited the combination of infantry, artillery, engineers, and massive air support in the mountains as successfully as they had done in the desert, and used their tank forces brilliantly to crash through the broken defenses and clinch the German disaster by a pursuit whose vigor and power rushed the surprised Germans clean off their feet into collapse and surrender.

This return of the guns to a major role on the battlefield, carried further in Sicily and, be it noted, duplicated in Russia, is remarkable. The need of infantry for all the fire power that can be given them was foreseen by the Germans and was met by their development of the mortar. But there they stopped. Placing their faith in mortars, dive bombers, and the tank they failed to foster the artillery.

But the Allies' use of massed artillery, controlled largely by radio, supplemented by fighter-bomber attacks of far greater weight and efficiency than those of the Stuka, has surprised and dismayed the enemy.

One more tendency of modern tactics is observable. The term "combat team" or "combat force" may be new, but the idea is not. It is merely a denial of the conception of the division of all arms as being of a fixed and unchangeable pattern.

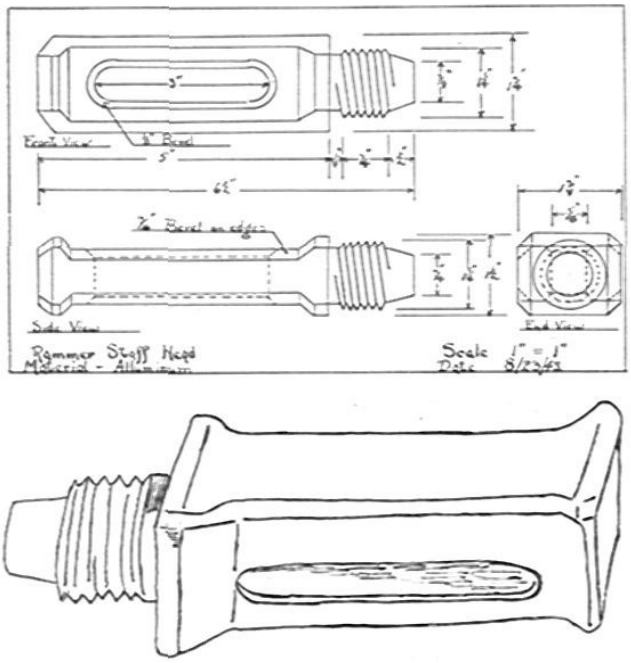
In the last war "brigade groups" were often formed, but they were frowned upon by those above. Greater fluidity in organizing forces in special ways for special tasks is now accepted, and British and American practice is following the earlier German lead in that direction. It is a practical embodiment of cooperation, the dominant note of modern tactics.

Not in the BOOK

EDITOR'S NOTE: *This feature is devoted to ideas sent in by our readers describing methods or devices which, though not specified by official literature, have proved useful in service.*

A NEW TYPE OF RAMMER STAFF HEAD

For some time our pack outfit has found the ordinary rammer staff head unsatisfactory for use in cleaning the piece, particularly after firing, due to the rammer staff head's being subject to damage which can be repaired only by the ordnance. We devised a simple aluminum casting to be used as a rammer staff head. In this particular case aluminum was chosen because it is easily worked, but any other light and durable metal would be just as satisfactory. It can be made easily by any other good artillery mechanic, and provides a satisfactory, versatile and durable instrument for cleaning the piece. Although our casting was designed for use on the 75-mm Pack Howitzer M1A1, it could be adapted for use on any other type of light artillery.



The principle of operation is the same as that used in cleaning small arms. A uniform gun patch would be desirable, but is not necessary: any kind of clean rag will serve the purpose. Present issue rammer staff head cannot be used for drying and oiling; this one can, thus effecting a saving in time and labor.

T/4 SYDNEY MOSKOWITZ, FA

SLIDING CODE DEVICE

The Map Template M2 alleviates the counterintelligence problem somewhat. Capt. Richard Hoose has saved further wear and tear on the mimeograph machine by making the simple device shown here. A special boon to FOs, it eliminates shuffling through accumulated poop sheets to reduce a message to the various prearranged symbols. In the event of capture, the existing codes and authenticators are not compromised. As pictured here it is solely for the use of personnel going forward. An additional center disc can be put on the back, however, providing enough additional messages to make it useful for the entire battalion.

To construct, mount discs on heavy cardboard and shellac the whole for durability. Attach Disc A to Disc B with a metal fastener in the center of each, allowing both to revolve freely. To operate, move Disc A until the predetermined "key number" appears in the window. In this position the instrument is set up, and the various symbols are read on Disc A directly opposite the appropriate phrase on Disc B. "Key numbers" can be changed at will be prearrangement—every hour if desired. Still further secrecy is obtained by periodically rearranging one of the discs.

Other possibilities and variations may come to mind. With a little thought and experimentation, an authentication code, operating similarly, could be readily devised. Used in conjunction with the Map Template, these devices virtually cut out all paper work relative to code security within the battalion.

LT. ROBERT W. VANHOOK, FA

FILM BULLETINS

Here are some recent film bulletins of interest to you:

72—Sub-Zero Test of Ordnance

90—Fire Power versus the Pill Box

91—Use of War Dogs

94—Gas Obstacle Course

Diary of War Events

(As Reported in the American Press: Edited by B. H. W.)

JANUARY, 1944

1st R.A.F. Lancasters bomb Berlin for the 100th time.

2nd U.S. troops land at Saidor, far up the New Guinea coast, and quickly capture the harbor and airfield.
Canadians of the 8th Army in Italy capture Villa San Tomasso.

3rd Allied fliers destroy 13 Jap planes in an attack on Kavieng, New Ireland. Destroy 19 more at Babaul.

4th Approximately 2,750 Allied planes bomb northern France and northwest Germany.
U.S. troops capture Saidor at a cost of 3 dead and 4 wounded.

5th U.S. Flying Fortresses and Liberators raid Kiel shipyards. Bomb airfields at Bordeaux and Tours in France and other targets in western Germany. Destroy 95 planes, lose 37.
Lt. Gen. Sir Oliver Leese succeeds Gen. Montgomery as Commander of British 8th Army in Italy.
Allied fliers over the south and southwest Pacific destroy 17 Jap planes and a cruiser.

6th Russian troops advance 10 miles across Polish frontier and capture Rakitno.
U.S. Air Force and R.A.F. introduce new propellerless jet-propulsion plane.
Gen. MacArthur's troops kill 600 Japs in battle at Borgen Bay, western tip of New Britain.

7th Russian Ukrainian Armies break through Nazi lines on 62-mile front and surround the industrial center of Kirovagrad.
U.S. heavy bombers raid southwest Germany. Shoot down 42 Nazi planes. Lose 12 bombers and 7 fighters. 750 Allied planes raid invasion coast of France.
U.S. and R.A.F. bombers raid Jap controlled oil center of Yenanguang in Burma.

