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INTELLIGENCE BULLETIN

January 1943

MILITARY INTELLIGENCE SERVICE
WAR DEPARTMENT

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NOTICE

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It is recommended that the contents of this bulletin be utilized whenever practicable as the basis for informal talks and discussions with troops.

"The Americans are very poor at scouting, patrolling, and security measures; so the effects of a sudden attack and the benefits to be gained therefrom should always be kept in mind."

—from a Japanese Army training manual.

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PART ONE: GERMANY

Section I. INFANTRY TACTICS

1. INTRODUCTION

At present German infantry tactics naturally are of the greatest interest and importance to American fighting men. Official German doctrine covering infantry tactics is clean-cut—so much so that when an American reads it, he is likely to fall into the dangerous error of assuming that the Germans always will follow certain methods. There is in circulation a popular theory to the effect that the Germans are fond of set procedures. Even if there is an element of truth in the theory, it must not be supposed that German military thought is inflexible. German commanders often show great imagination and adaptability in difficult situations. Although the following German doctrine is official, American troops will find that the enemy does not hesitate to depart from it. Its chief value for us is that it suggests what we may sometimes, although not always, encounter.

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2. THE MEETING ENGAGEMENT

In a meeting engagement a commander dispenses with preliminary preparations and deploys straight into battle. A commander will not accept the challenge of a meeting engagement unless he feels that his troops and leadership are numerically or otherwise superior to those of the enemy, or that, by waiting to prepare a deliberate attack, he would sacrifice ground he cannot afford to lose. Sound tactical decisions in the initial stages are essential. The worst mistake of all is hesitation.

The advance guard will delay the enemy and seize important positions, such as those suitable for artillery observation posts. The advance guard may (1) attack, with a limited objective; (2) defend its existing position; or (3) withdraw to more favorable positions.

The main body will deploy immediately. (It must be remembered that a withdrawal by the advance guard is likely to interfere with this deployment.) It is wrong to wait for further information in the hope that it will clear the situation. Lost time never can be regained. The time available decides whether the commander should concentrate his troops before launching them in an attack, or whether he should launch them when, and as, they become available.

The meeting engagement normally will take the form of a frontal attack by the advance guard, combined with one or more encircling attacks by the main body.

3. THE DELIBERATE ATTACK

The object of the deliberate attack is to surround and destroy the enemy. A strong, rapid encircling attack can be decisive, provided that it really comes to grips with the enemy and that the enemy is pinned down by frontal pressure, which will be exercised mainly by fire.

Encircling forces must move in depth if they are not to be outflanked. All encircling attacks sooner or later become frontal.

In all attacks the commander will select a *Schwerpunkt*, or point of main effort, where the bulk of his forces will be employed. The considerations involved in choosing this point are: (1) weakness in the enemy defense; (2) suitability of the ground for cooperation of all arms, but especially for tanks; (3) lines of approach; (4) possibilities of supporting fire, especially by artillery.

Boundaries and objectives are allotted to attacking units. This does not mean, however, that a unit must distribute troops over all the ground within its boundaries. It will choose within its boundaries the best line or lines of advance and utilize its troops accordingly. A *Schwerpunkt* battalion can be allotted about 450 yards of front, while a battalion which is attacking in an area removed from the point of main effort can be given 1,000 yards or more.

Once an attack has been launched, it must drive straight on to its objective, regardless of opposition. It is wrong for the foremost attacking troops to turn aside to deal with threats to their flanks. This is the task of the troops which are following them.

A breakthrough must be in sufficient depth to prevent the enemy from establishing new positions in the rear. A breakthrough cannot be successful until the enemy artillery positions are captured. This is the special task of the tanks.

As soon as enemy resistance weakens at any point, all available fire and forces must be concentrated to insure the success of the breakthrough.

Since artillery support is essential, artillery must be kept well forward.

4. THE PURSUIT

If the enemy is able to withdraw under cover of a rear guard, the attack has failed. He must then be pursued. The object of pursuing forces will be to encircle and destroy him. For this, infantry and artillery alone are not sufficient. Aircraft will

attack defiles on the enemy's line of retreat, and motorized elements will attempt to pierce his front and encircle his flanks. A point of main effort and clear orders are just as necessary in this operation as in any other.

The task of the pursuing forces is to interfere with, and if possible stop, the enemy's withdrawal so that he can be dealt with by the slower-moving infantry and artillery, which will be following up. The motorized elements pursuing the enemy may find themselves in great difficulties because of the speed with which they move and because of the exposed positions in which they may find themselves. They must be prepared for this, and will rely on aircraft and the slower-moving infantry and artillery to assist them in due course.

5. DEFENSE

A point of main effort is as necessary in the defense as it is in the attack. A defensive position has no value if the enemy can avoid it by passing around its flanks. Essentials of a defensive position are (1) a good field of fire for all arms, but especially for the artillery; (2) good observation; (3) concealment; (4) natural protection against tanks; and (5) factors permitting the fire from weapons to be concentrated in front of the main line of resistance.

The position is divided into advance positions, outposts, and a main position. The forward edge of the main position is known as the main defensive line.

The task of the advance positions is to deny good observation points to the enemy and to hinder his advance. They will be approximately 6,000 to 8,000 yards in front of the main position, and mines and obstacles must be used to strengthen their area. The defenders of advanced positions normally will consist of small mobile forces. Their principal task is to force the enemy to deploy. They will be withdrawn according to a definite schedule.

The outposts are responsible for the immediate protection of the main position. Their tasks are (1) to prevent the enemy from

surprising the forces holding the main position; (2) to mislead the enemy as long as possible over the dispositions and situations of the main position; and (3) to protect advance observation posts as long as possible. Outposts will be withdrawn when the situation makes it inevitable. As a rule, they are from 2,000 to 3,000 yards in front of the main position.

The main position must be defended in depth. This is of the utmost importance. Areas, rather than lines, will be defended. If the enemy should succeed in penetrating the position, he will be faced by a series of defended areas which can support each other by fire, so that in the end he collapses under the concentrated fire placed on him. A battalion will defend from 800 to 2,000 yards in depth.

The withdrawal of advance posts and outposts must be planned carefully so that they will avoid getting in the line of fire of the main position.

Penetration must be met by immediate local counterattacks, with limited objectives. Small parties of infantry carry out these counterattacks—if possible, against the enemy's flanks. Unless tanks are available, a deliberate counterattack will succeed only if it is carried out by superior forces and as a surprise against one or both flanks of the enemy penetration. Like any other deliberate attack, it requires thorough planning.

6. VILLAGE FIGHTING

Troops are too easily attracted to villages. These afford some cover from fire, but also draw it. It is important to note that they may become traps.

a. Attack

In attack, villages should be by-passed whenever possible. However, when this is done, the enemy must be pinned down in the village, chiefly by artillery fire.

If villages must be attacked, heavy supporting fire will be

placed on the outskirts, especially on isolated buildings and small clusters of houses.

The leading troops will avoid the streets, and will fight their way through back yards and gardens until they reach the far end of the village. Small independent groups are preferable for this work. Their tasks must be laid down accordingly, and each group must have its own supporting weapons.

Reserves must move close behind these leading groups, which may easily get into difficulty.

b. Defense

Well-built villages make good defense areas. Their edges are shell traps; therefore, the main line of resistance should be either inside or outside the village, not on the edges.

If a village is favorably situated, it should be turned into a defense area organized in depth. The irregular shape of its approaches should provide ample opportunities for flanking fire.

Villages afford especially good antitank positions.

Reserves must be held in readiness outside the village to deal with the enemy's probable attempts to by-pass.

Section II. MINEFIELDS IN DESERT TERRAIN

The following notes deal with the Axis technique of laying minefields in the North African desert. It must be emphasized that an important Axis purpose in laying minefields is to create and spread fear among United Nations troops. Cool heads and common sense, as well as a sound understanding of enemy methods, are therefore "musts" for all personnel.

1. TYPES OF MINES

Although the Germans and Italians use several types of mines in desert warfare, including captured mines as well as those of Axis manufacture, it has been reported that the enemy recently has shown a preference for the following:

a. German Teller Mine

This is a 19-pound antitank mine containing 11 pounds of explosive (tolite). It is shaped like a disk, 12 inches in diameter and 4 inches high. The firing pressure is about 350 pounds.

b. German "S" Mine

The "S" mine is an anti-personnel weapon containing 1 pound of tolite and 350 steel shrapnel balls. It is cylindrical, 4 inches in diameter, and 5½ inches high. "S" mines may be fired either by push-igniters or pull-igniters. These mines are buried, but when they are fired, they are thrown about 3 feet above the ground before detonating.

c. Italian "B4" Mine

This is a 3⅓-pound anti-personnel mine containing ¼ pound of T. N. T. and scrap metal fragments. It is cylindrical, 3 inches in diameter, and 5 inches high. In use, B4 mines are concealed, but not buried. A trip wire is attached to the trigger of a B4. When the wire is tripped, it releases a striker, which fires the mine.

d. "Wooden Box"

A new and unusually effective type of mine has been encountered during the present Egyptian-Libyan offensive. The mine consists of a wooden box containing nine blocks of guncotton and measuring about 18 inches in length, with inside dimensions of the box given as 11 by 8 by 2½ inches. The mine is fitted with a sensitive detonator, which is activated by about 35 pounds pressure. Since the mine is made of wood, the British probe for the mine with a bayonet, instead of using their regular mine detector. This is done with the bayonet at an angle to the surface of the ground, rather than perpendicular.

2. PATTERNS

Most minefields are laid in patterns. Prisoners of war state that these may vary considerably, and that they are decided upon by the officer in charge of a particular task, who must take into consideration local conditions and the type of defense that is contemplated. Among the patterns very frequently encountered are the "regular pattern" and the "regular pattern offset."

a. Regular Pattern

This is the most common. Mines in a row are spaced at equal distances, with equally distant rows, and with the mines of one row equally spaced between the mines of the previous row. A variation in this method is to vary the distances between rows. In no reported case, except for scattered mines, has the distance between mines in a row been unequal.

b. Regular Pattern Offset

By means of a pacing drill, a certain variety is introduced into the regular pattern. The distance between mines in any one row is equal, but one row is slightly offset from the previous row, and the next row is again offset by a different distance. Once a few mines have been located, the pattern soon becomes apparent and mines will be found where expected.

c. Random Mines

In front of most regular minefield belts, and particularly in front of gaps, there may be found mines

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scattered at random and unmarked. These are either continuous at very wide and irregular spacing, or in groups more closely spaced but not laid in any pattern inside a group.

3. SPACING

The average spacing observed between mines in a row is 6 yards; it has never been less than 3 yards and seldom greater than 10 yards, except in scattered fields. The commonest distances observed between rows are 5 yards and 10 yards.

Shallow minefields usually consist of from two to four rows of mines. Deep minefields generally consist of several belts of mines with considerable distances between belts, and with seldom more than eight rows of mines in any one belt. A single belt may be of any depth up to 200 yards.

4. MARKING

Often the front edge of forward minefields is not marked. The rear edge normally is marked by some form of fence, usually with a trip wire on short pickets, although cattle-fence, concertina wire, and rock piles are sometimes used. Instances of unmarked rear edges have been reported. The distance between the front fence, if there is one, and the rear fence may be anything from 100 to 800 yards.

A common marking is a single row of concertina wire running along the center of a field parallel to the rows of mines. In a large minefield there may be several un-

marked rows of mines in front, then a row of concertina wire, more mines, then concertina wire, and so on, finishing up with a row of concertina wire on the rear edge.

Only one case has been reported of continuous wire running irregularly within a field. Little information is available regarding signs used to mark fields, except those mentioned under "Gaps" (see par. 7, below). It is believed that a skull of crossbones indicates the presence of anti-personnel mines or booby traps.

In rear areas enemy minefields may be expected to be well marked with cattle fences and warning notices in German and Italian.

5. USE OF BOOBY TRAPS

No booby traps have been found fitted to captured British mines used by the Axis. Fields of Teller mines have been found, with a number of the mines fitted with booby traps. In one case Teller mines were in groups of 20, with about one-third fitted with pull-igniter traps and one-third with push-igniter traps. Teller mines, each fitted with a pull-igniter and a loop of wire projecting above the top of the mine as a trip wire, have also been found, but it has been the exception rather than the rule to find booby traps attached.

6. USE OF ANTI-PERSONNEL MINES

Increasing use of the Italian B4 anti-personnel mine was noted during September, 1942, before the British Eighth Army cracked the El Alamein line. These fields

contained some "S" mines, but mostly the B4's. Spacing of B4 and "S" mines ranged from 7 to 10 yards between mines in a row. The layout usually consisted of mines and wooden pegs set alternately, 4 to 5 yards apart, with trip wires from the mines running to the wooden pegs on both sides of each mine.

7. GAPS

Little information is available about gaps through minefields, but the following conditions were reported from Egypt:

a. Width

Widths of 7 and 10 yards were observed.

b. Method of Closing

Gaps are usually closed by means of two or three rows of Teller mines, with boards placed on one or all of the rows to insure detonation of mines if a vehicle attempts to pass through. Normally, gaps are kept closed.

c. Marking

In the northern sector of the El Alamein line, two types of gap markers were found:

(1) *Painted signs.*—Painted signs (see fig. 1) may appear on either side of a gap.

(2) *Luminous tubes.*—Luminous tubes 1 inch long have been placed on the tops of mines to mark a route for patrols. These tubes are visible 3 yards away.

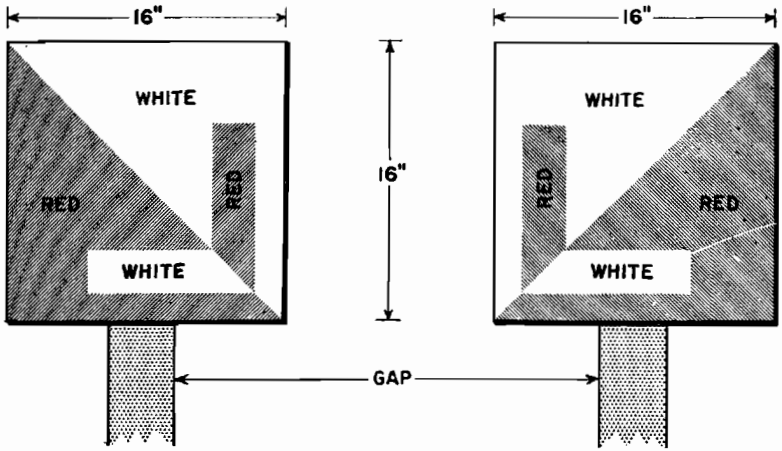

Figure 1.

d. General

It is reported that gaps are a favorite place for laying Teller mines without any marking wire or signs. Gaps are sometimes protected by unmarked groups of mines scattered in front of the gap.

8. TACTICAL SITING

One report states that the minefield is usually 215 yards to 325 yards in front of the main line of resistance, is covered by fire, and is observed by outposts. In another report the distance from the main line of resistance to the main minefield is given as varying from 215 yards to 1,080 yards. A listening post was also located by a patrol 100 to 150 yards behind a minefield. It definitely can be stated that it is the enemy's practice by day to cover all main minefields with small arms fire from close range, and by night to maintain anti-lifting

patrols and outposts, often located within the minefield itself.

9. MISCELLANEOUS INFORMATION

Until recently most mines were laid on the surface. Now a greater proportion of fields have the mines buried, but mines are often badly concealed so that by daylight their positions can, with practice, be located by eye. This should not be relied upon, however.

Teller mines, and sometimes captured British mines, have been found laid two or three on top of one another. The bottom mine may be laid upside down. Such groups are occasionally booby-trapped.

10. CONCLUSION

A most important point to remember is that the forward edge of a main minefield is often unmarked. Furthermore, whether the main field is marked or unmarked, there may be some scattered mines laid at random and unmarked in front of this field. Also, enemy minefields normally consist of several shallow belts laid in depth, with considerable gaps between belts rather than in one belt consisting of a large number of rows.

Section III. USE OF SMOKE

1. GENERAL

The fact that the Germans are fully equipped to utilize chemically produced smoke at any time cannot be too widely known.

Smoke may be used by any arm; in addition, regular smoke-producing units (*Nebelwerferabteilungen*) of varying sizes, as well as engineer units trained to handle smoke projectors, may be assigned to provide smoke support when it is needed.

Although slightly irritating, smoke is harmless, unless it is mixed with chemical warfare gas. Being practically the same color as natural fog, smoke is distinguished by its greater density and sharper outline, as well as its sudden rise and disappearance. Its density and extension depend upon weather and terrain. Favorable conditions for the use of smoke are: a steady, moderate wind, damp atmosphere, clouded sky, falling temperature, early morning or late evening hours, and bare, flat terrain. Unfavorable conditions for the use of smoke are: a very weak wind, a strong, gusty wind constantly changing its

direction, or no wind at all; dry atmosphere, sunshine, heat, and hilly or covered terrain.

2. SMOKE EQUIPMENT

The normal marking for German smoke ammunition is a broken white line and white lettering, including the identifying abbreviation Nb.

a. General Equipment

The following types of smoke equipment are likely to be used by all arms:

(1) *Smoke hand grenade 39.*—This closely resembles a stick hand grenade in shape. The head of the 39 is filled with a standard smoke mixture, and its handle has three horizontal corrugations at the screw cap so that it is possible to distinguish by touch between this and the stick hand grenade. The discharge of smoke lasts from 1 to 2 minutes. The total weight of the smoke grenade is about 2 pounds.

(2) *Smoke hand grenade 41.*—This is a small smoke generator (very similar to the smoke candle 39—see below) in a cylindrical metal case. It weighs about 1¼ pounds.

(3) *Smoke candle 39.*—This is used to lay small local screens of short duration. Its airtight and watertight cylindrical metal container is filled with standard smoke mixture. The candle weighs about 4 pounds and is fitted with a carrying handle. It can be placed on the ground and ignited, thrown by hand, or hurled by means of a sling passed through the carrying handle. The candle burns

from 4 to 7 minutes. Sometimes a number of candles are placed together to increase the density of the screen.

(4) *Smoke generator 41.*—In addition to using several older types of smoke generators, the Germans employ a new type, the 41, to screen long buildings, bridges, battery positions, and other vital areas for periods up to 2 hours. The generator, a strong iron drum strengthened by two iron bands, has a double bottom and a removable lid, and is fitted externally with a spigot and a steel projection tube. Several pieces of necessary equipment are attached to the inside of the lid. In operation, compressed air expels the smoke acid (20 gallons). The empty weight of the generator is 280 pounds.

(5) *Improvised smoke projector.*—The Germans also have an improvised smoke projector which can fire a special smoke generator (known as model 34) as far as 547 yards.

b. Equipment of Smoke Troops [1]

Troops especially designated and trained as smoke units use the following equipment:

(1) *Smoke mortars 35 and 40.*—These are two different models of a 4.14-inch smoke mortar. The 35 fires a stream-lined bomb a distance of about 3,000 yards, whereas the 40 has a maximum range of some 6,500 yards.