8th Russians capture Kirovograd, vital railroad center in the southern Ukraine.

9th U.S. 5th Army in Italy captures San Giusta.
Allied planes raid St. George on New Ireland. Shoot down 10 planes, lose 6.

10th U.S. heavy bombers from Italy raid Sofia, Bulgaria.
U-boat losses in 1943 60 per cent less than in 1942.

11th Large Allied Air Force raids northwest Germany. More than 1,250 Fortresses, Liberators, Lightnings, and Thunderbolts take part. Destroy or seriously damage Fock-Wolf, Junkers and Messerschmitt factories. Shoot down more than 100 planes. Lose 59 bombers and 5 fighters.
Allied planes bomb Rabaul and shoot down 40 Jap fighters.

12th U.S. Marines kill 300 Japs at Cape Gloucester, New Britain.

13th Allied Armies in Italy advance to within 4 miles of Cassino.

14th Russian troops capture Mozyr, center of White Russia.
In Western Burma Allied troops advance against stiff opposition to within 50 miles of Jap supply base at Akyab.

15th R.A.F. bombs Brunswick, Germany.
Australian troops advance to the outskirts of Sio, New Guinea.

16th U.S. 5th Army in Italy captures Mount Trocchio, the last high ground before Cassino.
40 Allied bombers raid Rabaul. Damage 7 cargo ships, a cruiser, and a destroyer. Shoot down 29 and damage 16 planes. We lose 2 bombers and 8 fighters.

17th Flying Fortresses from Italy bomb the Messerschmitt plant in Klagenfurt, Austria.
Gen. Eisenhower announces the appointment of Lt. Gen. Omar N. Bradley as Senior United States Ground Commander in Britain.

18th Red Army opens powerful new offensive on both sides of Leningrad.
U.S. troops in Italy cross the Rapido River and cut the Cassino-Atina highway.
Secretary of War Stimson returns the operation of the nation's railroads to their owners.

19th Russian troops push Germans back on both sides of Leningrad.
U.S. Navy planes bomb Kusaie Island located in the Jap string of Caroline Islands less than 700 miles from Truk.
Allied planes destroy or damage 8 Jap cargo ships at Babaul, New Britain. Shoot down 18 planes, lose 12.

20th R.A.F. makes heavy assault on Berlin.
Allied fliers in a raid over Rabaul shoot down 22 Jap planes, lose 2.

21st Allied planes bomb Pas-de-Calais area of France.
Red armies capture Mga, an important rail junction southeast of Leningrad.
British troops of the 5th Army in Italy capture Minturno.

22nd British and U.S. troops land behind the German lines on the Italian shore only a short distance south of Rome. Encounter very little opposition.
Anthony J. Drexel Biddle, Jr., resigns as Ambassador Minister to the exile governments in London to become Lt. Col on Gen. Eisenhower's staff. He will serve as liaison officer between the military and civil chiefs.

23rd More than 200 U.S. Marauders bomb Pas-de-Calais area of France.

24th German furious drives force U.S. troops back across the lower Rapido River.
U.S. heavy bombers raid western Germany. Shoot down 21 fighters, lose 10 fighters and 3 bombers.
Allied planes in a raid over Jap bases in the Pacific shoot down 18 planes over Rabaul, New Britain, and 33 over Wewak, New Guinea. Lose 11.
United States and Great Britain refuse to recognize Bolivia's revolutionary regime.

25th 5th Army in Italy captures Anzia, on the coast, and pushes 12 miles inland.
U.S. troops battle all night to capture Mussolina Canal bridge.

26th Allied fliers in the Pacific sink 6 Jap ships and destroy 24 planes in a raid on Rabaul, New Britain.
Argentina breaks relations with Germany and Japan.

27th Allied Armies in Italy push inland from beachheads at Anzio and Nettuno.
Russian troops advance to within 40 miles of Estonian border.
Secretary of Wtr Stimson announces the complete reorganization of the U.S. Army, with 5 to 6 million fighting men overseas by the end of 1944.

28th O.W.I. makes known Japanese atrocities on the defenders of Corregidor and Bataan.
Mediterranean Allied Air Force shoots down 50 German planes over Italy and the French Riviera.
U.S. fliers shoot down 22 Jap planes over Rabaul.

29th U.S. Army Air Force makes greatest attack in history on Frankfort, the German chemical and communication center. Shoot down 102 planes. Lose 31 bombers and 13 fighters.
Red Army clears Germans from the Moscow-Leningrad area and advances to within 17 miles of the Estonian border.
Allied fliers shoot down 23 Jap planes over Rabaul.
Strong Allied carrier force attacks Taroa, Wotke, and Kwajaltin in the Marshall Islands.

30th U.S. bombers raid airplane factories and railroad targets at Brunswick and Hanover, Germany. Shoot down 91 planes. Lose 20 bombers and 5 fighters.
Mediterranean Air Force raids German airfields in Northern Italy. Shoots down 36 fighters.
Allied planes again bomb Rabaul. Shoot down 30 out of 70 Jap planes.
U.S. Navy planes bomb Wake Island.
R.A.F. bombs Berlin.

31st Great U.S. naval force supporting U.S. planes in an attack on the Marshall Islands. Details lacking.
Allied planes raid Rabaul. Destroy 36 planes.
U.S. troops break Germans' Gustav Line and partly encircle Cassino.
Mediterranean Air Force attacks German airfields in Northern Italy. Shoots down 62 planes. Loses 6.

For Heroism and Service

The 68th Armd FA Bn is cited for conspicuous gallantry in battle on 15, 16, & 17 Feb 43 during a withdrawal before a vastly superior enemy at Faid Pass, Sidi bou Zid, Sbeitla, and Kasserine in Tunisia. On 15 Feb 43 while in position immediately to the west of Sidi bou Zid the combat command supported by the 68th FA Bn was attacked in rear and flank by German tanks, at least 16 of which directly threatened the 68th FA Bn. By remaining in position and delivering direct fire on these tanks several Mark IVs were destroyed and the attack broken. Again on the night of 16 Feb the position of the combat command supported by the 68th FA Bn were threatened by enemy tanks. The 68th Armd FA Bn again remained in forward position delivering direct fire against enemy tanks destroying Mark IV tanks and broke up this attack thereby penetrating the combat command to reorganize for further defense. On 17 Feb the combat command supported by the 68th Armd FA Bn had the mission of covering the withdrawal of the remainder of the 1st Armd Div through Kasserine Pass, Tunisia. During this action the 68th Armd Div FA Bn by deadly fire slowed the enemy advances and made possible the successful retirement of hundreds of men and the salvage of equipment which otherwise would have fallen to the enemy. The successful disengagement of our troops in this withdrawal from the superior enemy was in a very outstanding way largely due to the initiative, courage, and gallantry of the personnel of the 68th Armd FA Bn.