[1] Other arms may be equipped with adaptations of the matériel mentioned in this article. German tanks, for example, are fitted at the rear with a rack which can hold 5 smoke candles. These candles are dropped into place from the interior of the tanks; they cannot be projected. Certain infantry and artillery weapons can fire smoke shells, and it is possible to fit several types of aircraft with smoke-producing installations.

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(2) *Smoke mortar d.*—Although the Germans speak of one of their weapons—the *Nebelwerfer d*—as a mortar, it actually resembles a small gun, and has six barrels set in a circle like the chamber of a revolver. The mounting consists of a pair of rubber-tired wheels and a split trail. The barrels are not rifled, but have straight grooves inside them. The projectiles are 5.91-inch rockets, shaped like artillery shells. The six rounds are fired electrically at 1-second intervals. The rate of fire, including the time required to reload, is 6 rounds every 90 seconds. This weapon has a maximum range of 6,670 yards and can accommodate H. E. (high explosive), smoke, or gas-charged shells.

(3) *Smoke vehicle.*—A special smoke vehicle, built on a 3-ton semi-tracked chassis, is equipped to carry a large number of smoke generators in racks, from which they can be removed rapidly for use.

3. USE OF SMOKE IN THE FIELD

Army and corps commanders allot smoke troops, equipment, and ammunition to subordinate formations for large-scale screening operations. It is customary for the division commander to decide on the use of smoke and how it is to be coordinated with artillery fire and troop movements. Concentrated effect, as in other arms of the service, is what the Germans usually aim for when they employ smoke. The extent, object, duration, and direction of the smoke screen are contained in the commander's orders. When smoke is required in limited areas, it is

generally furnished by smoke-producing ammunition fired by the combat units themselves.

Captured documents indicate that the Germans fully realize how greatly the use of smoke may hinder the work of nearby friendly troops and supporting weapons. Independent use of smoke is permitted only when the effect of the smoke is limited to the area of the command using it. In other cases, the use of smoke is regulated by a higher commander than those immediately concerned.

Official German military doctrine outlines the following uses for smoke:

a. Attack

(1) Concealing the movements made in preparation for an attack, so as to gain surprise;

(2) Assisting movements which involve the crossing of open ground;

(3) Covering the initial crossing of a river in the face of the enemy;

(4) Blinding concealed enemy firing positions and suspected observation posts, preventing such defensive weapons as machine guns from operating effectively;

(5) Economizing on ammunition, and reducing the artillery's task;

(6) Taking the place of covering fire, to some extent;

(7) Assisting the main effort of the attack;

(8) Concealing weakness in the secondary attack or gaps in the attacking forces;

(9) Protecting the flanks.

b. Defense

(1) Blinding enemy observation posts;

(2) Concealing activities in the forward defense areas;

(3) Concealing troop movements to prevent observation from ground and air.

Throughout German training it is emphasized that smoke must always be laid on the enemy and not on friendly troops. An interesting suggestion is that screens sometimes be put down merely as a deceptive measure to mislead the opposition as to German intentions.

c. Miscellaneous Instructions

In the following miscellaneous instructions laid down for German troops to follow when they find themselves fighting in smoke, it should be noted that no distinction is made between hostile and friendly smoke:

(1) Smoke hinders defense more than it hinders attack;

(2) Route-finding by compass is essential;

(3) Units should be guided through preassigned sectors;

(4) Close combat is decisive; upon contact with United Nations forces, attack them immediately with the bayonet, hand grenades, and battle cries;

(5) Careful preparation of fire plans is essential in defense;

(6) Certain points of danger should be protected by units armed with the bayonet;

(7) Counterattack should take place, as a rule, after a smoke screen clears;

(8) Gas masks should be worn until it is definitely known that no chemical warfare gas is mixed with the smoke.

Section IV. 50-MM LIGHT MORTAR

1. GENERAL

The standard light mortar of the German Army is the 50-mm. This is comparable in a number of ways to our 60-mm, although ours is the superior weapon on the whole, especially as to maximum range, precision, and all-around performance.

The following table affords a basis for a comparison of the two weapons:

	German 50-mm Mortar	*U. S. 60-mm Mortar*
Caliber	50 mm	60 mm
Weight in action	31 lbs	42 lbs
Length of barrel	18 in	28.6 in
Maximum range	568 yds	1,935 yds
Minimum range	55 yds	100 yds
Traverse	600 mils (change in deflection)=33°45′	140 mils (70 either way)=7°57′
Rate of fire	6 rounds can be fired in 8 seconds, but this rate cannot be maintained	Maximum: 1 round in 2 seconds; normal: 1 round in 4 seconds—this can be maintained

AMMUNITION FOR ABOVE

Type of bomb	HE	HE
Overall length	8.5 in	9.54 in
Maximum diameter	50 mm	60 mm
Weight	2 lbs	2.96 lbs

AMMUNITION FOR ABOVE—Continued

HE filling	TNT	TNT
No. of charges, or zones	1	4
Propellant	Nitrocellulose	Nitrocellulose
Markings	Bomb painted dull red, stenciled in black	HE, yellow; practice, blue
Fuze	Percussion	Superquick

The 50-mm is muzzle-loaded and trigger-fired, and is designed for high-angle fire only—that is, for fire at angles of not less than 45 degrees. Our 60-mm is muzzle-loaded,

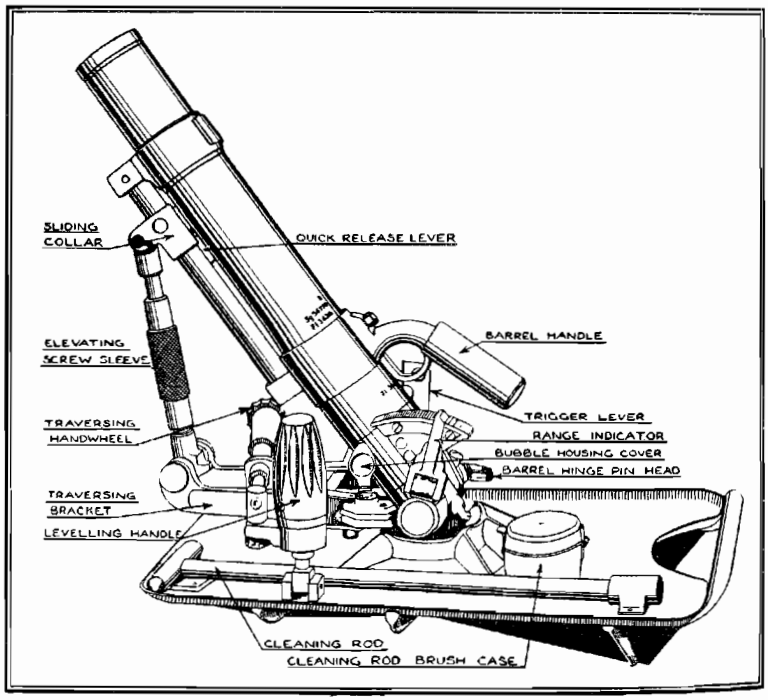

Figure 2. German 50-mm Light Mortar.

has a smooth bore, and is not trigger-fired. It is designed for high-angle fire at angles of from 40 to 85 degrees.

Although sights will be found with German 50-mm mortars manufactured before 1938, the mortars manufactured during or after that year are laid on the targets or aiming stakes by means of a white line on the barrel. Our 60-mm has the M4 sight, as does our 81-mm mortar.

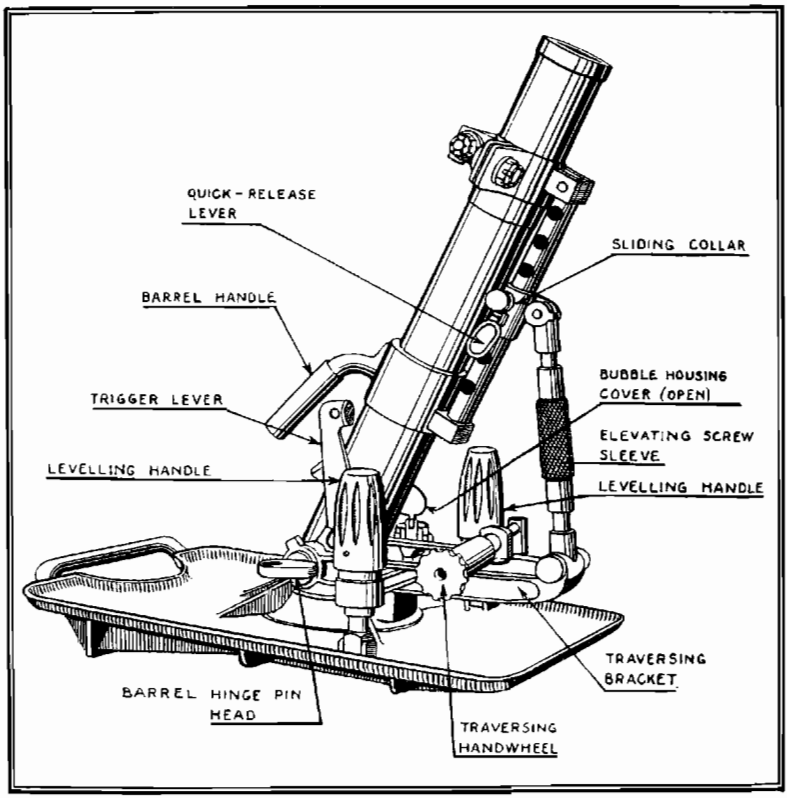

Figure 3. Another View of the German 50-mm Light Mortar.

The 50-mm is a two-man load. One man carries on his back the base plate with traversing and cross-leveling gear. The other carries on his back the barrel and the elevating screw pillar. Our 60-mm is a two-man load, also; a corporal carries the base plate and sight, while the No. 1 man carries the mortar and bipod.

2. ELEVATION

Range for the 50-mm is indicated on an arc fixed on the left side of the barrel by the rear edge of an indicator hinged on the traversing bracket. The arc is graduated from 60 to 520 meters, and the indicator can be folded down when the mortar is dismantled.

A rough adjustment of elevation can be effected in the following manner: Pressing a quick release lever unlocks the catch of the sliding collar connected to the upper end of the elevating screw pillar. The collar is then free to slide along its guide and the barrel can be elevated by means of the barrel handle.

As soon as the range ordered is approximately indicated on the range scale, the sliding collar is locked in its guide by the release of the quick-release lever. Fine adjustments are effected by rotation of the sleeve of the elevating screw pillar.

The U. S. 60-mm mortar has a permanent firing table, which is fitted to the tube. For ammunition of present manufacture, a firing table card is included with each complete round container. This table gives elevation (degrees) corresponding to various ranges throughout the field of fire, and also gives the change in deflection

(mils) due to one turn of the traversing control of the mount. The latter feature permits direct introduction of deflection corrections in case the sight is lost or becomes unserviceable.

3. LINE

The mortar can be laid either direct or by means of aiming stakes. Rough adjustments for line are effected when the position of the base plate is altered, with the traverse set at zero.

A deflection scale is engraved on the cross-bar joining the two leveling handles, and consists of a double row of graduations. The interval between the graduations in each row is 20 mils, but the rows are offset, so that the graduations on one are halfway between the graduations in the other. Thus the scale indicates deflections to the nearest 10 mils.

The total traverse is 600 mils (33°45′)—that is, 300 mils (16°52′30″) each side of zero. Fine adjustments are made by rotation of the traversing handwheel until the required deflection is indicated on the scale.

4. LOADING AND FIRING

During loading and firing of the 50-mm mortar, the layer's position is on the left, behind the mortar. He lies on his belly, holds the leveling handles, and presses on the base plate with his forearms. The loader, who lies to the right of the layer, loads by inserting the bomb in the muzzle, tail down.

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After releasing the bomb, the loader's right hand instantly goes to the trigger, and both loader and layer lower their faces to the ground. Meanwhile, the layer still holds the leveling handles and continues to steady the base plate by resting his weight on it. On the order to fire, the loader pulls the trigger slowly and evenly to the rear.

5. MISFIRES

When a misfire of the 50-mm occurs, the trigger should be pulled again—several times, if necessary. A German training manual warns that the detachment should wait 1 minute before unloading, in order to avoid accidents caused by possible delayed fire. On the other hand, when a misfire of the U. S. 60-mm occurs, the No. 3 man immediately strikes the barrel several times with a heavy nonmetallic instrument, such as a 2- by 4-inch timber, or, if this is not available, with the cleaning rod or with his heel. The mortar crew then waits at least 1 minute before removing the round.

6. AMMUNITION

The bomb fired from the 50-mm is a streamlined H. E. bomb of the anti-personnel type, with a finned tail unit which carries the cartridge. The bomb is fitted with a quick-acting nose fuze with booster. (The German name for this bomb is the 5-cm. Wgr. 36.)

The body is of mild steel with walls 4-mm thick, and has a cylindrical portion near the head. A screw-threaded

fuze hole is formed at the head, and the base end is similarly prepared to receive the cartridge container portion of the tail unit. The body contains a bursting charge of T. N. T. weighing approximately 4½ ounces.

The tail unit consists of a mild (not hardened) steel cartridge container, to which 8 blades formed in pairs, are spot welded to form the fin.

The fuze (Wgr. Z. 38) is a quick-acting nose percussion fuze with a graze pellet and booster. It arms itself approximately 60 yards from the muzzle of the barrel; until then it is safe.

The U. S. 60-mm mortar uses an H. E. shell (designation: Shell, H. E. M49A1, w/PDF M52, 60-mm mortar) against personnel and light matériel targets. The action of the fuze is superquick. For use in the field, it is issued assembled to the shell as a component of the complete round. To arm the fuze, it is necessary only to remove the cotter pin.

Section V. SECURITY IN THE FIELD

A German order giving instructions regarding security measures is published here as a matter of interest to our own forces.

In view of a regrettable loss which has occurred, it is necessary to call attention to often-repeated orders concerning security. All commanders, adjutants, liaison officers, doctors, and orderlies will be impressed immediately and most strongly with the following points:

Written orders and marked maps must contain only information which is essential for other ranks to know. All supplementary information about the general plan of operations will be given verbally.

Important orders and situation maps must never be taken into the front line.

Matches, hand grenades, or other means of producing fire must always be kept at hand for the immediate destruction of orders in cases when delay involves danger. The division will carry out periodic inspections in order to supervise the execution of this order.

Great care must be exercised during telephone conversations, since the English appear to tap connections.

Radio messages may be sent in the clear only when delay would entail grave danger.

PART TWO: JAPAN

Section I. JAP ESTIMATE OF U. S. LAND TACTICS

1. INTRODUCTION

What Japanese staff officers think of the land warfare tactics used by U. S. forces is set forth in an official Japanese document. These beliefs indicate clearly why the Japs have specialized in infiltrating, surprise, and deceptive tactics to such a great extent against our forces. Although the enemy may be in a mood to alter some of his beliefs by now, a study of what he thinks of us as fighters should be beneficial, as well as interesting. You will notice that the Japanese contradict themselves more than once in the document. Extracts from it are given below:

2. "U. S. METHODS—OUR COUNTERMEASURES"

One peculiarity of the U. S. forces is that the orders of the higher commanders are passed down in minute detail and leave little room for initiative by subordinates. For this reason, if

the supreme commander does not display a great deal of ability, a versatile change of tactics to cope with the situation as it develops is not possible.

American strategy is based on fighting a battle of fortified positions, but their rules for the conduct of battles encourage mobile warfare. In actuality, however, this is not often practiced in training and maneuvers.

Under normal conditions, the Americans display their might in carefully planned operations; but once their planned strategy is spoiled, they must get one or two high commanders to straighten things out. Hence, we must grasp every opportunity not to give them time to do this.

In order to capture one of their positions, we must induce them to come outside their fortifications and fight a decisive battle, or else all efforts must be made to put a hitch in their plans; we must practice a policy of throwing them into confusion.

Also, because American tactical ideas are simple, deceptive displays of force are one of the most valuable of all our strategic weapons.

Again, because the character of the American is simple and lacking in tenacity, they also lack tenacity in their tactics and battle leadership; and if they meet with one setback, they have a tendency to abandon one plan for another. For this reason, we must not fail to hammer at this weakness.

The Americans are very poor at scouting, patrolling, and security measures; so the effects of a sudden attack and the benefits to be gained therefrom should always be kept in mind.

The Americans make much of firepower, especially the power of artillery, and lay only small stress on bayonet assaults. So, under the cover of night, fog, or a smoke screen, we must take advantage of the lack of flexibility of their plans, cut down the advantage they may have gained by having registered their artillery fire on us, and lead our troops into an attack which will decide victory or defeat.

The decision of the U. S. forces to attack or defend will depend

largely on their estimates of the strength of their artillery compared to ours, so it is essential that we conceal our artillery strength and thereby cause them to underestimate it.

The Americans regard the enemy artillery dispositions as most important. For this reason, if we utilize mobile warfare and either conceal our batteries or establish fake artillery positions, we may reap great benefits.

The U. S. forces vigorously recommend the offense, and constantly practice it in maneuvers and training; and, unless they feel a definite inferiority in manpower and more particularly in artillery, the view should be taken that they will attempt an offensive.

As the rise of the U. S. forces took place during the World War, it is no wonder that they developed a definite tendency toward position warfare. Even in encounters that are not according to the "book," their leadership follows a fixed path; and they are extremely fearful of enemy counterattacks. For this reason, it is especially necessary for us constantly to utilize mobile warfare tactics.

a. Attack

(1) *Plans.*—The Americans do not minutely reconnoiter the movements of the enemy, and they are especially poor at determining the direction from which enemy attacks will come. They simply make broad plans for combatting enemy attacks against their fortified positions, but have no idea of our active defense.

We must search for ways of attack and defense against the Americans with their superior firepower; and we must avoid a stationary defense as much as possible. Even when we unavoidably are fully on the defensive, we must work to keep our forces mobile.

In an active defense, if we base our defense on firepower in our advanced positions and do not seize every opportunity to counterattack, we will never make any gains. However, if the U. S. forces should have a marked superiority in firepower, we must plan an active defense by disposing our forces so as to increase

the units in the reserve. Do this by increasing the frontages assigned to front-line units. In doing this, we multiply our chances to use reserves for flanking.

(2) *Leadership.*—If the U. S. forces are in a meeting engagement or in an attack on a position (excluding heavily fortified positions), their columns usually will first diverge and then deploy. In deciding on the plan for deployment, they consider the enemy artillery fire as a factor of first importance. Their dispositions will usually be made on a much narrower front than our assembly positions, and therefore room for their maneuvering will be lessened.

It will be beneficial to study the methods of deployment of the U. S. forces. It should be remembered that at this time communication facilities will not be complete. Also, as their leaders will not have regained control as yet, we may, by maneuvering, discover good opportunities to strike. For this reason, do not relax your reconnaissance of the enemy's movements.

It is bad judgment not to use an assault to bring about a final decision. American assaults usually appear to be penetrations of enemy positions which have already lost all power of resistance (that is, after fire superiority has been gained); and their training in hand-to-hand fighting is not sufficient. Because of this, it is well to consider ways of destroying them by desperate fighting within our defensive positions.