SOLDIER'S MEDAL

2ND LT. CARROLL W. GUY, for heroism near Dot Inlet, New Guinea, on 17 Aug 43. Address, Troy, Tenn.

1ST LT. JACK A. OSBORNE, for heroism near Dot nlet, New Guinea, on 17 Aug 43. Address, 2614 N. W. 17th Ave., Portland, Ore.

LEGION OF MERIT

(Posthumously)

COL. WILLIAM D. McNAIR, for exceptionally meritorious conduct in the performance of outstanding services as commanding officer of division artillery during the period 1 Aug to 20 Oct 1943. On arrival in the South-west Pacific Area, Col. McNair had the task of planning and effecting a complete reorganization of his unit to conform to theatre requirements. This he accomplished with remarkable speed, at the same time maintaining a high state of morale and training, and of coordination with other areas. The admirable condition of Col. McNair's command attested his tireless energy, high professional ability and inspiring leadership. Address, San Antonio, Texas.

LEGION OF MERIT

BRIG. GEN CHARLES G. HELMICK, for exceptionally meritorious conduct in the performance of outstanding service. Serving in the Budget and Legislative Planning Branch. Office of the Deputy Chief of Staff, from 1 Mar 1941 to 9 Mar 1942, he assisted in the preparation and processing of various annual and supplemental appropriations. From 1 Dec 1941 to 1 Jul 1942 as Chief of that Branch and as Chief of Military Budget Estimates Section, Headquarters, Services of Supply, he prepared and processed through the Bureau of the Budget and the Congress the most complicated, comprehensive, and important supplemental and annual appropriation acts, vital to the war effort, in the history of the War Department. By reason of the high order of performance of these arduous and manifold duties he rendered exceptionally meritorious services to the Department. Address, Hillsdale, Mich.

COL. JOHN KELIHER, for exceptionally meritorious conduct in the performance of outstanding services. As assistant chief of staff, G-3, United States Army Forces, Central Pacific Area, Col. Keliher was charged with the planning, supervision and coordination of a most successful diversified combat-training program. Through this program, the combat forces of the Central Pacific Area not only received exceptional training, but were able to engage in the special amphibious operations required for the successful capture of the Gilbert Islands. They possessed a high morale and confidence in their invincibility that could only mean victory for our forces. Through his initiative, high professional ability, and untiring efforts, Col. Keliher was an important contributor to the success of these operations. Address, Boston, Mass.

BRIG. GEN. BASIL H. PERRY, for exceptionally meritorious conduct in the performance of outstanding service as Chief of the School Section of the Training Branch, G-3 Division, War Department General Staff. Gen. Perry was charged with the organization of the school system during the period of 1 Jan 1940 to 24 Feb 1942. His keen foresight and able grasp of current problems were of great value during the organization period of these schools. By his tireless energy and marked ability he supervised the development and execution of all plans for the entire system. Address, Bristol. R. I.

COL. FORD TRIMBLE, for exceptionally meritorious conduct in the performance of outstanding service as the Assistant Chief of Staff, G-3, Western Defense Command and Fourth Army, from 8 Jan 43 to Sep 43. By his sound military judgment, keen foresight and exceptional qualities of leadership, he successfully planned and supervised the tactical disposition of troops of the Western Defense Command to insure the effective defense of the west coast of the United States against any possible enemy attack. His tact, thoughtfulness, and splendid spirit of cooperation aided materially in establishing the friendly, cooperative relationships and coordination of defensive efforts existing between the military forces and civil defense agencies of the West Coast. The success of the recent combat operations against the enemy in the Aleutian Islands was due to a considerable extent to the service rendered by this officer in the coordination of the preliminary planning and organization of the task forces that later occupied and reduced the enemy-held islands of Attu and Kiska. Address, 1704 S. Lincoln St., Spokane, Wash.

OAK LEAF CLUSTER TO SILVER STAR

SGT. JAMES F. COSGROVE, for gallantry in action in North Africa. When his battery had been forced to withdraw from its position due to heavy enemy fire, Sgt. Cosgrove repeatedly returned to the position and assisted in the evacuation of valuable equipment that otherwise might have been captured or destroyed by the enemy. Address, 78-07 84th St., Glendale, N. Y.

SILVER STAR

T/5 FRANK J. JANKOWSKY, for gallantry in action in North Africa. When the intensity and accuracy of enemy artillery fire made necessary the immediate evacuation of his battery's guns, Cpl. Jankowsky drove his prime mover into heavy fire. He remained in this hazardous position until his vehicle was rendered useless by enemy fire. Address, Highland Ave., Montville, N. J.

PVT. VINCENT H JORDAN, for gallantry in action in North Africa. Although painfully wounded by enemy artillery fire, Pvt. Jordan carried a radio through a concentrated enemy barrage to a sheltered spot where continued communication between the artillery elements was possible. Address, 6 Alexander St., Doechester, Boston, Mass.

T/5 WILLIAM McCARTNEY, for gallantry in action in North Africa. When the intensity and accuracy of enemy artillery fire made necessary the immediate evacuation of his battery's guns, Cpl. McCartney drove his prime mover into this heavy fire. He remained in this hazardous position until his vehicle was rendered useless by enemy fire. Address, 432 Atlantic Ave., East Rockaway, Long Island, N. Y.

1ST LT. GEORGE B. McNEILL, for gallantry in action in North Africa. When his battery had been forced to withdraw from its position because of heavy enemy fire, Lt. McNeill repeatedly returned to the position and assisted in the evacuation of valuable equipment that otherwise might have been captured or destroyed by the enemy. Address, Kings Highway, Haddonfield, N. J.

1ST LT. JOHN H. MARTIN, for gallantry in action in North Africa. When the enemy began infiltrating his unit's positions, Lt. Martin, exposing himself to enemy fire, advanced to a point where he could direct an effective concentration of artillery fire on the attacking force. His keen tactical judgment and coolness under heavy enemy fire assisted materially in the ultimate defeat of the enemy. Address, 99 Cedar Brook Rd., Plainfield, N. J.

SGT. DAVID A. NELSON, for gallantry in action in North Africa. When it became apparent that, because of poor visibility, his forward observer could not furnish him with necessary information, Sgt. Nelson, relying on his own tactical judgment, fired his guns accurately and effectively and destroyed several enemy tanks. His actions contributed materially to the ultimate defeat of the enemy. Address, 70 W. King St., Shippensburg, Penna.