We must not overlook the fact that the Americans, who believe in a principle of mutual support, are paradoxically inclined to reckless and headlong advances; and at times, they do not consider a coordinated advance, but, instead, rush forward alone. Consequently, when their forces are separated, crush them individually, or endeavor, with a counterattack by all your forces, to deliver a crushing blow.

(3) *Meeting Engagements.*—In meeting engagements, it is usual for the Americans to commit their forces only when control has been regained, so take advantage of this by sending up an advance guard to hold fast, and use your main body to maneuver and

strike at the enemy's flanks. Again, because the initial artillery fire of the enemy will be unorganized, bring up to the front at once a strong force of artillery to press the enemy. It is essential that the initiative be taken from him and that he not be allowed to regain it.

Their advance guards have a tendency to carry out independent attacks, and also often deploy their front line too broadly. By advancing one body of our troops, we can make the enemy deploy prematurely in most cases. Also, by bringing up an advance guard, we can gather our offensive strength in one spot for a decisive attack, break through the enemy front line, and strike the main body during deployment.

In dawn attacks, there are times when contact between opposing forces is lost. Therefore, when you fear that the Americans may launch a dawn attack while you are changing your dispositions in preparation, carry out a small attack against them; this will take advantage of the fact that while they are advancing to the line of departure, their covering fire will not yet be ready. Or, depending on circumstances, if you are well acquainted with the terrain within the enemy's lines, you may make a major counterattack.

Thus, while American attacks are not to be feared, it is most desirable that we investigate fully the ways of combatting the enemy's superior firepower. An attack or defense based on firepower will never bring good results when used against the U. S. forces.

b. Defense

The American defense does not utilize the ideas incorporated in our active defense system.

In cases when there is not much time, their organization of fire is weak and there are gaps in it. The machine guns are particularly fond of displaying their independence, and coordinated fire between machine-gun units is not often seen.

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When there is time to spare, they display magnificent, systematic organization of fire by using many types of weapons, and aim it in front of the position; but they have no minute organization of fire (that is, fire distribution by squads, and so on).

From the preceding, it can be seen that when they are pressed for time, the American dispositions, and especially their organization of fire, are not coordinated. Therefore, we must not fail to move fast and attack quickly, giving them no time in which to prepare their positions.

However, on the whole, in deciding on a plan of attack against American positions, the possibilities of maneuver must not be overlooked. Utilize a deceptive display of strength in order to draw the enemy out of his positions. When he attacks, by using your infantry guns, keep him from breaking through. Then practice the principle of manifesting your whole might in a counterattack.

c. Night Fighting

Insofar as night fighting is concerned, the Americans are unlike our troops, who can attack at night and bring about decisive results; instead, they simply use the night hours to better their preparations.

In view of the American organization of their military forces, national characteristics, and habits, it is best for them to make use of superior firepower and not indulge in night fighting. This is a point of which we should take advantage.

d. Pursuit and Retreat

American pursuit of the enemy starts only when the enemy has left his position and has begun the retreat. In the drill regulations, it is emphasized that the whole result of battles may be decided by energetic pursuits. In actuality, because they fear enemy counterattacks and demand order in the ranks, their manner of pursuit is not vigorous. And if their pursuit is delayed

by forces of the enemy, they will finally go on the defensive in order to collect their strength.

In general, their leadership in a retreat is very incapable. For this reason, once you have defeated them, great advantage may be gained by pursuing them relentlessly.

e. Security Measures

Duty in the field is poorly performed by the Americans, especially their security measures and patrols that operate over short distances. Because of this, concealment of our movements and execution of surprise attacks are comparatively easy, particularly at night. Their use of cover and concealment is poor.

f. Tanks

Their tanks are considered able to fight independently, but coordinated action with the infantry is difficult. In consideration of this, after the tanks have smashed the enemy positions, their infantry is brought up to exploit the gains. But calm individual soldiers, well trained in throwing explosive charges, will be able to destroy the tanks.

The movement of their tanks is extremely skillful and they are able to pass through practically any type of terrain. However, their antitank measures, on the whole, are crude and if we use our tanks well, we may crush the enemy line or break through without much difficulty.

g. Other Vehicles

A great many motor vehicles are included in the organization of the U. S. forces, who are thoroughly experienced in using them. They plan strategic and tactical actions with them that are unthought of by us. In a place where vehicles can travel, regardless of how bad the roads may be, you must consider that they will try to use them.

h. Vulnerability of the Rear

Since the rear of the U. S. forces seems very vulnerable, threats and raids on their rear confuse them extremely and produce many advantageous possibilities for the conduct of operations.

Section II. NOTES ON RECENT FIGHTING IN THE SOUTHWEST PACIFIC

1. INTRODUCTION

Issues No. 3 and 4 of the *Intelligence Bulletin* contained considerable information dealing with tactics and matériel used by the Japs in the Solomon Islands fighting. Additional information on the action in the Solomons, as well as in other Southwest Pacific areas, is presented in this issue.

2. INDIVIDUAL CHARACTERISTICS

Members of a Marine battalion in the Solomons agree that at night Japanese often can be detected by a characteristic odor, which resembles the gamy odor of animals. One Marine, through his sense of smell, detected a Jap walking along a road with him—the Jap was killed.

It is interesting to note that the Japanese are able to detect us by smell. A Jap scientist has described the odor of a white person as being pungent, rancid, sweetish, or bitter to his race.

3. NOISES DURING NIGHT ATTACKS

The Japs are very well trained to move silently in jungle areas. They deliberately make noises at times, however, to distract our attention and to deceive us, or to draw our fire—especially that of automatic weapons. These noises are made by firing rifles, mortars, and firecrackers, by beating on bamboo sticks, and by loud talking and yelling. Frequently, Japanese attacking units sneak up ahead of the noise makers and are ready to throw hand grenades and fire at our positions if our troops open fire at the noises. On other occasions, the Japs infiltrate small patrols to attack our forces from the rear while the noises are being made.

4. BIVOUAC DEFENSE

When the Japs bivouac in the jungle, they prepare an all-round defense. One bivouac position, captured by a Marine battalion in the Solomons, was occupied by a reinforced rifle company. Foxholes were of the standing type and tunneled in, with well camouflaged overhead protection. Some of the holes were connected by ropes, probably to guide soldiers at night. The area was roughly circular, and presented no flanks and no weak spots. Snipers were placed about in trees to protect automatic weapons. Low and narrow fire lanes, extending 1 to 2 feet above the ground, had been cut in all directions. The lanes were hard to see unless troops were crawling. Only the low brush was cut, and the lanes appeared like tunnels

in the jungle. Weapons fired low through them hit several of our men in the lower legs and ankles.

5. DECEPTION

The Japs have tried numerous tricks to sneak up to within knife- or grenade-range of our forces at night, or to lure them into the range of these weapons. Although many of the Japs speak good English, their accent almost always gives them away to a careful listener. They try hard to learn our passwords, and sometimes they cut in on our radio or telephone lines to get information.

After certain night operations in the Solomons, our troops found dead Japs wearing our helmets.

Also, a Jap was found dead with a light machine gun strapped to his back in such a manner that it could be fired. It is believed that guns of this type were moved from place to place in this way, with one man carrying the gun and the other firing it. The Japs also have been observed while running from tree to tree, firing one or two shots from each position. This creates the illusion of large numbers of troops.

6. EQUIPMENT

During the Milne Bay operations, the Japanese employed at least two light tanks which were heavily armed with automatic weapons. The tanks had strong lights which threw powerful rays 200 yards. The lights were controlled in such a manner that it was practically impossible to shatter them by point-blank fire. The tanks

were heavily greased, and sticky grenades would not cling to them. They were finally immobilized by breaking the tracks.

Cans of luminous paint were found in the Solomons. Apparently the Japs had planned to use the paint to assist movements at night.

7. CONCLUSIONS

The following conclusions, drawn by officers and men of a Marine battalion, are based on their fighting experience against the Japs in the Solomons:

a. Because the helmet silhouette is an easy way to detect friend from foe at night, it should be borne in mind that the Jap will use our helmets if he can get away with it, and positive identification cannot be based on that factor alone.

b. Telephone lines should be carefully concealed, and never laid on trails—because the Japs cut or tap them and use them as guides to our command posts.

c. Remember that darkness is just as good cover for us as for the Japs.

d. Jap noises are harmless. Wait until "pay-dirt" targets present themselves at night before opening fire.

e. Our men should always dig in, and our automatic weapons should have protection against grenades.

f. During daylight hours strong patrols should be sent out to interfere with enemy reconnaissance (on which they base their attacks) and to interfere with their rest.

g. Each man should be equipped with at least 4 hand grenades.

h. Location of friendly troops should be known to all our units or detachments.

i. Snipers strategically placed in trees are very effective in daytime—give the Japs some of their own medicine.

j. All guard and sentry details must be posted in pairs—while one man is challenging, the other must cover his partner from the flank, ready to handle any emergency.

k. Challenging at night must be done skillfully. The challenger must remain unseen in the shadows of a tree or building, and not permit the challenged person to come within knife-range of him until his identity has been definitely established as okay. The password should not be used unless necessary to secure positive identification. If used, the password should be spoken in a stage whisper.

l. Commanders should be mentioned by nicknames. Mention an officer or noncom by rank and that individual has a fine chance of being showered with grenades.

m. Troops should be well instructed in Jap tactics, but they also should be impressed with the fact that American fighting men can, and have, outfought this wily enemy.

n. The jungle puts a premium on individual and squad action.

o. Strict compliance with all basic rules of hygiene and sanitation is all-important. The individual must learn to conserve drinking water. All local water must be considered contaminated, and must be treated before drinking.

Section III. THE INDIVIDUAL SOLDIER

1. INTRODUCTION

The *Intelligence Bulletin* seeks to acquaint our junior officers and enlisted men as far as possible with the characteristics, training, and background of enemy troops. Such information has been given in each of the four preceding monthly issues of this publication. Particular reference is made at this time to the following sections which dealt with the Japanese: "Section I. GROUND FORCES," issue No. 1; "Section I. CHARACTERISTICS OF THE JAPANESE" and "Section II. GROUND FORCES," issue No. 2; "Section II. THE SOLOMON ISLANDS CAMPAIGN," issue No. 3; and "Section I. FIGHTING IN THE SOLOMON ISLANDS," issue No. 4. Additional information about the Japanese follows:

2. REACTION IN BATTLE

The information in this paragraph comes from several captured Japanese diaries. It shows that the Japanese

have a healthy fear of our weapons—particularly bombers—and that their morale can be shaken. However, the quotations—below—should not be interpreted as being counter to previous information describing the tenacity, fanaticism, treachery, and brutality of the Japs in battle. Apart from the morale aspect, these extracts reveal that certain weaknesses existed in the Japanese defenses at some points.

The extracts:

"Due to our antiaircraft guns being ineffective, the enemy (U. S. planes) circles around and drops their bombs on essential places. As we have only rifles, our only alternative is to flee from that area. It doesn't seem soldierly for us to flee as we watch the planes.

". . . I believe if friendly planes were here—even the inferior seaplanes—the enemy would disappear. I often think that antiaircraft guns and machine guns are not very effective."

"Several bombs were dropped. Even though there is little damage, the bombing is very dreadful. It is a horrible thing just to think of the restless souls of the human beings. The workers seem to scatter like small spiders at the same time the alarm sounds off. It is true that even the soldiers have in mind to flee as they watch the enemy planes. The higher officers would flee before anybody else.

"Even as an enemy, they deserve praise. It is very difficult for their bombs to hit the target. However, we are in fear on account of lack of armament.

"This time I think it is truly hopeless when I watch them over our head. Our force is shooting more and more at the enemy. However, not even one bullet seems to hit anything.

"Thus, in a battle the air assault is very fearful. No matter

what I do, I would rather be alive, and return to stay near Shizuko (his wife)."

"Our combat planes cannot get close to the enemy Flying Fortresses. It's very regrettable that the only alternative is for us to flee from being killed."

"Last night I stood guard at the working place, but there was no air raid. Even the motor sound of the automobiles would get us all excited. We started to construct the air raid shelters at 0500 hours. However, it was behind schedule. There is not even a single high official who can look into the future.

"An air assault occurred at 0930 hours, and every soldier fled. The deck officer was very displeased and gave a lecture. 'It is soldierly to die by a bullet.' Such boastful talk was made by him. However, when it comes to actual bombardment, he would disappear first, and the subordinates are very unpleasant about this situation."

". . . Many commanders like to take into battle with them as many of their men as possible, but, in contrast to this, I myself (a lieutenant) am inclined to leave behind many of those who are not really fit (due to injuries and sickness). Can it be that I am not sufficiently ruthless? It is a matter regarding which some self-examination is necessary. I am worried because I cannot unconcernedly overlook another's troubles and the feeling grows on me that as a commander I am lacking in sincerity. I feel that I am becoming detached from my comrades through insufficient mental discipline.

"Diligent people talk of their hopes.

"Lazy people bemoan their misfortunes.

"I will rectify my lack of mental discipline by diligence and industry."

"I (a lieutenant) don't know whether it is because the No. 1 Battalion has had so many casualties, but all ranks of commanders seem to have lost some of their offensive spirit . . .

"I feel strongly that if the enemy adopts guerrilla tactics, we will have no alternative but to adopt similar tactics. I have told Captain Horita that we must make a desperate attack at the enemy supply lines and billets, but he won't listen to me.

"The regimental headquarters has decided to move forward as the enemy in front has been repulsed by our 1st Battalion. I recommend that since none of our troops could be observed along the road, it was too early to move forward but the recommendation was rejected. Unwillingly we pushed forward, with the 3d platoon at the head. As expected, when we reached the ravine Corporal Komatsu and 5 men were killed, and Corporal Yamamoto and 2 men wounded . . ."

"June 17.—. . . (en route to Southwest Pacific island) Although I am not to think about such things until this military objective is ours, as I was gazing at the stars I felt as though I saw Yuriko's face (his girl friend)."

"July 3.—Going south. Wind came up in the afternoon and the boat rocked violently because of the high waves. During the night, while watching the waves, we began thinking about home and various other things and we became very depressed . . ."

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3. EARLY TRAINING

Physical training and conditioning play an equally important part in the development of the Japanese soldier. The Japanese have been quick to realize the advantages of mechanization and motorization, but they fully realize

that in many of the areas in which their troops must operate, such equipment can be used only to a limited extent. Furthermore, they feel very strongly that in warfare the machine can never take the place of man. All their training is based on the theory that troops must be prepared to operate under any conditions without the advantages of motor- or even horse-drawn transport.

The process of conditioning and hardening the soldier begins with his earliest recruit training. Physical drill, wall-scaling, road marches (a good part of which is done at double time up hill as well as on the level), fencing, bayonet training, ju-jitsu (called "judo" by the Japanese), and swimming occupy much of the soldier's time. The strictly military training is frequently carried out under adverse weather conditions, and, even in the earliest stages, is made to simulate battle conditions as realistically as circumstances will permit.

Because training in schools and universities does much to furnish the army with recruits who are already partially conditioned and toughened, the Japanese soldier is brought to a state of physical fitness very soon after his induction into the service. He needs this early conditioning because his training during the rest of his service will include long marches and maneuvers with full pack and equipment under a hot summer sun in Formosa or other tropical areas, or long periods of tactical exercises in the cold winters of Hokkaido and "Manchoukuo," frequently followed by a night in open bivouac in the snow without fires or lights of any kind. Men who have experienced these hardships find, under the stress of battle, that they have

become accustomed to physical strains and are freer to concentrate on overcoming the other difficulties which might confuse them in action.

Japanese training doctrine calls for special emphasis on field exercises, and insists on a maximum degree of realism in their execution. Whenever possible the enemy is represented by troops, not by flags or dummies; and trenches, barbed wire, and other obstacles are actually constructed in the area over which the troops are to operate. Every effort is made to simulate the noise, confusion, and befuddled vision which so frequently exist in actual battle, in order to accustom officers and men to that peculiar state known as the "fog of war." Artillery and machine-gun barrages are fired over the heads of friendly troops, and live grenades and mortars are used, although with reduced charges. So realistic was the training of the divisions which were rehearsing in the hills near Canton for the attack on Hong Kong that the troops suffered "a number of casualties." No considerations, either political or humane, are ever allowed to interfere with what the high command believe to be the one and only purpose of the training program—the production of fighting men.

All soldiers in the Japanese Army receive basic infantry training during their recruit period and take frequent refresher courses throughout their term of service. The training is progressive and thorough. Instruction proceeds systematically from the School of the Soldier to exercises involving large units and combined arms. In addition to this purely peace-time training, many officers and men were rotated through the ranks of active divi-

sions on the China front before joining units destined to take part in the major campaigns of the present war. Service in China was considered a very important part of the training program, and every effort was made to give this experience to the largest possible number of men. The Japanese have made conscientious use of the facilities afforded for small-unit training in the comparatively quiet areas of China and for higher unit and combined staff work in the more active sectors.

In all field exercises, the Japanese soldier is required to make full use of the terrain for cover and concealment. He is taught to improvise simple camouflage by using grass, twigs, branches of trees, and even by plastering himself with mud. Each combat soldier is provided with an individual camouflage net which he uses when on scouting or sniping duty. All men in the infantry and engineers are trained in the duties of scouts or snipers and much time is devoted to instruction in infiltration methods. Normally, in combat, only selected men are used for this type of work, but all those units fighting in jungle areas have been greatly benefited by the fact that all officers and men have had some experience in maintaining themselves, and in operating for days at a time, individually or in small groups, behind the enemy's lines.

Night operations play an important part in the training of Japanese troops of all arms. An effort is made to get every combat soldier out once a week on some sort of night problem with special emphasis being laid on individual, squad, and platoon exercises. More than half of the six weeks of intensive training engaged in by the

troops designated for the attack on Hong Kong was devoted to night operations. Their efforts were well repaid, for the key point in the British defense line on the Kowloon peninsula was captured after some two hours of fighting when a Japanese infantry battalion and a few engineers launched a well-timed and perfectly coordinated night attack against the position and caught the defenders completely by surprise.

Recent manuals bearing on various aspects of the training of officers stress the necessity of developing initiative in all grades, and the danger of adhering too rigidly to previously formulated plans when the situation demands a change in the course of action. That the Army has taken this to heart and can apply it in even the most complicated form of engagement was demonstrated at Kota Bharu (East coast of Malaya) where the repulse of the Japanese landings in the north and central sectors of the beach necessitated a change of plans in the midst of the engagement, involving the movement of men, barges, and even ships to the southern flank. This difficult maneuver was carried out in the face of the enemy, after the troops had suffered considerable losses, and during the hours of darkness. The Malayan campaign contains numerous other examples of rapid changes in tactics by troops whose first attempts to advance had been blocked by determined enemy resistance. Japanese troops are still taught to move forward regardless of losses when no other method presents itself, but officers are trained to seek out the soft spots in an enemy line and to

make their plans flexible enough to take advantage of any change in the situation which may occur.

Mass singing is used extensively. The Japanese say that martial marching songs heighten morale and that the beat of the music aids the rhythm of breathing, thereby easing fatigue. This feature has obviously been borrowed from the Germans, whose army has for many years recognized the value of mass singing.

4. COUNSEL ON FIELD SERVICE

The information in this paragraph was taken from a Japanese manual called "Battlefield Discipline" (*Senjin Kunren*).

a. A moment's negligence may result in an unexpected catastrophe. Be constantly on your guard. Do not despise your enemy or the natives. Do not be negligent after a small success. Know that carelessness brings disaster.

b. Sentry duty is important. Upon the sentry rests the safety of an army; he also represents the discipline of an army. Those on sentry duty must devote their person to their tasks, which must be sternly carried out. Accord the sentry high respect.

c. Ideological warfare is an important phase in modern conflict. Destroy propaganda and falsehoods of the enemy by your unshakable faith in the cause for which your Empire stands, and endeavor to spread *Kodo* (literally, the "Imperial Way").

d. Rumors arise from a lack of confidence. Do not be misled; do not be agitated by them. Firmly believe in the strength of the Imperial Army and deeply trust your superiors.

e. Control your anger and suppress your grudges. The ancients said, "Consider anger your enemy." A moment's violence often leaves cause for a long regret.

f. There is nothing more to be regretted than to fall a victim

to disease on the field. Be particularly mindful of your health so that you may not be unable to serve because of excesses.

g. Take to heart this saying of an ancient warrior: "My sword is my soul; my horse is my fortune." Always take good care of your arms and supplies, and give humane attention to animals on the field.

h. Be honest always; consider exaggerations and lies as dishonorable.

5. UNIFORMS

Extreme caution should be exercised in identifying the Japanese soldier by means of clothing and personal effects. Japanese troops in recent campaigns often have exhibited a complete lack of uniformity in dress.

In the majority of cases reported in Malaya, Japanese noncoms and privates wore uniforms of a cloth similar to our khaki drill. Officers wore slightly darker or greener khaki. The badge of rank usually was worn on the collar. A soft fatigue cap was worn underneath the steel helmet, which is much deeper than our old type and which is also distinguishable by a five-pointed star in the front center. In Burma, the Japanese were sometimes found wearing Chinese hats (peaked with a round crown). Footwear consisted of black or brown boots or tabi (canvas shoes, with heavy rubber soles, in which the big toe is separated from the remainder of the foot), with puttees up to the knee.

However, there were several deviations from the above standard attire, arising from pure necessity or from deliberate attempts at disguise.

Some of the prisoners were wearing pajamas and

even Chinese civilian dress. Captured Japanese equipment often included a soft straw hat, shorts, sweat shirts, and canvas shoes, which prisoners explained as part of their evening change in tropical weather. Instances have been reported by our troops of Japanese soldiers wearing captured British gas capes, Indian uniforms, and Malayan clothes. Such variations in dress have been observed principally on the front-line troops, who are fond of discarding their own cheap apparel for British clothing, both to disguise their identity and to satisfy their instinct for loot.

From the foregoing, it will be understood that the uniform is not always a foolproof means of identifying a Japanese soldier. In addition, it is advisable to study his facial and physical characteristics, especially so as to be able to distinguish him from our ally, the Chinese. *(See Section I, Characteristics of the Japanese, Intelligence Bulletin No. 2.)*

Section IV. SERVICE RIFLE

The Japanese service rifle is a simplified Mauser type with an action similar to our M–1903 (Springfield). Its official name is the Meiji 38th-year pattern (1905) rifle. Its caliber is .256 inch (6.5 mm). The weapon has not been changed since 1905, and the bulk of Japanese infantry is armed with it, or its carbine form.

The Japs are known to have a larger (bore) rifle of the same pattern, but it has not been used on a quantity basis. Its caliber is .303 inch (7.7 mm), enabling the enemy to use the British .303-inch Mark VII small-arms ammunition. The rifle has been used to some extent as a sniper's weapon, mounted with a telescopic sight.

The caliber .256 rifle is operated very much in the same manner as our M–1903 with the exception of the safety lock, which is easily figured out. This safety lock is much more awkward to operate than that of our M–1903. The rifle itself is a manually operated and bolt-action weapon, which takes 5 rounds in a clip, as does our M–1903. The bolt-stop is of the Mauser type; it is located on the left rear of the receiver and is pivoted on its forward end. To withdraw the bolt, the back end is pulled out.

The barrel is 31.4 inches long, and the rifle itself is 4 feet 2 inches without bayonet and 5 feet ¼ inch with bayonet. It is too long for easy handling—it probably is made long to compensate for the small stature of the

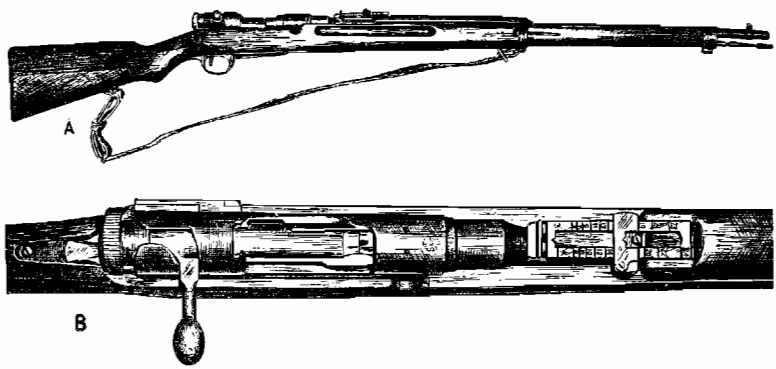

Figure 4. Japanese Service Rifle.

average Japanese. This length gives them a good reach in bayonet fighting. The rifle is equipped with a long knife bayonet, in the use of which the Japanese soldier receives a great deal of training.

The bolt handle is not bent down like that on our M–1903 and, consequently, catches in underbrush and is not so fast in operation. The sights are graduated from 433 yards to 2,598 yards. The leaf sight has an open "V" notch with no windage adjustment. The rifle is not so accurate as ours, especially at ranges greater than 300 yards.

All in all, the American soldier equipped with an M1 or 1903 rifle is far better armed than the Jap soldier with this "squirrel" rifle.

PART THREE: ITALY

Section I. 81-MM MORTAR

1. AS A WHOLE

The 81-mm Italian mortar Model 35 is a smooth bore, high-angle fire, muzzle-loading Stokes-Brandt type weapon. Remarkably similar in construction to the 81-mm American M1, this mortar is a standard Italian Army weapon.

The following table gives comparative data regarding the two weapons:

	Italian 81-mm Mortar	*U. S. 81-mm Mortar*
Caliber	81 mm (3.2 in)	81 mm (3.205 in)
Total weight in action.	135 lbs	136 lbs
Weight of barrel	47 lbs	44.5 lbs
Weight of bipod	42 lbs	46.5 lbs
Weight of base plate	46 lbs	45 lbs
Internal length of barrel.	46 in	45.55 in
Max. range (light bomb).	4,429 yds	3,288 yds
Max. range (heavy bomb).	1,640 yds	1,275 yds
Traverse	150 mils (8°26′15″)	180 mils
Elevation	40° to 90°	40° to 85°
Method of firing	percussion	percussion
Practical rate of fire	18 rpm	18 rpm

The barrel is a smooth-bored, steel tube fitted with a hollowed and threaded base cap which in turn is fitted to the socket in the base plate. The base cap is axially bored, and is threaded to accommodate the striker. A band and lifting handle are fastened to the breech end of the barrel.

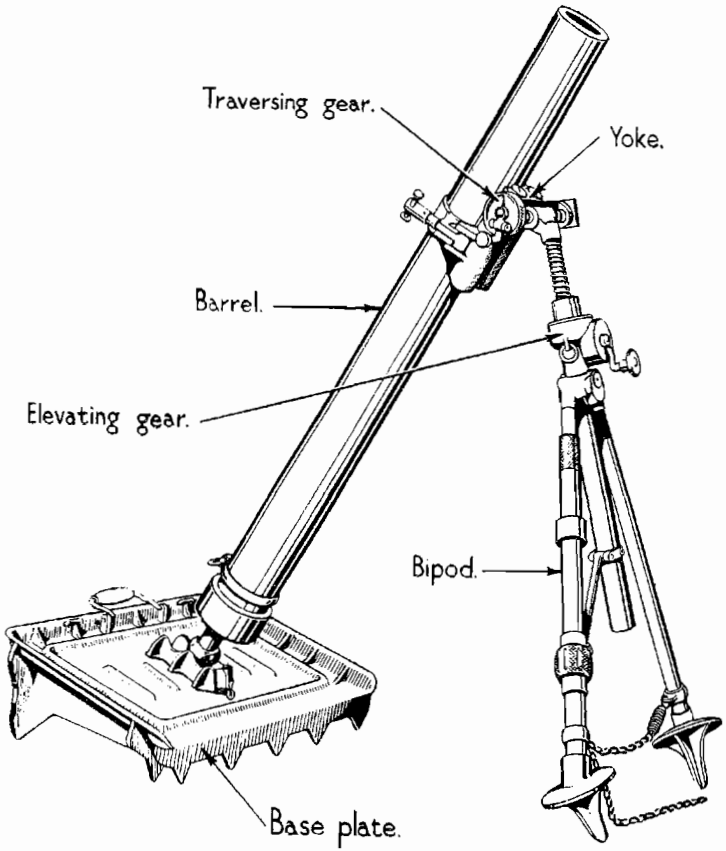

Figure 5. Italian 81-mm Mortar

2. BIPOD

The bipod consists of tubular steel legs, an elevating mechanism, and a traversing mechanism. The legs have spiked feet, and their spread is limited by an adjustable chain. To absorb shock on the legs during firing, a spring is linked with the chain. The cross-leveling mechanism is locked with a locking nut.

The elevating mechanism consists of a vertical screw operating in a threaded tube. The screw is actuated by a gear-and-handle mechanism of conventional design.

The traversing mechanism consists of a horizontal screw operating through a threaded T-yoke, the lower end of which forms a bearing for the elevating screw. An operating handle is secured to one end of the traversing screw, and a sight bracket to the other.

Two shock absorbers are mounted in a housing secured to the yoke, and are clamped to the barrel with a clamping collar.

3. BASE PLATE

The base plate is rectangular. It has three socket seats and a carrying handle. This is still another respect in which it is similar to the American M1.

4. SIGHT

The elevating quadrant provides for vertical adjustment from 40 to 90 degrees.

The lateral deflection scale, graduated in conventional

mils from 0 to 6,400, is equipped with a sliding scale beneath it to facilitate traverse readings. From the definition of a mil as that angle which at any range subtends 1/1000 of the range, errors in deflection can readily be estimated and corrected.

5. AMMUNITION

Two types of semi-fixed high explosive ammunition, a heavy and a light bomb, are used in this Italian mortar. Both are painted gray with an orange nose. Contrary to American practice, the propelling charge and fuze are not incorporated in the Italian bombs.

The maximum range of the mortar is 4,429 yards for the 7.2-pound light bomb, and 1,640 yards for the 15.1-pound heavy projectile. The corresponding American bombs used with the 81-mm M1 weigh 6.92 pounds and 15.05 pounds, and have maximum ranges of 3,288 yards and 1,275 yards, respectively.

Section II. TORPEDO BOMBER

The land-based Savoia-Marchetti (SM–79) bomber is the most widely used of several types of aircraft employed by the Italian Air Force. This aircraft has long been the mainstay of the bomber squadrons, and has been adapted successfully for torpedo-carrying purposes.

The SM–79 is a large, low-wing, tri-motored monoplane of metal and plywood construction. The engines, approximately 1,000 horsepower each, give the aircraft, when used as a bomber, a speed of almost 300 miles per hour. When a torpedo is carried, the plane has a top speed of about 200 miles per hour. The SM–79 normally carries a crew of four—two pilots, a radio operator, and a bombardier.

The depth settings of the torpedoes carried vary according to the size of the target. When employed against convoys, the aircraft carry torpedoes with several settings, the planes with deeper settings always attacking the larger vessels. These settings are adjusted by special torpedo mechanics and cannot be altered in flight.

An attack by torpedo bombers is usually made at dawn or dusk. Dusk is considered preferable since the air-

craft may make a low, unobserved approach toward the target, which is silhouetted against the horizon. The attacks are always made from the east since this is the

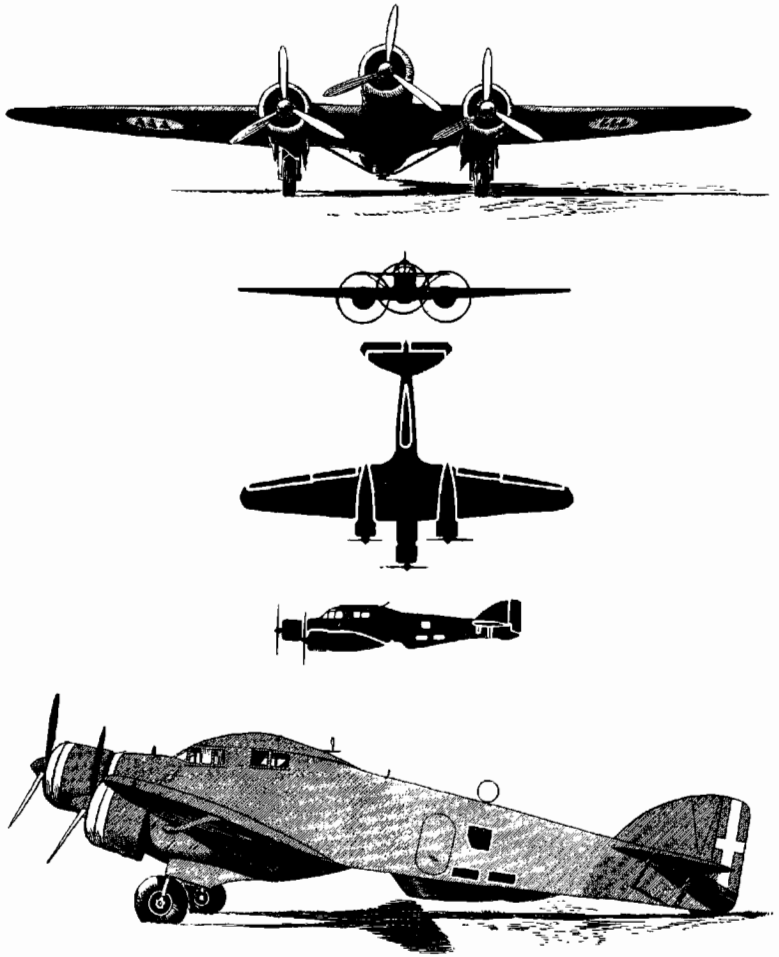

Figure 6. Savoia-Marchetti (SM–79) Torpedo Bomber; Two Views and Recognition Silhouettes

direction of poorest visibility. Daylight attacks are suicidal and are very seldom attempted.

Early in the war Italian aircraft torpedo attacks were usually made by individual aircraft and were not pressed home. Recently, however, these attacks have been better coordinated and many of them have been made at comparatively close range.

Torpedo squadrons are believed to have the highest morale of all units of the Italian Air Force. Their efficiency is such that Germany has sent squadrons to Italy for instructions in torpedo tactics. Italian aircraft torpedoes are believed to be superior to those of German design and are probably used by the German Air Force.

Section I. THE MOROCCAN SOLDIER

1. INTRODUCTION

The information in this section was extracted from an article written by a Spanish infantry captain. It deals with the characteristics of the Moslem soldier in Spanish Morocco and how to get along with him.[1] Basically, this soldier is very much like Moslem soldiers in other parts of North Africa; therefore, it is believed that a study of him will aid our troops who come in contact with Moslems in the African theater of operations.

2. THE EXTRACTS

Centuries of warfare have developed notable military virtues in the Moroccans. They are born warriors, and possess in the highest degree the characteristics of a perfect infantry soldier. They are industrious and economical, good walkers and runners, agile, well disciplined, strong, good at hand-to-hand fighting, tenacious in defense, and pitiless in attack. They possess, moreover, an enviable instinct for making the most of opportunities

[1] A Moslem is a believer in the faith established by Mohammed, whose writings and revelations constitute a sacred book, the Koran.

offered by the terrain, fully exploiting them in retreat as well as in attack.

Military forces made up of such elements must naturally be excellent; but it takes skillful veteran officers to command them. The Moroccan is not urged on by the sentiments that inspire the Spanish soldier, such as patriotism, sense of duty, self-denial, spirit of sacrifice, and so forth. He does his work, nearly always because of the inspiration and personal magnetism of his leader, and such leadership is fostered only by the leader's display of intelligence, force of will, rectitude, skill, and, above all, valor.

Aside from his military qualities, the Moroccan soldier possesses other characteristic traits that his officers should know: He is haughty and proud because, being a Moslem, he believes that his religion and his race are superior to all others; he is distrustful, because deep down in his heart he is convinced that every action in life has a selfish end in view; he is mercenary—of necessity and as a natural defense against the unfailing greed of his neighbors; and he is crafty, because since childhood he has had to keep constantly on guard to defend his own interests and his family, in a country where so far only cunning and force have carried the day.

As a result of these traits, the Moroccan soldier will seem complex and difficult to a young officer. One simply must learn to know him; and for that purpose one must observe him, study him, and treat him accordingly.

In dealing with these troops it will be found quite profitable to mingle to some extent with the subordinates, to enter into their feelings and get to know them, demonstrating a suitable measure of friendly confidence such as will afford opportunity for them to present any claims or complaints they may have, or ask any question that may be troubling them. Such consultations should even include the soldier's personal affairs, and he should come to his officers for help and advice. He may without doubt be expected to do so, and perhaps more frequently than one might wish, as soon as he notices that his officers lend an attentive ear and take an interest. This trait, together with the characteristic

obstinacy of the Moroccan, may become a source of annoyance; but there is no better way for an officer really to attach a Moroccan soldier to his person and induce him to do his best in the faithful performance of duties assigned.

The writer does not possess sufficient experience to offer substantial advice, and we shall limit ourselves to quoting a few suggestions from our lamented great master in matters Moroccan, none other than General Capaz:

"Be extremely polite, since nothing could more easily wound a Moslem than insolence or contempt. Be of firm character, without weaknesses; and if you show indulgence, let it always be preceded by punishment. Avoid insulting and angry speech. The native chiefs never shout as they speak their sentences, and you might set them a bad example.

"Wear correct uniforms, and avoid showy attempts at imitating the dress of the natives.

"Be equitable in your decisions; because impartiality is for a Moslem the height of justice.

"Always keep your word, and never go back on an agreement.

"Ask for a service in such manner that you would seem to be asking for collaboration; and the service will be rendered more willingly.

"Respect the man's religion, and take care not to offend him. It would be an outrage to their feelings for you to attempt to explain to them a passage from the Koran, or to say that you have a Koran in your possession.