T/5 HURBERT H. NEWMAN, for gallantry in action in Tunisia. During an evacuation by our forces, Cpl. Newman, without regard for his own personal safety, proceeded, under heavy enemy fire, to a place near the enemy front lines and recovered secret equipment. His coolness and courage in this action exemplify the highest traditions of the Armed Forces and are deserving of the highest praise. Address, Route 4, Knoxville, Tenn.

T/5 BROWN L. PORTER, for gallantry in action in Tunisia. During an evacuation by our forces and after our infantry had withdrawn. Tech. Porter, without regard for his own safety and beyond the ordinary call of duty, proceeded forward of our lines under enemy fire and recovered a piece of secret equipment. This action prevented the piece of equipment from falling into enemy hands, and exemplifies the highest traditions of our Armed Forces. Address, 1511 Haywood Court, Charlotte, N. C.

PVT. 1ST CLASS DONALD C. POWERS, for gallantry in action in Tunisia. During an evacuation by our forces, and after our infantry had withdrawn, Pvt. powers, without regard for his own personal safety, proceeded forward of our lines under heavy enemy fire and recovered a piece of equipment. His action prevented secret equipment from falling into enemy hands. This action was an inspiration to all who observed him and in accord with the highest traditions of our Armed Forces. Address, 317 Racepath St., Fayetteville, N. C.

PVT. FRANK RACKLEY, for gallantry in action in Tunisia. His battery position was located by enemy dive bombers. During the ensuing attack of bombing and strafing, Pvt. Rackley remained at his machine gun, feeding ammunition while the gunner fired at the attacking planes. When his gun became jammed he calmly cleared it and continued to feed ammunition. His coolness, courage, and devotion to duty were an inspiration to his comrades, exemplifying the highest traditions of the service. Address, Route 2, Goldsboro, N. C.

PVT. FRANK P. RATHBUN, for gallantry in action in North Africa. During heavy enemy aerial bombardment of his battery, Pvt. Rathbun, a radio operator, went to the assistance of a machine gunner firing from the back of a truck upon enemy planes. Pvt. Rathbun's bold action aided in diverting the pilot's attention and undoubtedly saved his battery a severe bombing. Address, 215 S. Downing St., Denver, Colo.

PVT. JULIUS V. SHUMAKE, for gallantry in action in North Africa. When the intensity and accuracy of enemy artillery fire made necessary the immediate evacuation of his battery's guns, Pvt. Shumake drove his prime mover into heavy fire and temained in this hazardous position until his vehicle was rendered useless by enemy fire. Address, Route 4, Ellisville, Mass.

PVT. RICHARD R. SNYDER and PVT. 1ST CLASS WILLIAM H. TROTT, for gallantry in action in North Africa. When their batteries had been forced to withdraw from their positions because of heavy enemy fire, Pvt. Snyder and Pvt. Trott repeatedly returned to their positions and assisted in the evacuation of valuable equipment that otherwise might have been captured or destroyed by the enemy. Address, Pvt. Snyder, 209 S. Park St., Canastota, N. Y.: Pvt. Trott, Harlansberg Rd., New Castle, Penna.

PVT. JAMES L. TEW, for gallantry in action in North Africa. When heavy enemy fire had forced his battery to withdraw, Pvt. Tew repeatedly returned to the position and assisted in the evacuation of valuable equipment that otherwise might have been captured or destroyed by the enemy. Address, Clinton, N. C.

CPL. COLIN J. THOMPSON, for gallantry in action in Tunisia. Our forward communication lines had been shot out by enemy fire. Cpl. Thompson set out to locate and repair the break in the lines. He discovered the broken lines on a hill, which at the time was under heavy mortar fire by the enemy. With complete disregard for his own safety he worked his way to the breaks and under heavy fire made the necessary repair which enabled our batteries to reduce enemy resistance in a vital area. Address, 183 Whitney St., Ludlow, Mass.

PVT. SCOTT THOMPSON, for gallantry in action in Tunisia. When his battery position was located by enemy dive bombers, and during the ensuing attack of bombing and strafing, Pvt. Thompson remained at his machine gun, firing at the attacking planes. His coolness, courage, and devotion to duty were an inspiration to his comrades and exemplified the highest traditions of the service. Address. Elmington, Va.

PVT. JAMES H. WHEELER, for gallantry in action in Tunisia. When an enemy advance made difficult and hazardous the supplying of food and ammunition to front line units, Pvt. Wheeler voluntarily delivered these supplies over roads subjected to heavy artillery and machine gun fire. Address, Route 2, Corinth, N. Y.

2ND LT. DAVID M. WHIPP, for gallantry in action in Tunisia. During an attack in March, 1943, with complete disregard for his own safety, Lt. Whipp proceeded in advance of the infantry to establish survey control for all of the artillery to be engaged in this attack. By his actions Lt. Whipp accomplished this survey control two days prior to the time that our artillery occupied these positions, despite enemy shell fire. At a later date, Lt. Whipp was assigned the mission of establishing the survey control of a forward observation post. After setting up his instruments under fire from enemy artillery, Lt. Whipp observed an enemy battery. He contacted the Corps Artillery fire direction center by radio and called for fire on the enemy battery. He succeeded in neutralizing this and other enemy batteries comprising a battalion of artillery. By his coolness, courage, and devotion to duty Lt. Whipp was an inspiration to his men and is deserving of the highest praise, exemplifying the highest traditions of United States armed forces. Address, 1232 E. Stanley Ave., Glendale, Calif.

CPL. HARRY J. WILKINSON, JR., for gallantry in action in Tunisia. Despite heavy enemy mortar, artillery, and aerial bombardment, Cpl. Wilkinson, gunner of a 155-mm howitzer, remained at his post and directed the firing until seriously wounded. Address, 83 Sunset Drive, Brighton, Brooklyn, N. Y.

CAPT, DANIEL E. WILLIAMS, for gallantry in action in North Africa. He received orders to place his gun section in position to meet an anticipated enemy tank attack. Before he could reach his position the attack materialized. He ordered and directed the fire of his gun at enemy tanks from a position on the running board of his vehicle. Address, 203 23rd Ave., Millville, Fla.

CITATION

CAPT. GEORGE T. FIELDING III (then 1st Lt.), by Lt. Gen. Millard F. Harmon: "As commanding general, United States Army forces in the South Pacific area, I take great pleasure in noting personally the account of your courageous service from 23 Sept 1942 to 5 Aug 1943, clearly deserving of the commendation as follows: During the Battle of Munda and the New Georgia occupation, the early, accurate, opening fire of other battalions arriving on the scene was facilitated by Lt. Fielding's voluntary survey control after performing his own advance detail and initial survey missions. Through his control points on the New Georgia mainland, he was able to locate friendly front lines when other means failed. As advance representative of his battalion on all of its movements after departing from the United States, his work was so ably done that it was never necessary for the commander or battery commanders to conduct further reconnaissance." Address. 20 W. North St., Stamford. Conn.