"Pass in silence over their beliefs and superstitions. They will tell you all sorts of funny superstitions; and you should not agree, or disagree, or smile. Simply remark: 'That may be.'

"The so-called good Moroccan—who admires European things and possibly speaks Spanish quite correctly, and who publicly advertises his repugnance to his creed and takes alcohol freely—is, generally speaking, not the type of man to be very much trusted.

"In your dealings with Moslem authorities, show them consideration; but do not strike too great a note of familiarity with

them. They will not understand your condescension and will not fail to regard it as a sign of weakness.

"Look with indifference upon events as they happen; if you give too much praise, they will regard it as cringing.

"Don't talk about war; and if you do, avoid dwelling too much on their cooperation or praise their valor and loyalty. If you do not follow this advice, you will hear them saying later that success was due entirely to their help.

"Do not lend your presence too readily at festivities, banquets, or more casual entertainment in your behalf; because the invitation will, as a rule, be followed by some request for a favor.

"There is one thing in particular that the young officers must keep in mind. Upon arrival, they will readily find admirers. But do not abandon yourself to your vanity. Servility is only one of their modes of intrigue; and a Moslem is addicted to intrigue so much that it constitutes part of his character no less than the Yibala is a regular part of his dress.

"In cases of doubt or hesitation—and such cases are bound to arise for a newly arrived officer—it will be necessary to suspend judgment and consult.

"If the occasion arises, something will have to be done. If you make a mistake you will lose prestige. If you confess your ignorance, they will lose respect for you. Under such circumstances one must nonchalantly pronounce certain magic words which can be acquired from the natives and the purpose of which is to gain time. For instance, 'We shall have to see . . . But let me see . . . Tomorrow;' or simply make a promise, more or less as follows: 'Don't worry . . . things are bound to go right, if it is the Lord's will . . .,' and so forth."

Section II. BRITISH TRAINING AND USE OF DOGS.

1. INTRODUCTION

The United States, Great Britain, Canada, and Germany are among the nations that recognize the importance of training dogs for war duties. The extensive use of dogs in World War I, as well as the popular peacetime activity of training dogs to take part in obedience trials, provided a backlog of experience for the men who now must train large numbers of dogs for work in the field. In nearly all nations, dogs have been used in police work; their trainers are in great demand for the wartime emergency need. To mention an outstanding force, the Royal Canadian Mounted Police long have been expert at schooling dogs to search for evidence in criminal cases, apprehend the more desperate type of criminal, and locate missing persons in thickly wooded areas.

The British Army, especially, has been making great progress in the training of dogs for war work. The personnel conducting its Dog Training Center have been selected from men who were recognized as successful dog

trainers in civilian life. The following notes deal only with dog training methods used by the British Army.

2. SUPPLY OF DOGS

The breeds of dogs most useful for war work are the Alsatian, the Dobermann Pinscher, the Big Airedale, and the Rottweiler. The age at which their training generally starts is from 1 to 2 years; after this, a dog is likely to have acquired set habits, and consequently is harder to school. Inasmuch as civilians have been generous about lending pets for the duration, the British Army has had no trouble in obtaining an adequate supply of dogs. Incidentally, mongrels have proved so satisfactory for war work that no effort is made to secure pedigreed stock. The British have found that mongrels with a strong Alsatian strain make especially good candidates, because of their quietness, dependability, ruggedness, and speed at detecting a body scent.

3. TACTICAL USE OF DOGS

A dog is trained to perform only one of three specific types of work. It may be trained as a messenger dog, to carry messages from outposts to company or headquarters and return; as a patrol dog, to advance ahead of night patrols and to indicate by pointing the approximate location of any human beings in the line of advance; or as a sentry dog, to be stationed at such vulnerable points as forward machine-gun posts to indicate any hostile advance against the position.

4. TRAINING

a. General

Dogs are tested first for gun-shyness. About one-third of the dogs are rejected for failure to pass this test. Next, the dogs are assigned to their trainers, and are given about two weeks in which to become accustomed to them. The dogs are taught to recognize certain simple, easily distinguished commands. All trainers use uniform commands. Throughout the training period, the dogs are conditioned to ignore human beings seeking to pet them, and all wild and domestic animals, including other dogs.

b. Messenger Dogs

Each prospective messenger dog is assigned to two trainers. It is taught to shuttle back and forth between the trainers, and over gradually increased distances. As soon as the dog can perform this work satisfactorily, its trainers take it to the headquarters of a unit. One of the trainers remains at a fixed position at the headquarters, while the other takes the dog to an outpost with which communication is desired. When the dog is released from the outpost, it makes its way back to the unit headquarters and its other master. Afterward, the dog can be released from the headquarters to return to the outpost when necessary. A good dog will find the right man if he is anywhere within a quarter of a mile from the position where the dog last saw him.

Messages are carried in a hollow, lightweight leather collar. This collar is put on the dog only just before the

animal is released, and is removed as soon as it arrives at the other post. This is the psychological basis of the training. Each dog is taught to understand that whenever the collar is attached, a trip to the other master is required.

Experienced trainers need an average of 6 weeks if they are going to teach a dog to work with them in this manner. Some dogs have been trained to operate over distances up to 8 miles. Three-fourths of a mile to 1 mile, however, is the maximum distance over which they are expected to operate under service conditions.

Once a dog has been trained, only two weeks are needed to accustom him to work with new masters. The battalion, or other unit to which the dog will be attached, furnishes the new men, who come to the Dog Training Center to work with the animal for the two-week period before taking it back to the unit.

Little effort is made to develop a dog's speed at delivering messages. Instead, emphasis is placed on developing its dependability, and on teaching it how to get past a variety of difficult obstacles. The theory is that if a dog gets through at all, its speed is bound to be greater than that of any human messenger. It is also recognized that a dog has a tremendous advantage over a human messenger in crossing bad ground, negotiating obstacles, and presenting a small and difficult target to enemy fire.

c. Patrol Dogs

Patrol dogs are trained to pick up body scent, to point out the direction from which it comes, and to work in

complete silence at all times. They are used only at night.

During operations the master and his dog work several paces in advance of the patrol. If the wind is coming from a direction from which opposition is expected, there is a much better chance of success. Detecting a body scent ahead, the dog points, indicating the direction. The dog's master signals the patrol leader, who can either take steps to deal with the opposition or attempt to evade it.

A U. S. Signal Corps officer reports that during a demonstration he witnessed, two of these dogs picked out men hidden in woods and ditches at distances of 100 to 150 yards, and accurately pointed the direction. The experienced trainers were able to estimate the approximate distance simply by noting the degree of excitement shown by the dogs and the eagerness with which they tugged at their leads. Another officer, after working with a night patrol which had used a patrol dog, reported that the animal was invaluable in helping the patrol to avoid opposition while carrying out reconnaissance.

d. Sentry Dogs

Sentry dogs are assigned to fixed defensive positions, where they pick up the sound or body scent of anyone approaching and give instant warning. They have proved especially valuable in the defense of machine-gun posts. As soon as a human being comes within about 80 yards of a gun position, the dog gives warning. Sentry dogs also are used extensively in the guarding of airdromes.

Section III. RUSSIAN ANTITANK TACTICS

1. INTRODUCTION

The Russian Army had forced upon it in June 1941 the major portion of Germany's armored forces. The Russians were driven back several hundred miles eastward during the first few months of the campaign, but, at the same time, they were studying the German tactics. And in the fall of 1941, when the Germans made an all-out attack for Moscow, the Soviets put into effect certain antitank tactics that finally halted the German drive.

These tactics, in general, involve placing the various antitank weapons in considerable depth and supporting them with heavy artillery, infantry, and frequently with aircraft. They are designed to break up the massed attacks made at relatively weak points by German tanks.

2. VARIOUS METHODS EMPLOYED

a. Organization of Terrain

Selection of terrain which limits or prevents the maneuvering of tanks is a major factor in breaking up armored attacks. In fact, the Russians consider that denial of

maneuverability is half the battle—the enemy must not be allowed to choose his ground or the time of attack.

The Russian defenses against armored vehicles are based mainly on "islands of resistance" disposed in depth. More often than not, these areas of resistance are centered around towns and villages or other built-up places. The Russians acquired considerable experience in organizing defenses in towns and villages during the revolutionary and Polish campaigns of 1918–1921. Their facilities for such defensive activity have been increased since that time by the systematic training of women and children, who operate the aircraft warning system, help to organize the defenses, and sometimes act as snipers.

To consolidate a town's defenses, armed detachments of soldiers and civilians are disposed at strategically important sites. Stone dwellings are used for emplacing heavy machine guns, either on the roofs or through windows. Antitank and antiaircraft guns are emplaced so that they can be fired down roads or streets, along with machine-gun fire. Tank mines and barriers are placed along likely approaches. Barricades are constructed for street fighting in case a penetration should occur.

Over areas selected for defense against tanks, the Russians frequently construct thousands of X-shaped tank obstacles by crossing three pieces of heavy steel rails or beams, and by driving them partly into the ground or wiring them together on top of the ground. Tanks approaching these obstacles must either slow down or maneuver around them. Artillery is sited to open fire as the tanks approach the obstacles—which, there-

fore, serve much the same purpose as the British minefields in North Africa.

Well in advance of their defended positions, the Russians install thousands of prefabricated individual concrete pillboxes. These are moved on trucks to the areas which need them. Holes are dug into the ground according to a planned scheme, and the pillboxes are then dropped into the holes. The pillboxes are distributed in great depth along the main highways. They are arranged so that an enemy, concentrating on destroying a certain pillbox, encounters oblique or flanking fire from others.

b. Use of Artillery

The Russians rely on artillery as their main weapon in fighting tanks. They make particular use of an 85-mm dual-purpose gun. Other pieces used extensively include 76-mm and 45-mm guns.

Usually the artillery opens up with long-range fire against moving or assembling tanks. Barrages are employed to disorganize tank combat formations, to cause casualties, and to separate the tanks from the infantry and accompanying artillery. In addition to stationary guns, a mobile reserve of antitank guns is always available.

If the Germans are able to attack after the long-range shelling, the Russians do not put their antitank system into effect until the tanks cross their line of departure and break through the forward positions.

How the Russians emplace their 45-mm and 76-mm guns and fortify the areas where they are located are told

in the following article written by a Soviet artillery officer:

"Fortifying 45- and 76-mm gun positions is hard work, but it pays large dividends in combatting German tanks. Crews are taught not only to dig in and to camouflage quickly, but also to mine sectors in front of their batteries. When time permits, two or three alternate positions are dug for each gun and are used to confuse the enemy in spotting our gun positions. Artillery fire from these positions is also frequently imitated in order to draw enemy fire.

"Open positions are soon knocked out by enemy tanks or aircraft. Therefore, a platform with all-around traverse is built first. Beside it is dug a hole into which the gun may be lowered. Ditches, 1½ yards deep, for personnel and ammunition, are dug on each side of the platform. The hole and the ditches are covered with logs, poles, and a ½-yard thickness of earth to guard against shell and bomb splinters. About 2 to 3 yards from the emplacement, another ditch is dug—this one for reserve ammunition. In battle, enemy tanks and planes make it very difficult to bring up additional ammunition from the rear. At some distance from the gun positions, dugouts 3 to 4 yards long and 2 yards wide, with inclined entrances, are dug for the horses. These dugouts are covered with poles, leaving a gap 1 to 1½ feet wide to admit enough light to prevent restlessness.

"In the spring battles, the Red Army artillery was organized in depth. The 45-mm guns were emplaced on the front lines, and were protected by other antitank defenses. The crews were able to set up minefields in front of the gun positions, as well as obstacles, and also to lift the mines when necessary. In addition, each artillery battalion and, in some cases, each artillery battery, had a mobile reserve of 5 to 8 combat engineers equipped with 4 to 5 mines each. Their function was to mine unguarded tank approaches after the direction of the enemy attack had been definitely ascertained. These mines proved highly effective in stopping and even in destroying many enemy tanks."

c. Air Support

The Russians insist on thorough air reconnaissance to safeguard their forces—particularly infantry—from surprise tank attacks. If there is any possibility of a clash with enemy armor, mixed columns of infantry, artillery, and tanks are employed, closely supported by aircraft.

Russian close-support aircraft—including the highly respected Stormovik planes—often have achieved good results in attacking German tanks and other armored vehicles.

d. Use of Antitank Rifle

The following information about the use of the Russian antitank rifle was originally published in the Red Star, official Soviet Army publication:

"A Soviet artillery battery was on the march when the column was suddenly attacked by six enemy tanks. A Red Army private armed with an antitank rifle jumped off a caisson, took position behind a mound, and opened fire. He inflicted sufficient damage on the leading tank to cause the remainder of the enemy tanks to delay their attack for a few minutes. The battery was given a chance to deploy and open fire, and the surprise attack was beaten off. Four of the six German tanks were put out of action.

"In many similar instances antitank rifles have proved effective against enemy tanks. The light weight, portability, and rapid fire power of this weapon permit its crew to go into action in so short a time that it can cover units on the march, at rest, or in battle.

". . . The greatest success has been attained by squads consisting of two or three antitank rifles placed 15 to 20 yards apart. Such units can bring effective fire to bear on a target, and have

a greater chance of putting it out of commission than fire by a single rifle would have.

"In selecting positions for antitank rifles, detailed reconnaissance of the target area should be made, in addition to the usual local reconnaissance. Eliminating dead spots and protecting against the most likely routes of enemy tank approach are most important considerations. The positions should be echeloned so as to be mutually supporting with fire from the flanks. Antitank rifles in artillery batteries are generally grouped on the most exposed flank of the gun positions. In all cases, the squad leader should select his own position so as to have maximum observation and, at the same time, personally control the actions of the antitank rifles.

"In fortifying these positions, it has proved impracticable to construct emplacements with roofs because of increased visibility to the enemy air force and lack of 360° traverse. The best types of emplacements are open and circular in shape, with a diameter large enough to permit free movement of the crew for all-around traverse and to protect the gun and crew from being crushed by enemy tanks. Narrow communication trenches connect the gun positions with each other as well as with the rear. Both emplacements and trenches are constructed without parapets; the extra dirt is utilized in building false installations to draw enemy fire. It is practically impossible for tanks to spot such fortifications, and the rifles are able to fire on them for the longest possible time. Also, protection against aerial bombardment is increased.

"In the preparation of antitank fire, the rifleman should select five or six key reference points at different ranges, measure the distance to them, and study the intervening terrain. When actually firing, he should fire at stationary tanks whenever possible and not take leads at ranges over 400 yards. Aim should always be taken at the vulnerable parts, taking advantage of any hesitation or exposure of the sides of the enemy tanks.

"Antitank defense must be drawn up so as to protect the anti-

tank rifle units fully, by means of all available obstacles, mines, and fire power."

e. Recent Trends

Recent trends in Russian antitank tactics are discussed in an article appearing in the "Red Star." An extract from this article follows:

Correctly disposed and camouflaged, antitank weapons can and do stop the German tanks. One case of a recent battle is recorded in which three antitank guns of the regimental artillery held off 56 German tanks in an all-day battle and destroyed 5. Another case records 35 to 40 German tanks attempting to cross a river, over a single bridge. One well-placed antitank gun destroyed 5 German tanks and forced the remainder to seek other means of crossing.

Communication with the chief of the artillery unit, with the infantry commander, and with adjacent units is usually by radio.

All artillery and antitank defenses are subordinated to the sector commander.

No set rule can be laid down as to the density of antitank weapons on any sector. The system depends upon the terrain and the local situation. In general, there should be greater density toward the rear. An attack by a large number of tanks is met at the front lines by artillery and rifle fire. Then antitank rifles and destroyer tanks come into play. If the enemy tanks still break through, they run into tank obstacles defended by flanking and rear antitank fire. Soviet infantry at this point attempts to cut off the German infantry from its tank support. The enemy tanks then continue to run into tank destroyers and an increasing number of minefields.

Where Soviet tanks are used in the defense, they must not be pushed out front, but must be scattered to the rear and dug in to await a possible breakthrough, where they can do their best work.

Section IV. NOTES ON BRITISH ANTITANK TACTICS

1. REGARDING POSITIONS

a. In Depth

Like the Russians, the British are firm believers in distributing their antitank weapons in depth. This not only goes far toward preventing encirclement, but results in "smothering" the tank waves. Whenever possible, antitank defenses—including traps, obstacles, and mines—should be so located that enemy vehicles will be channelized, or caught in positions where they will be subject to flanking fire. The flanks of tank echelons, although often protected by accompanying artillery, are especially vulnerable, partly because the visibility of the tank gunners is severely limited and partly because tank leaders are instructed to dash forward and gain their objective even if this involves dangerous exposure of flanks.

b. Changing Sites

Once a gun has opened fire, its position is given away by the flash, which may be seen both by air and ground observers. Therefore, the only means of protection is a change of position. The coordination of such moves is vastly important, because even one change may upset or alter the defensive layout as a whole. The British recognize that more training is required in the reconnaissance and layout of positions, especially with reference to the selection and coordination of alternative positions. Also, the guns should be so sited that they are defiladed from enemy ground observation. To accomplish this, it is frequently necessary to dig pits for the guns, just deep enough to allow the gun barrels to have traversing room above the ground. Slit trenches are provided for personnel and ammunition.

c. In North Africa

In the North African campaign, the British usually boxed in their battle positions completely with mines, providing an all-around defense. Such minefields, according to American observers, are normally marked with a barbed-wire fence, usually consisting of one to three strands. British-laid minefields along the enemy front were well covered by automatic weapons, while the dead spaces in between were covered by infantry mortars.

The minefields were sited and laid by British engineers.

Other information obtained by our North African observers included the following:

"The normal fire unit is the single gun. Where possible, guns are sited so as to be mutually supporting. A favorite gun position appeared to be behind a slight ridge, defiladed from the front, exchanging fire across the front of a neighboring gun, which, in turn, fired across its front. Some guns, especially 47 mm, are sighted to the rear so as to catch the tanks in their engine compartments or thinner armored portions after they have passed.

"The decision to employ guns on portee or on the ground is reserved to the battery commander.

". . . A typical position for the 57-mm gun is a shallow emplacement similar in plan to the standard emplacement for our 37-mm gun (M3). A low parapet of loose dirt is built up in front of the gun, just high enough to permit the muzzle of the piece to swing through its maximum traverse. Deep slit trenches for the protection of the crew are habitually provided. Ammunition chests are likewise dug in. It was observed that in level, open terrain, such an emplacement provided a high measure of concealment, especially if the muzzle were fully depressed so as to rest on the parapet. By doing this, the characteristic shape of the gun was concealed . . ."

Section V. BRITISH INDOOR WAR GAME

1. INTRODUCTION

The British Infantry Company Commanders' School suggests that greater realism can be added to indoor war games by using two identical sand-table models in each exercise. This enables two groups to oppose each other, one on the offensive and the other on the defensive. The tables should be placed in separate rooms, preferably adjoining each other and as nearly sound-proof as possible.

Such an arrangement is a particularly good training medium for platoon commanders and squad leaders; it is stimulating in that two sides are actually pitted against each other. The procedure offers a wide training scope, because the instructor can take up with each group war problems extending from the plan of the platoon commander down to the detailed action of each individual soldier. To derive the greatest benefit, students should give their orders and otherwise conduct themselves as in actual warfare. Wearing of gas masks would give added realism to the exercise.

2. SUGGESTED PROCEDURE IN DETAIL

An instructor and, preferably, two assistants should coordinate the exercise. They act as umpires, with the senior instructor moving from one group to the other to explain each situation as it would appear to the other side and assess the fire effect and casualties.

Each side is given a written report dealing with the situation at the start of the exercise and the mission it is to accomplish.

Realism can be added by having colored pegs to represent the platoon commander, squad commander, and so on. Also, cotton or wool could be used to represent smoke and the burst of high explosives.

The instructors should keep students strictly to what is practical, reminding them when necessary of the factors of time and space in connection with transmitting information and executing their plans. Distances, ranges of weapons, visibility, and the existence of streams, banks, woods, bogs, railroads, and mire as antitank obstacles or otherwise, need interpretation to students until they have as vivid an impression of the country depicted by the sand model as they would have if they were on the ground itself. Emphasis should be given to the actual position of students and the exact routes taken when on reconnaissance. For instance, would they be riding, walking, running, or crawling? Are their weapons loaded? If so, what is the position of the safety catch? Would they use their binoculars? Would the sun reflect from their

celluloid map cases, and thereby give the enemy sniper an easy shot with his telescopically sighted rifle?

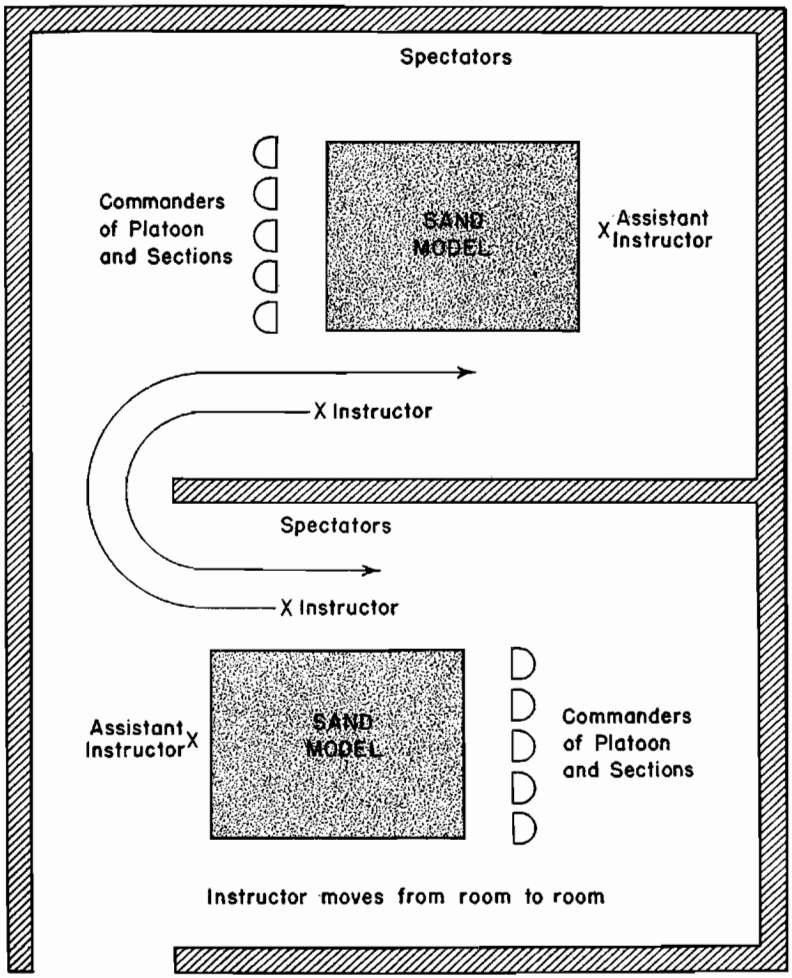

Figure 7. Sand Model War Game

The instructors should see that the following points, among others, are brought out:

a. By the Attackers

(1) The plan and orders of platoon and squad commanders;
(2) Routes of advance and formation;
(3) Position of antitank rifle, mortar, and Tommy gun;
(4) Action when fired on;
(5) Use of smoke;
(6) Action on reaching objective;
(7) Withdrawal (if applicable);
(8) Messages.

b. By the Defenders

(1) Orders by platoon and squad commanders for occupation of position;
(2) Orders regarding the digging of weapon pits;
(3) Concealment of squad posts and fields of fire;
(4) Antiaircraft protection;
(5) Antigas protection;
(6) Position of platoon headquarters and platoon weapons;
(7) Covering of road blocks;
(8) See that squad leaders know the position of platoon headquarters, that they know who is on the right and left, and that they prepare range cards;
(9) The position of wire (if applicable).

c. Regarding Administrative Duties.

(1) Ammunition supply;
(2) Evacuation of casualties;
(3) Feeding;
(4) Provision of spare clothing;
(5) Position of platoon truck;
(6) Latrines;
(7) Duty rosters;
(8) Organization of platoon for work.

The instructor and his assistants should see that the action is not slowed up—the tempo should tend to increase toward the end of the exercise. To help achieve this result, the instructor can allow the student less time to take action on the information he brings them dealing with the movements and actions of the opposing sides.

The height of interest is reached at the conclusion when both sides are brought together, and the instructor points out the dispositions of the opposing forces on the respective sand models and relates the moves and counter moves made by both sides during the exercise.

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February 1943

MILITARY INTELLIGENCE SERVICE
WAR DEPARTMENT

● Readers are invited to comment on the use that they are making of the *Intelligence Bulletin* and to forward suggestions for future issues. Correspondence may be addressed directly to the Publications Branch, Dissemination Group, Military Intelligence Service, War Department, Washington, D. C.

MILITARY INTELLIGENCE SERVICE
WAR DEPARTMENT
Washington, February 1943

INTELLIGENCE BULLETIN
No. 6
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NOTICE

The *Intelligence Bulletin* is designed primarily for the use of junior officers and enlisted men. It is a vehicle for the dissemination to them of the latest information received from Military Intelligence sources. In order to secure the widest possible use of this bulletin, its contents are not classified. It is for the exclusive use of military personnel, however, and no part of it may be published without the consent of the Military Intelligence Service, except in the case of Task Forces and Overseas Theaters of Operation. Commanders of these organizations are authorized to reproduce any item in the *Intelligence Bulletin,* provided they maintain the classification of the information and give its source.

It is recommended that the contents of this bulletin be utilized whenever practicable as the basis for informal talks and discussions with troops.

"Fools say that you can only gain experience at your own expense, but I have always contrived to gain my experience at the expense of others."

—Bismarck.

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PART ONE: Japan

Section I. DOCUMENTS DEALING WITH JAPANESE WARFARE

1. INTRODUCTION

All the information given in this section was taken from translations of Japanese documents of various types; most of them were written within the past few months. They deal almost exclusively with warfare in jungle areas. In some instances, the information has been rearranged or paraphrased in order to make it more logical and readible.

2. APPROACH TACTICS

After having passed through the enemy lines, and while making a reverse turn in the jungle (attack from the rear), absolute secrecy is still essential to success in attacking the enemy. Each unit will bear this in mind, and will see that each individual soldier clearly understands our plan of attack.

Special precaution must be taken in regard to the following points:

a. Cooking operations must be carefully concealed, both day and night. Cooking must cease at least 1 hour before daybreak,

and the fire must be extinguished completely. In going to a river for water or bathing, it is necessary to select the naturally concealed places, or to camouflage a place from enemy air observation.

b. During the approach in thick forest, liaison is made chiefly by telephone and messenger. Prohibit the use of radio. These methods are to be changed only after the attack is started.

c. If the approach is along a road, the road should be wide; if not, remove the weeds near it. However, do not let the changes become visible from the air. Units making a round trip should strictly enforce rules for passing on the left flank, and should prevent delay in the advance.

d. Do not make the forest thin by such action as would damage the large trees near roads and bivouac areas.

e. Progress through clearings and open places in the jungle must be made swiftly and in an orderly manner. Again, when enemy planes are overhead, the unit is required to stop temporarily, even in a forest, if there is any possibility of being observed.

f. It is necessary to take precautions against talking out loud or shouting, even in the forest, because of native spies, enemy sound detectors, and enemy scouts. This is especially the case when close to the enemy position. Again, if the natives are being sighted, it is necessary to kill them immediately.

g. During the movement of each unit, it is necessary to organize an observation party to carry out strict supervision and observation of this movement and to take various other precautions.

h. The approach-march speed of units in the forest must be the same as that of heavy fire weapons. Include in original plans the sending ahead of time of a supply of ammunition and a 12-day supply of provisions.

i. It is necessary for each unit to secure close control in thick forest, using rest periods to reassemble the main force.

Particulary because of soldiers being delayed and falling out of rank, it is necessary for leaders to keep strict supervision.

3. DEPLOYMENT TACTICS

a. The commanders (accompanying an advancing construction unit), together with engineer personnel, will go to the jump-off position being prepared for the division, and will select and mark the sectors to be occupied by the various units. Especially try to scatter each unit involved in the initial fighting, selecting good camouflaged positions. You must take all precautions against enemy discovery. In case you are discovered and receive shells from the enemy, you must be prepared to take any measures necessary.

b. Then each front-line commander will reconnoiter his terrain in preparation for advancing, will indicate the nature of routes to be taken, and will select the next stopping place (deployment line).

c. Movement of the main division force to the jump-off position must be made one night before the day of attack. It is very important to carry out these instructions without confusion, shortening the day of readiness in front of the enemy as much as possible.

d. Each infantry regiment in the division jump-off position (generally about 3⅔ miles inside the forest) will make a deployment. Then each battalion in the first line will select a battalion deployment position, temporarily on a line generally about 1½ miles inside the forest. Deploy after advancing to this line on the route which is already constructed, and again prepare for attack.

e. Each company on the first line will naturally have the approach route open up to the time the battalion advances into the jump-off position, and will approach to approximately 1½ miles from the edge of the forest (same as the battalion deploy-

ment line) and make a deployment. Then the preparation of the attack will be made. Afterwards, a leader is required to make a reconnaissance before the attack. Hereafter, at dusk, you will advance to the line at the edge of the forest; if necessary, crawl through the jungle zone, and immediately rush on to the enemy position after giving the signal.

As it is best for each flank unit to make a rush at the same time, the time should be regulated. Therefore, consider the distance of the forest line and plan for a simultaneous rush.

f. When approaching the enemy, the possibility of encountering enemy patrol and security units must be taken into consideration. It is necessary to annihilate them, as far as possible, and not make any errors. It is necessary to make plans for immediate annihilation of lookout facilities and microphones of enemy artillery organizations when they are discovered.

g. During an approach to an attack, each commanding officer must take the responsibility for maintaining the direction of advance and make the line of development parallel to the enemy line. Even though there are times when enemy fire is received, it is necessary to control the subordinates and not let the unit become confused.

4. COMBAT TACTICS

a. Control of units is the key to successful attack in a dense forest (jungle). When each flank unit makes a rush at the same time, as one group, no matter what the position may be, it can be taken.

b. Flanks of enemy positions can easily be discovered by light tracer bullets. Therefore, every effort should be made to rush from the flanks. It is also very important to assault by immediately chasing the retreating enemy without stopping. When the enemy has observed our assault, he will retreat and concentrate his fire on the point just evacuated. At this time give a

part of the unit the previous duty (the assault), and make a suicide attack into the enemy positions, especially at the antitank gun position. Attack the remaining enemy with mopping-up action. It is very important to make a complete annihilation by dawn.

c. The enemy is very fearful of our assault, and each unit has a tendency to gather into groups. Against such an enemy, hand grenades are very effective.

d. The units rushing the area around an airdrome must try to avoid setting equipment on fire or spilling gasoline. Shoot at the rubber tires and not at the engine of a plane.

e. When advancing to an attack through a dense forest, take precautions on open ground as there may be cases when there is a zone of concentrated enemy fire.

f. When a large number of enemy prisoners are taken during the progress of combat and are looked after by small groups of guards, it is best to take away their weapons and remove their shoes.

g. Take measures to prevent attacks on the left, right, front, and rear of the friendly force. Moreover, carry out the signs of the commanding officer and select each ranking officer to carry out controlled leadership, taking precautions to maintain the thrust to the end.

5. OBSERVATIONS OF JAP OFFICERS

This paragraph consists of tactical opinions given by all officers of a Japanese battalion—after they had experienced considerable combat against United Nations forces in Southwest Pacific islands. A preface to the document stated, "Each unit creates necessary devices, based on these opinions, after considering the enemy combat methods."

a. Marching Through Jungle

(1) Leave some distance between the engineer unit and the units that follow. Moreover, have liaison men advance at least 200 to 525 yards ahead.

(2) The leader at the head must always allow for deviation of compasses.

(3) It is advisable to assemble each unit when resting, as it is customary to march over the road in single column.

(4) Because jungle units carry lights, the commanding officer must advance his unit by leaps and bounds from one defiladed area to another.

(5) The engineer unit must regularly report to the commanding officer in the rear regarding the status of preparations and terrain features at the front.

(6) Camouflage of each individual and each gun must be thorough. Moreover, when crossing a grassy plain, camouflage by using the grass.

(7) If enemy planes are overhead while you are in a grassy area, lie prone in the tall grass and hide the body by placing grass over it with both hands.

(8) Generally, infantry assistance is necessary for heavy weapons units. The minimum is one platoon for a machine gun and one platoon for an infantry battalion gun.

(9) The rate of march for a unit during a day should be about 4 to 6 miles.

(10) It is advantageous to select a route where water supply is possible.

(11) Although it is best to relieve the engineer unit each day, the leading officer in the front should continue his duty.

(12) When bivouacking in the jungle, it is best to begin sleep at 3 o'clock. Cooking must be performed at the last resting place before reaching the bivouac area, which should be completed before the units arrive. This is safe and also tends to hide the biv-

ouac area, making it difficult of discovery by enemy planes (at least two men from each squad should be sent forward to prepare the area).

(13) Be at ease while cooking. Use "marsh reed" and bamboo to make fires. It is necessary to cook in several places, not just one. Moreover, it is important to be ready to put out fires immediately in case enemy planes should appear.

(14) During this military operation, there was never a time when we were discovered by enemy planes while in the jungle. It is significant that enemy prisoners never move, even at night, when planes fly over.

(15) When in flat country, the commander should be in the center of his unit. When on a hill, he should be at the highest point.

b. Night Attacks

(1) Never be overconfident with aerial photographs, especially those taken before enemy occupation, because he will make changes. Pictures of areas directly to our front are extremely necessary for the execution of the attack, and they should be distributed at least down to the first-line assault company. This is especially necessary when maps are not available.

(2) It is important to have sufficient time to move into a jump-off position for an attack. Going long distances to an assault without eating on the way will only tire personnel.

(3) It is advantageous to use as leaders the fatigue personnel of the navy and the present area guides.

(4) It is very important to consider the effective zone of enemy artillery and mortar fire. If units are rushed into the jump-off position when the enemy artillery is not neutralized, useless damage may result. Only the cadre should advance, and it is ideal to set the time for departure of attack about 10 minutes beforehand.

(5) If artillery fire is not received, it is best to assault without

hesitation because heavy losses may result if time is spent in idle complaints.

(6) Most of the fire from enemy positions consists of light tracer bullets. Therefore, the enemy line becomes clear and distinct. It is impossible to attack the front or to assault with a large force. It is important to send one or two squads around to make an assault on the flank. To make a simultaneous attack, wait for an opportune time and then yell. The noise is very successful in demoralizing the foe.

(7) If a rush is made into the enemy firing line, concentrated enemy artillery fire will always be received; therefore, it is best to rush only when close to the enemy. After penetrating the firing line, engage the scattered enemy soldiers again. Therefore, it is necessary to leave one unit (one squad) behind to carry out the mopping-up work.

(8) It is very important for the cadre and men to immediately cut communication and liaison lines within a position.

(9) There is an inclination for the subordinates to scatter by themselves when concentrated enemy fire is received, and it is necessary to mark the position of the company commander and control the men (subordinates) for a wholehearted assault. Moreover, give the men a positive reason for, and an outline of, the company's conduct of battle. It is also necessary to place in each group someone able to use a compass.

(10) The majority of losses are caused by artillery and by pursuing gun fire. Therefore, when they cannot be neutralized, it is necessary for a plan of suicide occupation. In artillery positions there are many automatic weapons with formidable protection, and other strong establishments.

(11) There are many dead spaces within the enemy position. Give the first-line unit adequate front to investigate the dead space and use this to expand the success of battle from the rear and to the flanks. It is also advantageous to assault. In general we do not investigate dead spaces skillfully.

(12) Complete silence is necessary, since concentrated fire can be received even within a position.

(13) Do not use radios, because fire will be concentrated in their vicinity.

(14) The liaison between regimental and battalion headquarters must be carried out by wire, orderly, and other means.

(15) The control of soldiers' voices and markings for commanding officers is inadequate. Therefore, it is necessary for thought to be given to these matters the day before the attack begins.

(16) To carry on the battle after daybreak, the heavy guns must advance during the night—advancing over long distances after daybreak is impossible. A section of the heavy gun cadre must advance behind the first line, reconnoitering the route of advance, and have the unit in the immedate rear pay strict attention.

(17) The enemy usually fires on our jump-off position all night long. It is necessary to advance to the front of the rear unit during a lull in the firing.

6. NOTES BY A MARINE COMMANDER

The information in this paragraph was taken from a Japanese bulletin, prepared by a Marine (Naval Landing Party) commander and designed especially for unit commanders of Marine forces. The bulletin apparently was written before the Japanese met severe opposition in the Southwest Pacific Islands.

a. Handling Personnel

Would you throw away the lives of your men, who have been placed in your keeping by the Emperor, by recklessly sending them on a frontal charge in the face of the enemy fire and ignor-

ing your own shortcomings in leadership and strategy? As a commander, bear this well in mind.

In a word, your object must be to attain the greatest results with the smallest sacrifice. If you order your men to advance, they will obey you in any circumstances and at all times. But remember that before doing this, you are to take the minutest precautions. Do not forget to explain to your men, as carefully as if they were little children, how and in what direction to advance, the places to watch, and what to do when shelled or attacked by hand grenades.

For example, how many men would have come through unscathed if they had been ordered to "lie down until your head is on the ground." This may sound like a graceless criticism of men who have given their lives, but I believe many men have become casualties through their own carelessness and want of caution. It is true that we have dedicated our lives to the nation and will not begrudge them at any time, but we want to accomplish something by our death—not die uselessly. We want to die gloriously. We hope for a death worthy of a Samurai . . . and we owe it to the men under our command to enable them to do likewise. If you do this, as the commanders of a unit, your mind will have a measure of peace.