ROLL OF HONOR

LT. JAMES D. BALL, JR., killed in action in North Africa, 1 Feb 43.

MAJ. ROGER D. BLACK, killed in an accident during November 1942.

PVT. JAMES W. DOYLE, killed in action at Milne Bay, New Guinea, 14 Apr 43.

PVT. REUBEN W. DUNLAP, killed in action in Tunisia, 25 Mar 43.

LT. COL. HARRIS M. FINDLAY, died at Ft. Bragg, 27 Oct 43.

LT. ROBERT W. HENNING, killed in an airplane accident at Bowling Green, Va., 1 Sep 43.

MAJ. JOHN R. JEFFERSON, died in North Africa, 4 Oct 43.

LT. ROBERT S. KASSAN, killed in South Carolina, 15 Nov 43.

BRIG. GEN. ZIM E. LAWHON, died at Station Hospital, Camp Reynolds, Pa., 7 Nov 43.

CAPT. CHARLES E. LUTHER, killed in action in North Africa, 26 Apr 43.

COL. WILLIAM D. McNAIR, killed in Southwest Pacific Area, 20 Oct 43.

CAPT. ANDREW J. PARKS, died in North Africa, 4 Aug 43.

LT. JACK W. RICKARD, killed in action in North Africa, 28 Apr 43.

CAPT. EDWARD C. ROBERTSON, killed in action in North Africa, 10 Aug 43.

LT. RAY R. ROEHR, died in Pacific Area, 17 Jul 43.

SGT. LAWRENCE E. SANFORD, died Southwest Pacific Area, 22 May 43.

PVT. 1ST CLASS HARRY WASSMER, killed in action in North Africa, 1 Dec 42.

CAPT. ARTHUR F. WATSON, killed in action in the Southwest Pacific Area, 18 Jul 43.

MAJ. THOMAS J. WEBSTER, died in North Africa, 27 Oct 43.

BOOK REVIEWS

ALL FORT SILL PUBLICATIONS HAVE BEEN WITHDRAWN FROM SALE EXCEPT: (1) EXERCISES IN GUNNERY MATHEMATICS AND (2) LOG, TRIG AND SHORT BASE TABLES—15 CENTS EACH.

PIPELINE TO BATTLE. By Maj. Peter W. Rainier, 302 pages; maps. Random House. $2.50.

Engineers are generally supposed to be inarticulate; if they are, Maj. Rainier is the brilliant exception to prove the rule. In civilian life an engineer with world-wide experience, at the outbreak of war he was living in Egypt. He rammed his way into the service despite his 50-odd years, and proved stalwart enough to be one of the few who formed the nucleus of the Army of the Nile and survived on through the successor Eighth Army's to-and-fro movements in the desert and on through to final Tunisian victory.

During this period Maj. Rainier held one of the most important of all jobs: he was responsible for the supply of water to the desert troops. He it was who built the desert pipelines, erected purification plants, ran pumping stations, and drilled wells. No rear-area soldier, he: history was made when he established a water point in a foremost machine gun emplacement!

Pipeline to Battle truly conveys the power and sweep of the North African campaigns. It combines an understanding of background events and the "big picture" with an appreciation of small unit fighting and tank battles. Montgomery's astounding deception of the Afrika Korps is splendidly told. So too are hitherto hush-hush items, such as that the Alamein line did not truly hold but actually was breached, and badly.

A number of books on the Eighth Army have appeared, but to date none can compare with Maj. Rainier's. For the 3-year period between the springs of 1940 and 1943, few are apt to surpass it. Although written somewhat spasmodically as circumstances would permit, it does not suffer thereby. It's tops in its field, for fair.

LESSONS OF MY LIFE. By The Rt. Hon. Lord Vansittart. 281 pages. Alfred A. Knopf. $3.00.

In the last half century Germany has been a source of some hard, sobering lessons to other countries. Whether or not these lessons have been learned well enough to be applied effectively will be shown by the postwar action of the United Nations to shape policies and re-shape maps for peace.

With penetrating, analytical keenness Lord Vansittart has observed Germany in her aggressive reach for power, and he very distinctly recites the lessons he has learned. They are lessons of a cold, hard people solidly welded in their fierce nationalism and ideas of racial superiority.

The demotracies are not entirely blameless for the Germany that is. Their lack of adequate national policies, their unwarranted credulity, and their evasion of disturbing facts have contributed indirectly to the pompous demands of a country gone mad with the lust for power.

The author does not stop with his recital of lessons learned in the hard school of national experience. He has a plan of action to forestall further abuse from Germany. The first step is to face the reality of her almost unbelievable greed, duplicity, and arrogance, and to banish illusions of a divided Germany with factions friendly toward democratic freedom. He warns against acceptance of reports about underground activities. The toughness of the German mind must be understood for what it is, and this leaves no room for nice academic theories about its sensibilities.

Very firmly but without undue vindictiveness the re-education of Germany must be undertaken and, in the words of the author, it must be "from the ground up." If Lord Vansittart's sane and just proposals gain general acceptance it may soon be Germany's turn to learn some lessons. F. E. J.

CLEMENTINE IN THE KITCHEN. By Phineas Beck. 221 pages; recipe index; illustrated. Hastings House. $3.00.

One of the more delightful books of the year. The stories are excellent and the etchings reproduced are super-excellent.

Samuel Chamberlain (writing as Phineas Beck) tells a series of stories about Clementine, who became the cook for the Beck family when they lived in France. The Becks came back to America and Clementine came with them to a small town near Boston. The successful transpotation of French cooking to a Massachusetts kitchen will give you both culinary ideas and many chuckles.

The stories about the French shops and shopkeepers are gems of description and the etchings of the shops and houses and surrounding countryside (both French and American) are lovely. One in particular—of a street in Massachusetts—could be a photograph, it is so lifelike.

In each story is a recipe or two given in ingredients procurable at American markets, along with Clementine's ideas of how to put the composite parts together.

The book will serve to introduce *Gourmet* magazine to many, as

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the book is a collection of stories printed originally in *Gourmet*. I had difficulty in locating a copy, but the first one convinced me that a subscription was in order. J. M. C.

NETHERLANDS AMERICA: The Dutch Territories in the West. By Philip Hanson Hiss. 183 pages; appendices; bibliography; index; endpaper map; photographs. Duell, Sloan & Pearce, $3.50.

We have become fairly familiar with the Dutch East Indies in the last couple of years, but remain quite unaware of nearer Dutch lands. Yes, of course—Surinam (or Dutch Guiana), Aruba (with its oil), and Curacao are Dutch. But what of the others?—Bonaire, St. Martin, Saba, and St. Eustatius?