In maneuvers, we have always had it emphasized that we must get a grasp of actual conditions. During the battle of east Hwatelo (in China) a certain unit commander boasted that he had decided to make a charge, and thereby greatly embarrassed his company commander. I believe this was a case of blind decision. We had been ordered by the battalion commander to strengthen our position and defend it to the death—this meant, if your arms are broken, kick the enemy; if your legs are injured, bite him; if your teeth break, glare him to death. This spirit is expressed in the words "defense to the death." The time to launch a charge is when the enemy has reached the limit of exhaustion, as laid down in the manual. In defense, we believe that if you can

hang on to a position with one light machine gun, one platoon can successfully crush the enemy.

The unit commander must not give up hope or make pessimistic statements. In a battle, always remember the "4 to 6 ratio"—if 4 of our men are knocked out, consider that we have got 6 of the enemy. Whatever may be our own losses, strive to keep up morale. The more violent the fighting, the calmer and firmer must be the commander's bearing, orders, and words of command. It is also important, in the interest of morale, not to let the personnel of the unit know the number of killed and wounded, or their names. Heavy enemy shelling also affects morale, and sometimes troops will not fight as they should. The effect is still more marked when there are casualties.

Some young soldiers think it heroic to expose themselves to the enemy. Take care of this, particularly in a battle of positions.

When fighting is protracted, there is a tendency to get accustomed to the enemy, and relax vigilance against enemy fire and hidden enemies. We have been sniped time and again. Pay particular attention to this.

b. Pointers on Close Combat

Too long a halt in the same area will result in drawing concentrated fire from the enemy, and is inadvisable. The proportion of hits from bullets is smaller while you are moving than when you are stationary. In a charge, if you meet concentrated fire from the enemy at close quarters and lie down and stay glued to the same spot, you cannot advance. Also, the longer you halt, the more your will to advance is blunted, and the greater your casualties. Therefore, charges must be made with determination and daring. A daring and determined attack is the key to victory.

In a charge, the platoon commander must be at the head, as indicated in the manual. The charge is the moment when hardship and fatigue reach their climax, from the commander of the

unit down to the last man. At this time, if everyone is determined to carry out the unit commander's orders without hesitation, and if the platoon commander advances at the head of his men, the spirit of daring and solidarity aroused in the company will enable them to penetrate the enemy position.

"After victory, tighten your helmet strings" (an old Japanese proverb). After fierce fighting, or during a pause in the battle, the mind is apt to relax. This is the most dangerous moment. Even men who are daring and determined during a charge have a tendency to be cowardly as soon as the fighting changes to mopping-up operations, and only scattered fire and small numbers of enemy troops are encountered.

c. Use of Machine Guns

In a naval landing party (Marines), there is virtually no necessity for a machine-gun company. It is preferable to include in each company a machine-gun platoon under the command of the rifle company commander. From the nature of a naval landing party, there is practically no occasion on which a machine-gun company joins in the action as an independent unit with its six machine guns. As a rule, each platoon is detached, and is organized under the rifle unit company commander. This is particularly true in the case of street fighting and fighting at close quarters. Even if a machine-gun company were independent, it would be difficult for it to put up a vigorous fight without the support of the rifle units. Nowadays machine-gun squad training is the main consideration in machine-gun training, and the need for machine-gun company exercises is not particularly felt.

All machine-gun personnel, with the exception of the gunner, must be armed with rifles. This is especially necessary in street fighting, fighting at close quarters, and so on. Even when attacking and advancing, the carrying of rifles never impedes the advance. In case of an enemy attack, it is easy to make a

sortie with the machine-gun ammunition personnel. The ideal rifle for machine-gun personnel is the 1911 model carbine, which is nearly 12 inches shorter than the 38-year type, model 1905.

d. Miscellaneous

The gun loopholes of a position must always be screened with pieces of cloth or matting. If the enemy can see through them, his snipers may fire at them, or he may concentrate his fire on them. This is particularly necessary in the case of openings for heavy machine guns, which must be large on account of the angle of fire.

Even when an action is going on, arms must always receive proper care; otherwise numbers of such arms as rifles, care of which is apt to be neglected, will be found red with rust. It must be impressed upon the men that exchanging fire with the enemy is not the only battle—taking proper care of arms is a great battle in itself.

7. NOTES ON DEFENSE

This "Outline on Defense" was dated Sept. 1, 1942, and was distributed on at least one Southwest Pacific Island.

Special attention should be given at this period to the following matters concerning defense:

a. Selecting a Position

When selecting a defensive position, bear in mind that the enemy in attacking may not establish an extensive field of fire, but may concentrate fire power in a surprise attack from extremely close range. Special consideration should be given to concealment from the air.

b. Disposition

The enemy will approach through the jungle and may attack from all sides, especially from the rear. As a counter measure, deploy all units, from squads to regiments, in circular formation, changing the original frontal positions as the enemy advances.

Utilize oblique and flanking fire to the fullest effect.

c. Construction

(1) To the extent that time permits, construct strong defensive works, including shelter if possible. (Australian methods are most incorrect.)

(2) Provide positions for grenade dischargers, light machine guns, machine guns, and other appropriate heavy firearms. Depending on the enemy situation, either fire in the anticipated direction or hold your fire to avoid disclosing your positions and inviting destruction.

(3) Various types of obstacles should be constructed within the jungle where they will be least expected by the enemy, thereby affording opportunity to strike the enemy at selected places.

(4) Establish ammunition dumps in locations affording maximum protection from detonation by enemy bombs. When storing large amounts of ammunition, construct dumps in several places.

(5) Endeavor to deceive the enemy by constructing dummy loopholes, dummy soldiers (with steel helmet, knapsacks, and so on), and dummy trenches.

(6) Each squad should look after its own water containers, making full use of empty cans abandoned by the enemy.

d. Various Other Preparations

(1) Use every means to secure as much ammunition as possible. The company in particular should utilize captured weapons to the

best advantage (especially automatic rifles, captured ammunition, and hand grenades).

(2) Consider the fire sectors covered by rifles, light machine guns, hand grenades, and so on. Do not omit the preparation of hand grenades.

(3) Allow the enemy to approach very close, then fire calmly at individual targets.

(4) Use ammunition sparingly if it should become scarce.

(5) Do no make a sortie or counterattack heedlessly, simply because the enemy has approached. Such actions may have immediate advantage but casualties will soon result, and it will be difficult to maintain the position. Remain calm as the enemy approaches, and fire to annihilate.

(6) Pay close attention to sanitation, considering the length of time your position will be occupied.

(7) Make certain that adequate provision is made for drainage of quarters, water supply installations, lines of communication, and so on.

(8) In the absence of the enemy, assign one section as lookouts.

8. INSTRUCTIONS TO LANDING PARTIES

a. When Opposed

When opposition is expected, it is best to begin operations before dawn so that occupation is possible at dawn.

Make your landings with the boats in column formation. Or, if the situation demands, use the line formation.

If the landing point is steep, dash under the position so that you will be under the angle of fire.

b. Procedure After Landing

(1) All white troops and police will be captured. In case they resist, they will be killed by shooting and bayoneting.

(2) All white persons and Chinese (including women and children) will be thoroughly searched and all arms confiscated. They will be assembled and confined in a suitable place.

(3) As it is difficult to distinguish Germans and Italians from other whites, they will all be confined together.

(4) Native policemen will be disarmed and confined; however, since they are to be used later for police work, they should be treated with consideration.

(5) In case there are any Japanese, they should be released at once.

(6) Beware of small land mines, especially in the vicinity of the pier.

(7) Do not stupidly drink water or eat anything, as it may be poisoned.

(8) Installations, machinery, goods, and so on will be used later, so do not willfully destroy them.

(9) All radio equipment will be confiscated.

(10) When searching persons, all notes and other written documents must be confiscated, and their contents inspected. The necessary steps will be taken so that at a later time the holder of each document may be identified.

(11) Be especially careful not to destroy furniture, water tanks, ice boxes, safes, and so on.

(12) Cans of food and other useful things should not be punctured with the bayonet in order to inspect them.

(13) It is forbidden to waste food and other material willfully.

9. SECURITY MEASURES

Concerning the secrecy of the battle plan, the following items must be understood thoroughly:

a. During the daytime, there should never be any cooking;

b. Absolutely do not expose any bright lights, even though you are handicapped by darkness:

c. Do not throw any fording materials in the river;

d. Do not talk loudly;

e. Since the natives in this area are not trustworthy, soldiers must not discuss troop movements;

f. Do not use native roads;

g. Do not say "Oi Oi" (English equivalent of "hello"), as this shows that one is not well mannered.

10. REGARDING U. S. SOLDIERS

a. They do not like the jungle at night;

b. They fear our night attacks, especially our battle cry;

c. They use grenades within their positions;

d. Their artillery uses one "leading" shell out of every five shells;

e. They do not make sorties while in a defensive position, and they respect our fire power.

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Section II. EXTRACTS FROM DIARIES

1. INTRODUCTION

These extracts are presented primarily to show how the Japanese react to our attacks, and to give their version of the results we have obtained. The names of the Japanese who have written these diaries have been omitted. The extracts are presented in the order of their dates; each subsection represents a different diary.

2. THE EXTRACTS

"April 18.— . . . Enemy planes dropped bombs and strafed us with machine-gun fire. Our antiaircraft guns and machine guns fired fiercely but were unable to score. Three planes pursued them and disappeared in the volcanic smoke. After that, looking toward the west pier, a cloud of dark black smoke was rising. The blaze looked dreadful. Looking carefully at the blaze, the mast of a ship could be seen directly in front. So I knew, for the first time, that the ship (navy transport ship *Komaki Maru*, 8,500 tons) had been hit by a bomb. In a little while, a truck with many casualties came to my post and inquired the way to the hospital.

"After returning to the tent, I listened to stories from each sentry who had returned. The ship had arrived yesterday, loaded with many bombs and much ammunition, and was to have been

unloaded this morning. At about 1100 hours, the entire ship was wrapped in flames. The ammunition exploded violently, and it was dangerous even to approach the vicinity. All the ships that were near changed their anchorage. Since it would not do to leave it a target for enemy aircraft, the patrol ships and cruisers which were staying in the harbor fired upon the burning ship to sink it, but their projectiles could not hit below the water line because they were so close. The noise caused by the explosion of the projectiles and the rise of flames sky-high in the darkness made a gruesome scene. Even after all of us had prepared for bed, there was noise and vibration that seemed to crumble heaven and earth. Perhaps this was the explosion of the ship's magazine. . . . For the first time, the mighty force of the bomb was known.

"At this place, there are, it is believed, approximately 9,000 prisoners. They must all be very happy after seeing today's bombings. Among them there were some who clapped their hands. All the members of my unit who heard this agreed that it was better to kill them off one after another. . . . However, if we changed places and were in their position, we might also be as happy as they. I guess it is natural to be happy. And yet, knowing that the prisoners were happy, I presume it is natural to say 'Finish them off'."

(Marginal note.) "The stern of the ship exploded and sank. Just the tip part of the ship remained above the water. A little after 1900 hours, there was a great reverberation. Probably the big bombs which were loaded on the stern exploded all at once. Immediately platoons No. 2, No. 3, and No. 4 assembled their emergency unit members. We fell in immediately and climbed into the cars in groups. It appeared that fire from the ship had spread to the warehouse, which was on the right bank. Upon going there, we saw that burning fragments from the explosion had dropped on the warehouse. All at once, the situation was critical, because there were considerable provisions and ammunition within, and all around the vicinity there were moun-

tains of all kinds of gasoline and oil. The ammunition exploded repeatedly, fuel fires flared up, and the area was a sea of flames.

"The crude oil that surged up from the hold spread on the sea surface and burned furiously. Furthermore, the wind fanned the flames. The disastrous scene was gruesome and undescribable. Many times, I have seen pictures in the news of bombed and exploding oil tanks, but actually to see it is a horror utterly beyond imagination.

"April 19.—Just as I was thinking of gaining some much-needed sleep last night, I was asked to go on fatigue duty for No. 4 Company, so I hopped on a vehicle and hurried to the company area. At the place, one of the barracks was blown in half. The soldiers carried their government issue articles, personal belongings, and various kinds of weapons and arms to the material storeroom. When I went to the destroyed place, the trees and leaves were in fragments. Below was a big pool of blood . . .

"The company commander and platoon commander gave orders, one after another. However, it seems as though everyone's face had forgotten how to smile. For a while, each one seemed to have forgotten the work, and, without a word, just stared. After being scolded by the platoon commander, they started to work silently. It was the work of cleaning up the debris. Even the injured worked.

"The badly wounded were said to have died . . . Two died instantly. One barely lived on the way to the hospital and died. Without a doubt, life is beyond determination. Thus, it is probably quite regrettable to die now without killing even one enemy. They probably did not die happily. This also is fate . . ."

"June 11.—In the afternoon, while wearing full equipment, we practiced sliding down rope ladders in preparation for landing operations. Reduced the time for completing the operation from 2 minutes on the first attempt to 1 minute on the second try."

"Aug. 13.—Natives brought us nine Australian prisoners—five men, three women, and one child.

"Aug. 14.—About 0800 hours, we decapitated or shot the nine prisoners."

"Aug. 24.—Our plan to capture Guadalcanal Island came unavoidably to a standstill, due to the appearance of the enemy striking force. In order to give quick assistance to our men and officers, and to stimulate the morale of the Imperial Forces and the national prestige, also because of the fact that it is a very important place for our Imperial Forces, it was decided that the attempt to capture will be carried out tomorrow, the 25th. Disregarding the enemy air attacks, we advanced straight ahead, crossing the equator to the South Pacific Ocean. Today we had three enemy air attacks but suffered no damage. Moreover, the uneasiness of voyages and escort was greatly reduced with the reinforcement of our light cruisers. It added to our display of power.

"Aug. 25.—Six enemy planes attacked our convoy at 0605 hours, while officers and men were smoking and resting on the top deck after a hasty breakfast. The first bomb scored a direct hit on the flagship *Jintsu*. Her bridge was in flames. We were ordered to the upper crew's quarters, but our ship also suffered a direct hit on the bridge. I escaped to a corner of the crew's mess hall. Though I lost control of myself because of the fire caused by the explosion, I only sought for a safe spot. That short and fierce bombing has caused great confusion on the top deck; I still fear an aerial attack. The fierce fires increased greatly in the interior of the ship, and all members prepared the metallic raft. Fearing an explosion in the ammunition stores, they drifted quickly away toward the South Seas.

"Although our men and officers were rescued by patrol boats from the convoy and felt relieved for a while, the enemy attacked us again. They bombed our convoy but we escaped. We who

have been through these attacks can scarcely believe that we have survived such fearful and difficult experiences.

"Our casualties were great. The *Kinryū Maru* received two direct hits and sank. Observing this gave me a feeling of deep emotion. For the Landing Party, August 25 was one of the most dangerous days and must be remembered as our resurrection day."

"Sept. 2.—Stuck fast in the jungle. Our unit could do nothing. In the afternoon, one enemy light cruiser and one transport came brazenly into port during broad daylight. Evidently they brought troop reinforcements. At night there were many hits from the enemy trench mortars. We at the front realized this was the end and made up our minds for death.

"Sept. 3.—The situation became worse. We retreated with our telegraph set. On this date, it seems that the front-line units were completely annihilated before noon."

Sept. 20.—While we were marching, enemy planes dropped bombs in the rear and then machine-gunned us. After this the planes attacked us without a let-up.

"Sept. 21.—Day of rest to ready for the trip back. Thirty-six men out of 238 have malaria.

"Sept. 22.—The enemy has 40,000 troops, mostly Australians. For that reason their fighting power is great. On account of the second Coral Sea battle, our Navy is unable to carry out a landing at Port Moresby. We must wait until about November before another force is organized. There is no replenishment of the food supply, which is enough for only one more day. A food detail went out today, but 7 to 9 days will pass before their return. What to do for the men and patients is a serious problem. We have no medicine for malaria, wounds, and colds. Patients merely wait for death, or for natural healing."

Sept. 25.—When on the way to attack Guadalcanal, on the *Kinryu Maru*, a great fire was started by enemy aircraft. Twenty were killed and several wounded.

"Sept. 29.—As if waiting for the day to come, the enemy planes circled overhead, looking for people to strafe. It is very fierce and the soldiers can do nothing about it. The strafing planes come 6 or 7 times during the day, so our troops suffered considerably. We are awaiting the end of daylight on the 29th. This is our very last general attack. At first we were able, to our surprise, to advance, but as we neared the enemy airdrome, the counterattack became as violent as death.

"The enemy uses light and heavy machine guns and various modern weapons.

"The enemy's camouflage is truly efficient. We have found it hard to discover the enemy, and have suffered unexpected losses. At over 500 meters (nearly 550 yds.) his camouflage cannot be distinguished, and great care must be taken. Training against camouflage should also be carried out.

"Heavy enemy shelling greatly affects morale, and sometimes troops will not fight as they should. The effect is still more marked when it results in casualties. Unit commanders must strive to stimulate morale, and be careful of their own actions and attitude. (At such times the men always watch the expression of their commander's face.)

"When under enemy fire, there is a tendency to fire light and heavy machine guns at random, without looking at the target. The commander must strictly maintain fire discipline.

"Grenade throwers are most effective in striking terror into the enemy. However, a disadvantage is that their range is only 250 meters (about 275 yds.), and so there are few opportunities of using them.

"Before going into action, succession of command must always be clearly indicated. Unless this succession is defined right down to the last soldier, and training carried out until this becomes

practically automatic, fighting may become confused if the unit commander becomes a casualty. When the unit commander is killed or wounded, the effect on the personnel is extremely great, and morale tends to decline. On the other hand, even if one man after another is killed, and the situation is tragic, if the men see their commander's face full of vigor, their courage increases a hundred-fold.

"Patrols must not return the enemy's fire. Some patrols have penetrated an enemy position until they heard voices, and although eventually challenged and fired upon, have kept themselves hidden and carried out their mission. Some of the enemy understand the Japanese language. Take care not to be deceived by the call 'Dare Ka?' (Who goes there?)"

"Oct. 6.—After reporting to the unit commander, I talked with the adjutant and obtained much information. It seems that the unit will depart tomorrow night to occupy the enemy advance position. Before and after the departure many caught fever. Many officers in the regimental headquarters and the battalion headquarters died of fever. There are 20-odd patients in our company. In the platoon, 13 persons were overcome by fever and only 35 persons remained healthy. This is a ⅓ decrease in strength. The sickness is more dreadful than enemy bullets.

"Oct. 7.—Last night we started the advance and arrived at Matanikau River. And, we are engaging in the defense on the left bank area after relieving the 12th Company of the OKA Unit. Early this morning enemy planes circled above us on reconnaissance. In the afternoon, there were fierce gun fires from the enemy artillery, and bombing and machine-gun fires from the enemy planes. We had many casualties.

"Oct. 8.—The bombing from the enemy planes was continued until dark. I talked with the unit commander and decided to stay in the present area. In the morning it was the same as yesterday,

but there also was fierce enemy bombings during clear-weather periods in the afternoon. By the battalion order, we decided to retreat, and we carried out the tragic retreat.