Small Caribbean islands, they have been pretty well overlooked. Their history is interesting, their present important, and their future even more significant. Mr. Hiss made an extended trip through this area in 1942. The Netherlands government gave him exceptional opportunities to see, study, and photograph these areas. He made good use of his time. And his photos are lovely, and beautifully reproduced.

THE PAGEANT OF CANADIAN HISTORY. By Anne Merriman Peck. 353 pages; bibliography; index; map and photographs. Longmans, Green & Co. $3.00.

Well called a "pageant," this is no formal history. It is the sweeping tale of the settling of Canada, the interplay of different racial stocks. From the *voyageurs* to the fur-traders of the far west, through French and British domination to the confederation into a Dominion, the breaking of the plains and the growth of industry—through all is a clear and understandable picture of the growth of an empire.

BLITZKRIEG AND BLUFF. By Maj. Erwin Lessner. 246 pages. G. P. Putnam's Sons. $2.75.

The legend of Nazi invincibility was born in Poland and nurtured during the ensuing spectacular successes of Nazi military campaigns throughout Europe.

This book is the story of how the Nazi gamble proved successful from Poland to France, but folded up when it was tried against Russia. It presents facts well written by a man who knows his subject and was on the spot when the action was taking place. It is enjoyable and interesting reading. B. H. W.

A COURSE IN THE FUNDAMENTALS OF ELECTRICITY. By Morton Mott-Smith, Ph.D. 126 pages; illustrated. The Infantry Journal. 25c.

Written by a staff writer for *Science Service* under the direction of Westinghouse engineers.

THE ARMY READER. Edited by Lt. Col. Karl Detzer. 469 pages; illustrated. Bobbs-Merrill Co. $4.00.

The purpose of this book is to tell the story of the American Army. As it would have been impossible for one author to assemble all the material, a number of specialists in different branches of the Army have contributed to this book. B. H. W.

HERE IS ALASKA. By Evelyn Stefansson. 154 pages; index; photographs; maps. Charles Scribner's Sons. $3.00.

Mrs. Stefansson, wife of the noted explorer, is steeped with the North. Her book is no expose, nor a "sentimental journey." In delightfully straightforward fashion she tells what kind of a country Alaska is, who and what its people are and how they live, and includes much on the usually overlooked offshore islands. Much of its value comes from its magnificent photographs, skillfully chosen and beautifully reproduced.

COMBAT PROBLEMS FOR SMALL UNITS. 244 pages; illustrated. The Infantry Journal. $1.00.

Designed for Infantry squads, sections, and platoons, and based on T/Os of March, 1943.

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GUNNERS GET GLORY. By Lt. Bob Berry as told to Lloyd Wendt. 293 pages; illustrated. The Bobbs-Merrill Co. $2.75.

This is supposed to be the story of and a tribute to the Navy's Armed Guard, the men who have the vital and dangerous job of manning the guns on the nation's cargo ships and transports. Actually, it contains as much about the problems of buying officers' clothing, the beauty of various South Sea islands, how thrilled Lt. Berry's wife was to meet Lt. Robert Montgomery, and the bars in assorted ports-of-call as it does of the tenseness and strain of enemy strafing, submarine alerts, and being torpedoed. The last third of the book, dealing with the actual landing operations on Sicily, comes closest to really feeling the blood and sweat of combat. The reporting is usually good and the writing competent, but somehow one feels that the Armed Guard deserves better. A. L. O.

REPORT ON THE ARMY: July 1, 1939, to June 30, 1943. 271 pages. Infantry Journal. 25c

Two remarkable biennial reports by Gen. George C. Marshall, Chief of Staff of the United States Army.

PYROTECHNICS, CIVIL AND MILITARY. By G. W. Weingart. 220 pages. The Chemical Publishing Co., Inc. $5.00.

A mass of material requiring many years of research, development, and manufacturing has been assembled into this book by the author, who is a recognized authority in the field of pyrotechnics. It should be of special interest to manufacturers and users of explosives; students of pyrotechny will find it valuable for reference. B. H. W.

HITLER'S SECOND ARMY. By Alfred Vagts. 241 pages. The Infantry Journal. 25c.

Account of organized Nazi groups which might develop internal resistance to conquest.

SUCH INTERESTING PEOPLE. By Robert J. Casey, 347 pages; endpaper cartoons. The Bobbs-Merrill Co. $3.00.

He who laughs—lasts! A veteran war correspondent achieves a period of refreshing relaxation for himself and his readers as he turns the eyes of his memory home and "remembers when."

You too will probably agree that a newspaperman meets *Such Interesting People*, most of whom are in the newspaper business. Rich in human interest and often hilariously funny, the stories, essays, and biographical sketches which result are too short and too few. F. B.

ARMY LIFE. By WO (JG) E. J. Kahn, Jr. 152 pages. The Infantry Journal. 25c.

Sketches of military life by a former *New Yorker* author in the *New Yorker* manner.

AN ENCYCLOPEDIA OF WORLD HISTORY. Compiled and edited by William L. Langer. 1143 pages; appendices; index; maps. Houghton Mifflin Co. $6.00.

Ancient, medieval, and modern history is presented in integrated fashion, in chronological arrangement. Prepared by men eminent in their respective fields, Langer's *Encyclopedia* is the worthy successor of Ploetz's *Epitome of History* and its several revisions, which together have run through literally scores of editions, revisions, and reprintings. Now thoroughly revised in the light of modern archaeological and other historical discoveries, it is a well balanced summation of the world's history, worthy of a respected place in any working library. As a factual handbook or reference work it is outstanding.

THE LOST BATTALION. By Thomas Marvin Johnson and Fletcher Pratt. 222 pages. The Infantry Journal. 25c.

Pointed lessons from a needless and unfortunate but heroic episode in the first World War.

BLITZ GERMAN. By Dr. Rudolph Brandl. 174 pages. Military Service Publishing Co. 75c.

Not an exhaustive language text or grammar, *Blitz German* is well subtitled "A language guide for invasion and occupation." Words and phrases are grouped in a logical topical arrangement. In appendices are excellent English-German and German-English word lists. Usefulness of this pocket-sized book is greatly increased by the printing of a key to pronunciation at the foot of each page.

THE BATTLE IS THE PAY-OFF. By Capt. Ralph Ingersoll. 212 pages. The Infantry Journal. 25c (To members of the Armed Forces only).

Tunisia as seen by a professional journalist.

THE GROWTH OF THE RED ARMY. By D. Fedotoff White. 429 pages; notes; index. Princeton University Press. $3.75.

Today's successful Russian Army has a respectful international public interested in "how it got that way."

The Growth of the Red Army is a scholarly, well-documented, realistic study of a turbulent quarter of a century. From the collapse of the Russian Army on the extreme front in World War I to the German invasion in World War II, Mr. White traces the varying fortunes of a military force which he shows to be significantly dependent upon the social and economic changes within the country. He is very frank about the problems that faced Lenin, Trotsky, and then Stalin in their efforts to mold an adequate military machine; but he leaves the reader impressed as he analyzes the stuff of which the mighty Red Army has been made!

D. Fedotoff White has an extensive background of Russian military experience and an enviable reputation for fairness and objectivity. You may know him already through his autobiography *Survival—Through War and Revolution in Russia*. F. B.

JAN SMUTS: A Biography. By F. S. Crafford. 322 pages. Doubleday, Doran & Co., Inc. $3.50.

Here is a fully documented biography of Africa's outstanding leader, soldier, statesman, philosopher, and scientist. Jan Smuts is rightly considered one of the great men of the world. Very little is known to Americans about him, although it was he who led Africa into war on the side of the Allies—an action which has been of inestimable value to the United Nations.

An excellent biography and enjoyable reading. B.H.W.

A BASIC MANUAL OF MILITARY SMALL ARMS. By W. H. B. Smith. 213 pages; profusely illustrated. Military Service Publishing Co. $2.00.

Here is the most practical and comprehensive description of the world's military small arms that has yet been brought together. Revolvers, pistols, submachine guns, carbines, rifles, automatic rifles, and machine guns used by 14 different armies are taken up in detail, one by one. For each is given a photograph of the weapon, a general description, how to load and fire it, how it operates, and details of field stripping and reassembly with step-by-step descriptions and photographs. In many cases there are also cut-away drawings to illustrate mechanisms and the inter-relation of their parts.

This is a manual which should be owned and carefully studied by every officer and unit—whether now overseas or still in training. Direct and to the point, it is a book which should have been available before the outbreak of the war. It still will be of incalculable value.

AMMUNITION. By Melvin M. Johnson, Jr., and Charles T. Haven. 361 pages; charts; index; illustrated. Wm. Morrow & Co. $5.00.

Its subtitle well indicates the scope of this book: *Its History, Development and Use, 1600 to 1943—.22 BB Cap to 20-mm Shell*. Its quality is assured by its authors: Capt. Johnson of the USMCR has been deferred from duty by the Commandant because of his research and development work, and Mr. Haven is known for his own books and for his collaboration with Capt. Johnson in preparing *Automatic Arms*.

Practical worth of *Ammunition* comes from its great usefulness.

Development is covered, but most important is the treatment of current military ammunition. Stoppages and their causes and cure receive much attention. Functioning, defects, accuracy, what happens beyond the muzzle and why—these important matters are well treated.

Military and sporting rifle cartridges, pistol and revolver cartridges, shotgun cartridges or shells, and .50-cal., 20-mm, 37-mm, and 40-mm AA and AT ammunition are all described in detail. Ballistics charts add to the general usefulness of *Ammunition* for all who are interested in firearms in any way.

CIVIL AND MILITARY GERMAN. By J. Alan Pfeffer. 216 pages; illustrated; end-paper map. Farrar & Rinchart, Inc. $2.50.

Those with a basic grounding in the elements of the German language will find this text useful. It will help the study of spoken, printed, and written German, and at the same time give a considerable understanding of present-day Germany. Its 51 units are in logical sequence, and cover geography, climate, government, communications, transportation, etc., etc. Both English-German and German-English vocabularies are complete. In short, here we find a distinct contribution to useful language study.

SOLDIERS, SAILORS, FLIERS, AND MARINES. By Mary Elting and Robert T. Weaver; pictures by Jeanne Bendick. 92 pages; illustrated. Doubleday, Doran & Co., Inc. $2.00.

For a youngster, say one up to the first grade, this is a delightful book. In simple language and even more through its many colorful sketches, it tells of the daily life of service men, what the various branches do, and how they go about it. It's a grand gift for your own or another's child.

SEE AND SAY SPANISH. By A. L. Belmont. P. D. & lone Perkins. $6.25.

Here indeed is a new and extremely interesting way to learn Spanish. The course consists of 500 2×3½ cards. On one side is an English sentence, on the other the same sentence in Spanish. The object is to place 5 cards in a celluloid case (which is provided) and carry them with you. During your spare time look at the English and then the Spanish. After looking at the Spanish sentence pronounce it by use of the phonograms directly under the sentence on the card. It is all very simple and easy. After the first cards are mastered you repeat with the other cards on up to 500.

This principle of teaching is based on a child learning to talk before entering school. He learns only that which he hears, sees, and says. It is obviously true that anyone that lives for a length of time in a country can learn to speak and understand the language without going to school or studying.

If *See and Say Spanish* is properly used as per instructions which are included, anyone can learn enough quickly and easily to apply it wherever spoken in common everyday speech. B.H.W.

CARRIER COMBAT. By Lt. Frederick Mears. 156 pages; end-paper maps. Doubleday, Doran & Co. $2.00.

Lt. Mears relates his experiences with Torpedo Squadron 8 as a Navy torpedo plane pilot fighting the Japs in the Pacific. The battle of Midway, the occupation of the Solomon Islands, and the battle of the Stewart Islands are clearly described. This is not only a story of heroes and their actions, but a true and convincing picture of the men as brave, healthy young men.

Truly readable. M.K.W.

BEHIND THE STEEL WALL. By Arvid Fredborg. 305 pages; maps. Viking Press. $3.00.

This report on Germany by a Swedish journalist is the first clear account we have had from a reasonably unbiased source since Pearl Harbor. Fredborg, a careful and seemingly conservative reporter, left Germany late in the summer of 1943, after being there since 1941.

The dominating note of the report on the military front is that "the situation looks gloomy for the Germans," but the "German war machine still commands respect . . . it is battered but still intact . . . the morale of the Wehrmacht has been deteriorating . . . but no one can yet say that discipline has been shattered." Germany and its satellites probably have some 295 divisions of 11,000,000 men, of

which not more than half are combat troops. It is particularly strong in field and coast artillery and AA units.

On the political and home front Fredborg says that the "whole German community is overworked and suffering from nervous exhaustion (but) no one should underrate its strength. Nazism is not going to fall like the walls of Jericho . . . It looks as though the military leaders have taken a hand in the political direction of the war . . . the generals are said to have been carrying on negotiations with the Nazi party bosses." "Hitler has been pushed more and more into the background . . . but Himmler . . . is looking after his interests." As long as the friction between the Party and the Army "does not result in an open break, the home front will hold . . . any attempt at revolt would be crushed in blood."

The detailed accounts of Germany leading to these conclusions are very interesting. Fredborg's information is factual, tinged by a minimum of personal opinion except when he tries to pierce the obvious screen of propaganda thrown up by the Germans. Those annoyed by the breathless, know-it-all, "inside" stories written by so many journalists will welcome this sober, carefully written account of Germany since Pearl Harbor. R.G.M.

THE NAVY HUNTS THE CGR 3070. By Lt. Lawrance Thompson. USNR. 150 pages; illustrations. Doubleday, Doran & Co. $1.75.

The yacht Zaida became the object of one of the greatest searches in maritime history. Lost for 21 days in hurricanes and blizzards sweeping along the atlantic seaboard, she traveled 3,100 miles south of the position from which her voyage began. Her story has been likened to a new version of Joseph Conrad's *Typhoon*.

This is one of the first books to be released by the Navy that gives a detailed account of our war against the German submarines.

M.K.W.

AN EASY WAY TO SPANISH FLUENCY. By Estefania D. DcChavez, 232 pages. Commonwealth Press. $2.25.

A wonderful Spanish book for anyone who has at one time learned Spanish but forgotten most of it.

The ease in reading and understanding this book will amaze you. It will refresh your memory of Spanish and build up your vocabulary with very little effort on your part.

Highly recommended to anyone who would like to increase his knowledge of Spanish by self teaching. B.H.W.

THE AMERICAN FRONTIER IN HAWAII. By Harold W. Bradley. Stanford University Press. 466 pages; index; annotations; endpaper map. $4.50.

In *The American Frontier in Hawaii* Dr. Bradley has given us a lucid history of these fascinating islands which will content the casual reader and will prove a source of delight to the historian—amateur or professional—when he sees the fine, extensive documentations.

Hawaii has been of interest to Americans since the pioneer days of 1789 to the present moment. It is no longer famous as an island resort swarming with hula dancers and pineapples, but rather as a point of tremendous strategic importance as an offensive and defensive outpost in the Pacific. This transition and the part the Americans have played in it have provided a rich source of material for Dr. Bradley's narrative.

The author, an associate professor of history at Stanford University, knows the Islands and has devoted years of study to this field. As a result his book is an accurate history, one to read and enjoy.

M.M.

SPANISH THROUGH CONVERSATION IN THE CLASS-ROOM. By Estefania D. Dechavez. 384 pages. Times Mirror Press. $2.75.

By far the best text book in teaching Spanish I have ever studied.

The author uses the natural conventional way of learning a language as any child learns his native tongue. All rules, etc., are forgotten in the early lessons. You learn to pronounce correctly the common everyday words. After this comes the grammar, etc. Everything is in Spanish, thus you learn Spanish by using Spanish.

If you already speak Spanish add this book to your list as a refresher—it contains an excellent vocabulary. If you contemplate learning Spanish, try to persuade your instructor to use this text.

B.H.W.

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A TREASURY OF SCIENCE. Edited by Harlow Shapley (who also wrote the introduction), Samuel Rapport, and Helen Wright. 712 pages. Harper & Bros. $3.95.

These editors have drawn upon many writers on scientific subjects in order "to give some realization of how the scientist works, of the body of knowledge that has resulted, and of the excitement of the scientist's search." Authors, all eminently readable, range from Copernicus and Galileo, through Darwin, to Beebe, Haldane, and Einstein. Although most selections emphasize the work of modern science, in some cases older writings provide the best discussion. And all of them are well chosen for enlightenment of people (like this reviewer) without spcialized knowledge of science.

Not encyclopedic, still *A Treasury of Science* well covers the major fields. It is a splendid introduction for the layman, opening up new and often unsuspected fields. Scientific workers themselves can gain much from it, too, in learning the status of science unconnected with their own specialties. This work is a definite contribution toward the intergration of science, and particularly toward a general understanding of both the fields and their interrelationship.

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LIFELINE. By Robert Carse. 189 pages; photographs. Wm. Morrow & Co. $2.75.

Well sub-titled "The Ships and Men of our Merchant Marine at War."

THE RETURN OF OPPORTUNITY. Edited by William R. Kuhns. 309 pages, Harper & Bros. $3.00.

Leaders in many fields discuss the outlook for work and careers after the war.

OUR CONSTITUTIONAL FREEDOMS. By Robert E. Cushman. 32 pages. Public Affairs Committee, Inc., 10c.

One of a series of pamphlets on *Basic American Concepts*, this excellent resume was prepared by Cornell's distinguished Professor of Government.

ONE CONTINENT REDEEMED. By Guy Ramsey. 280 pages. Doubleday, Doran & Co., Inc. $2.50.

This is the military and political story of the Tunisian campaign from the invasion to the surrender of the Axis in North Africa.

TOTAL PEACE. By Ely Culbertson. 339 pages; index; map. Doubleday, Doran & Co., Inc. $2.50.

An elaboration and explanation of the World Federation Plan. It also offers new concepts of United States foreign policy and discusses vital postwar questions.

ABC OF RADIO FOR FLYERS. By Lt. Adras P. LaBorde, AC. 115 pages; index; illustrated. Military Service Publishing Co. $2.00.

A book on basic radio procedure which aids pilots to absorb knowledge requisite to the most efficient employment of their radio outfits.

HOW TO WRITE A MILITARY LETTER. By Cpl. David Klein. 133 pages; index. Military Service Publishing Co. $1.25.

What every Army letter writer should know is set forth in this little book in a brief and clear manner.

ELMORE. By Theodore J. Ritter and Robert W. Gadbois. 116 pages. The Dietz Press. $1.00.

Chuckleful cartoon account of Flight Preparatory School in the Navy, enough like the Army for all to enjoy.

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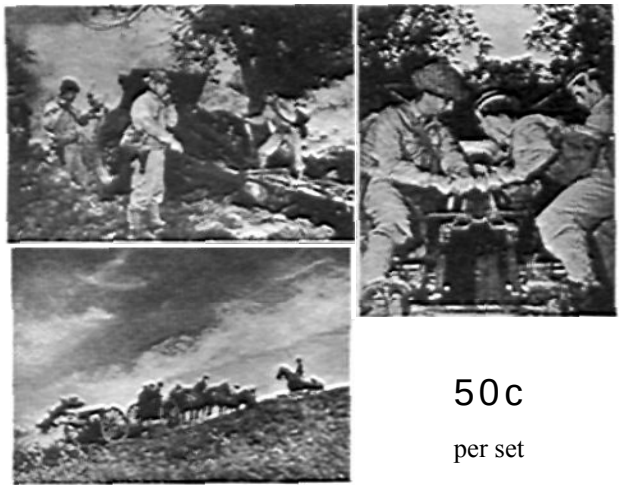

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