"Oct. 9.—The 1st Company also carried out the retreat from a hill. We assembled our strength in the position of the battalion headquarters. The shells from enemy trench mortars dropped in the center of the troop concentrations, and we fell into confusion. As contradictions occurred successively in the division order, the detachment order, and the regiment order, we suspended the night attack upon the agreement of Unit Commander Tamuma and Unit Commander Unoi, and endeavored to concentrate the troops. The shells from the enemy trench mortar dropped near us, and there were many casualties."

"Oct. 12.—The enemy planes appeared in the vicinity of the Hameawa (River), but there was no bombing. The gun fires from the enemy were rare. Many soldiers fear the enemy gun fire and the morale of the soldiers is very poor.

"Oct. 20.—I am recovering from sickness. I rested all day today. After experimentation for 1 month, we invented the smokeless fuel. (This is probably composed largely of alcohol.)

"The Kuma Unit, of the Ichiki Unit, met with the remnant. They were all very thin due to lack of food. They were eating only coconuts and grasses for one whole month and living in the jungle.

"Oct. 8.—The 2d Company, which was sent out to meet the 3d Company, encountered the enemy at the Matanikau River line and nothing has been heard of it since.

"Oct. 10.—The enemy which is confronting the 3d Battalion totals 2,000 to 3,000 and are taking a formation to envelop the battalion. The 3d Battalion is constantly withdrawing. The 3d machine-gun unit with their leader (16 men in all) and the battalion-gun unit all left their weapons behind and withdrew."

"Nov. 6.—It rains very heavily out here. It has been raining continuously since last night. The epidemic of sickness seems almost incredible. It seems like half of the neighboring field artillery unit has the beri-beri and diarrhea. During the morning we worked on air raid shelters in the rain. Raining, no water, the kindling does not burn!—the hardships of the soldiers are beyond their power.

"Nov. 14.—At the end of the day, after being observed by enemy patrol planes in the early morning, we were attacked by them. They dropped 3 bombs in the 1st round, 2 in the 2d, and 2 in the 3d round. Our planes, which were usually escorting us, did not happen to be there at that time. The conditions were pitiful after the attack was over. Only 4 ships remained as we continued on our course and reached our objective. Determination to make the landing was felt by all on our 4 depot ships. We are determined firmly to fight and avenge our soldiers who sacrificed their lives in the Solomon Sea."

SECTION III. COMMENT BY PRISONERS

1. INTRODUCTION

Since this information has been obtained from prisoners of war, it should be treated with considerable reserve. However, our observers to date have found the average Japanese prisoner to be more truthful in his statements than are prisoners of other enemy nationalities.

2. COMMENTS

a. Regarding Organization

Each rifle company normally has 190 men, but existing conditions in some Southwest Pacific islands have forced the number down to 120. The rifle company platoon usually consists of 52 men, but the prisoner's platoon had 70, and was therefore classed as "independent."

The battalion-gun company normally is divided into 3 platoons, each having 4 guns and about 70 men.

The mountain artillery battalion consists of approximately 500 men.

b. Regarding Equipment

(1) *Landing Boats.*—Each of those used at Buna carried 30 fully equipped infantrymen, or 20 men equipped as machine-gunners, or 10 horses.

(2) *Flame Throwers.*—A prisoner "thought" that each company is supposed to carry three flame throwers. Their use is primarily against fortifications and armored vehicles, the prisoner said.

(3) *Marks of Identification.*—One prisoner stated that his identity disks had been sewn to his uniform. These disks are made of black metal sheeting; they are shiny at first, but rust after brief use.

Another prisoner said that all badges of rank were removed by personnel in his unit before it left Rabaul for action on an island to the south. All marines wore a white cloth badge on the left side of the coats, over the heart. The inscription on these badges included name, rank, company, and date of birth.

(4) *Eye Shield.*—These are issued to all troops as a protection against sun glare, but are seldom used, because they affect the eyes and are considered a nuisance.

c. Regarding Supplies

(1) *Ammunition.*—One prisoner said that each rifleman carries 60 rounds into the combat area, while others stated that the number was 120. A supplementary supply is carried by natives. Shells for the infantry battalion gun (70-mm) are packed five to a case, which

weighs about 75 pounds. Larger shells, for mountain artillery, weigh about 20 pounds each.

Normally each soldier carries two hand grenades.

(2) *Rations.*—The information on rations was conflicting, probably because of the differing local tactical and supply situations. One prisoner said each man in his unit carried rations for 2 days upon landing, while another's unit carried sufficient food to last for 20 days.

d. Regarding Medical Care

One prisoner stated that each Jap soldier was issued 10 antimalarial pills, to be taken one per day for 10 days. At the end of the 10-day period, they took a round of smaller pills. The prisoner said he did not know the nature of the pills except that they prevented malaria. His unit had no malaria until the pills ran out. He added that the Japs would not use mosquito headnets because of the heat.

Another prisoner, questioned regarding malaria, said about half of his unit was attacked by fever—he did not know if all were malaria cases. Light cases recovered in 3 days, the serious ones took as long as 3 months.

e. Regarding Suicide

The following dialogue between a captured Japanese warrant officer of the Naval Air Service and his interrogator is reported from the Southwest Pacific:

Q. After the war is over, what would you like to do?

A. In accordance with our tradition, I would like you to allow me to destroy myself.

Q. That is contrary to our ideas and we cannot allow that, but if there is anything else which you would like and which we have power to grant, we would like to do so.

A. I would like to have my hair cut.

PART TWO: GERMANY

Section I. 50-MM ANTITANK GUN

1. GENERAL

In the summer of 1941 the German Army replaced its 37-mm antitank gun with the 50-mm, model 38. To date the 50-mm has proved one of the most effective antitank guns that the Germans have at their disposal. Armor-piercing projectiles fired in this gun weigh 4 pounds 9 ounces, and have been known to pierce the armor of British infantry and cruiser tanks as well as that of U. S. light and medium tanks. The gun has proved especially effective in jamming tank turrets by hits at the junction of the turret and hull. These hits fuze the metal of the two parts together and immobilize the turret.

This gun usually is mounted on a split-trail carriage with a shield of spaced armor plate. It is generally towed by a half-track, and has a third wheel which can be attached to the spade piece on the trail for manhandling the piece into position.

The Germans manufacture a self-propelled version of this gun. Also, the gun is commonly mounted in their Mark III tanks. When used in a Mark III tank, it can be fired electrically, instead of by percussion, and is used without a muzzle brake.

The 50-mm antitank gun fires armor-piercing shells, high-explosive shells, and armor-piercing 40 shot. This last has a windshield (light, streamlined nose) and a tungsten carbide core. It gives a good armor-piercing performance at 500 yards. Incidentally, the latest type of armor-piercing shell also has a windshield.

2. TABLE OF CHARACTERISTICS

Muzzle velocity	(AP)	2,740 fs
"	(AP 40)	3,940 fs
"	(HE)	1,800 fs
Maximum range	(AP)	1,540 yds
"	(AP 40)	770 yds
"	(HE)	2,640 yds
Effective range	(AP)	1,000 yds
"	(AP 40)	500 yds
"	(HE)	2,000 yds
Number of grooves		21
Twist		1 turn in 32 cals
Rate of fire		16 rounds per min
Total weight of gun		1,626 lbs
Depression		−18°
Elevation		27°
Traverse		65°

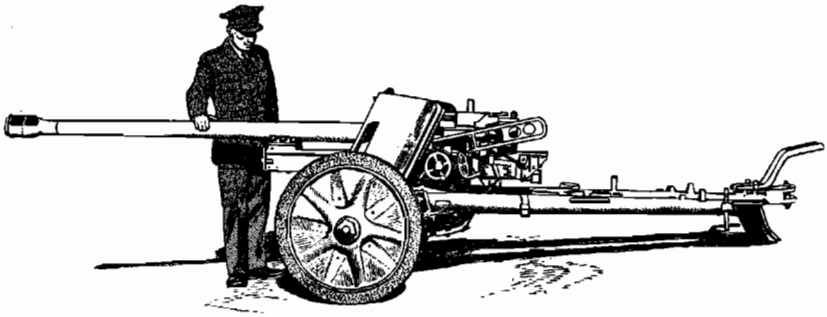

Figure 1.—German 50-mm Antitank Gun.

3. DESCRIPTION OF COMPONENT PARTS

a. Tube

The tube is of monobloc construction with a muzzle brake attachment, and is 111.25 inches long without the breech ring.

b. Recoil System

The recoil system consists of a hydropneumatic recuperator and oil buffer.

c. Breech Mechanism

The breech mechanism is of the horizontal sliding-block type. It works semiautomatically, and also can be worked by hand.

d. Safety Arrangements

Unless the sliding breech block is properly closed, the safety plunger will not enter its recess in the lower face of the breech ring, and the gun cannot be fired.

If the safety plunger is not in its recess, the firing shaft cannot be turned.

If the firing pin is not in the cocked position, the breech cannot be opened, since the firing shaft is engaged with the safety plunger, which is in its recess.

e. Firing Mechanism

The firing mechanism is operated from the elevating gear handwheel. It is a push-button attached to a wire

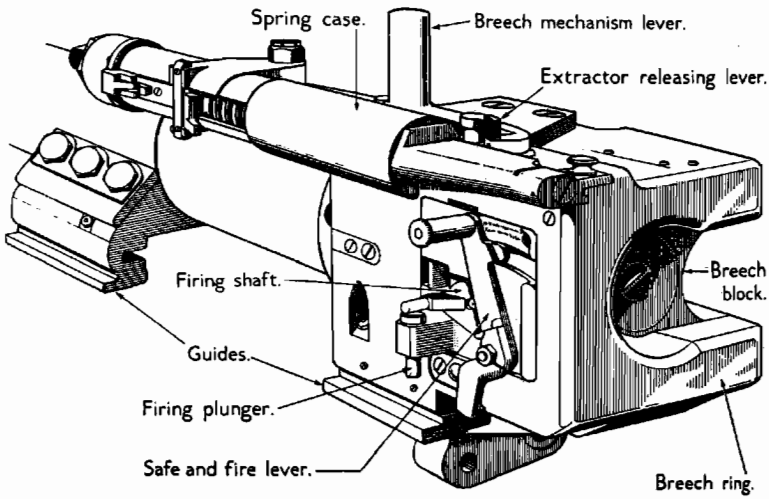

Figure 2.—Details of the German 50-mm Antitank Gun.

cable which actuates a lug on the cradle. This, in turn, actuates the firing plunger upward on to the firing shaft of the breech mechanism.

f. Sights

The firing bracket is mounted on the left trunnion, and either a telescopic sight or an open sight can be used. The sight bracket has lateral deflection gear, a range drum, and means of adjustment for azimuth and elevation. The telescopic sight is of three-power magnification.

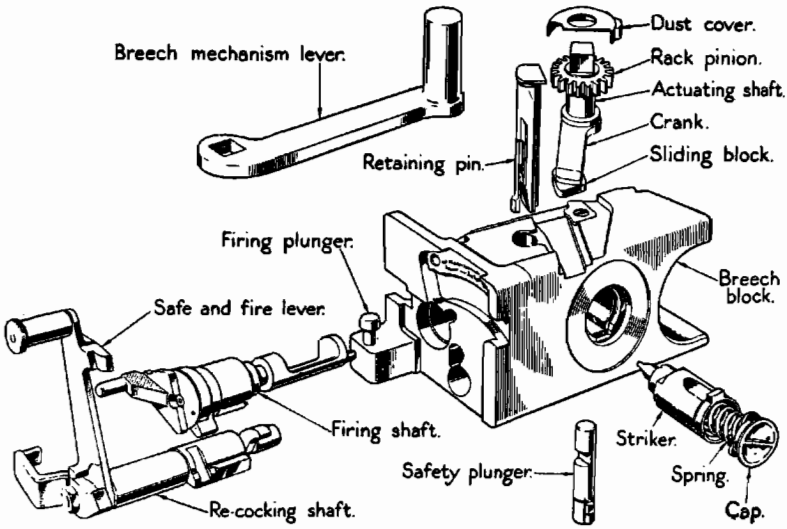

Figure 3.—Details of the German 50-mm Antitank Gun.

The range drum is so calibrated that when the maximum range for armor-piercing shell (1,540 yards) is reached, the gun automatically is sighted for high explosive, beginning with 330 yards and going up to a maximum of 2,640 yards.

g. Elevating Mechanism

The elevating gear is operated by a handwheel on the left side of the carriage. It allows 27 degrees for elevation and 18 degrees for depression.

h. Carriage

The gun has a spaced armor-plate shield composed of 2-mm to 4-mm plates about 1 inch apart. It has spoked wheels of a light alloy, with solid rubber tires. A third wheel can be attached to the spade piece so that the gun can be moved by hand.

4. AMMUNITION

Type	*Weight of complete round*	*Length*	*Weight of projectile*	*Fuze*	*Identifying marks*
AP tracer shell.	9 lbs. 3 oz.	21.4 in.	4 lbs. 9 oz.	Base.	Black projectile.
HE shell	7 lbs. 3 oz.	23.7 in.	3 lbs. 15 oz.	Nose.	Dark green projectile.
AP 40 shot	----------	--------	2.025 lbs.	None.	Black projectile.

PENETRATION DATA

Type shell	*Range*	*Angle*	*Compact*	*Penetration*
AP shell	250 yds	30°	Plate-hardened to same degree throughout.	60 mm (2.36″)
AP shell	1,300 yds	Normal	Same	60 mm (2.36″)
Unconfirmed on AP 40	330 yds	20°	Same	90 mm (3.54″)
	440 yds	20°	Same	64 mm (2.54″)

NOTE.—The above tests were fired with a limited supply of ammunition and the results probably represent underestimates.

5. CREW

The crew consists of the gun commander, No. 1 (gunner). No. 2 (loader and firer), Nos. 3 and 4 (ammunition handlers), and No. 5 (chauffeur).

Section II. USE OF 20-MM AA/AT GUN AGAINST GROUND TARGETS

1. INTRODUCTION

A German document, evidently written by a platoon commander of an antiaircraft-antitank company, deals with an antiaircraft-antitank battalion's use of the 20-mm dual-purpose gun against ground targets.

2. EXTRACTS FROM THE DOCUMENT

a. General

The 20-mm gun on a self-propelled mount combines the fire power and mobility of an antiaircraft gun with the accuracy and penetration of an antitank gun. It is insufficiently armored, however, and this fault must be offset by making good use of cover and by fire control.

The smallest unit in battle is the section of two guns. Use of single guns, except for individual tasks like the engagement of enemy observation posts, is exceptional. Ground observation is most important; every spare man must be employed on it, and must be made personally ambitious to spot targets.

b. Action During Assembly

During assembly, antiaircraft-antitank troops usually take over protection against air and land attack. Guns must be sited so

that attacking aircraft can be engaged from reverse slopes, while, by moving the gun to a position on the forward slope, it is possible to bring under fire the enemy approaching on the ground.

c. Action During Attack

The antiaircraft-antitank troops support the advance of the infantry and other arms. For this purpose the antiaircraft-antitank guns should be sited to a flank, to exploit their range fully without endangering the advancing German troops. The addition of 100 yards, more or less, to a flank hardly interferes with the effectiveness of the 20-mm gun, whereas it does affect the enemy's infantry weapons by widening the target.

When in action only the following remain on the vehicle: driver and gun commander and Nos. 1 and 4.[1] When the gun commander is away on reconnaissance for a new gun position, No. 3 takes his place. The other men (who are the ammunition handlers) give protection and carry out flank observation. If there is no mine-spotting section available, the ammunition handlers must search for mines in the ground to be passed over.

The platoon or section commander and his runners follow directly in the rear of the attacking infantry or the assaulting engineer detachment. The commander reconnoiters good positions and good targets for the guns.

d. Fire

Good fire discipline (including good observation) is of the greatest value; this is gained by experience and will be made easier by cooperation with the attacking troops and the various observation posts. The sectors of fire must be assigned. Telescopes and rangefinders will be used to the fullest.

[1] The duties of Nos. 2 and 3 are not indicated.

e. Movement

Changes of position must be made quickly. Occupation of a gun position from a flank must be avoided if possible. The guns will advance by bounds. If they meet slight opposition which can be broken by one section, the other section remains in reserve and, after the action, leapfrogs forward as an advance section while the first makes itself ready again.

When close to the enemy—for example, when breaking into his positions—the guns fire on the move. This forces the enemy to take cover, and weakens his morale.

f. Defense

When bivouacking or holding a defensive position, the guns occupy prepared positions under cover. Other alternative positions are prepared, battle outposts are put out, and landmarks are recorded.

g. On the March

On the march the battalion is disposed as follows:

No. 1 gun—protection to front and right.
No. 2 gun—protection to front and left.
No. 3 gun—protection to rear and right.
No. 4 gun—protection to rear and left.

Under air attack, a similar formation will be adopted. On the section commander's orders, the troops will halt and open fire. Aircraft will be engaged only if they spot or attack the battalion's own positions, if bridges or observation posts need protection, or if the aircraft offer especially good targets.

h. Tanks

It has been proved that the gun, rightly used, can put even the heaviest tanks to flight even if it cannot put them out of action;

that is, by its high rate of fire it can jam turrets and gun mantlets. The most effective range against tanks is under 400 yards. Every effort must be made to attack them from the sides.

3. EXTRACT FROM A GERMAN NEWSPAPER'S COMMENT ON THE 20-MM GUN

The duties of the anticraft-antitank battalions are, above all, to protect other units against low-flying attacks while on the march and in action. For this purpose the 20-mm gun is principally used.

The battalions are part of the infantry's support. Troops of these units are therefore trained as infantrymen; but, in addition, they learn their own weapons, including training with different sizes of rangefinders in height estimation. Otherwise, the training corresponds to that of flak units. The antiaircraft-antitank units (the platoon is the normal fighting unit) are located in the column of march according to the prearranged operation order. In case of surprise attack, fire is opened either immediately from the tractor on which the gun is mounted, or else sections (which are fully motorized) leave the column and occupy a position on firm ground with a good field of fire, with the gun dismounted. After fighting, the units catch up with their original position in the line of march.

Antiaircraft-antitank guns use only tracer ammunition—high explosive against aircraft, and, if necessary, armor-piercing ammunition against ground targets; they have a limited ceiling and are used principally by day. Antiaircraft-antitank troops have no listening apparatus or searchlight batteries and do not pretend to rival the flak artillery. Further tasks include: protection of divisional artillery against low-flying attack, participation in ground fighting by neutralizing enemy machine-gun nests and other strong points, or defense against single tanks.

Section III. ATTACKS ON CONCRETE FORTIFICATIONS

In the following report, British Intelligence officers summarize German methods of attacking concrete fortications.

1. PREPARATION

A typical attack is preceded by a short artillery concentration on the objectives. The artillery then lays down smoke. Under the concealment that this affords, the infantry and its supporting weapons get in position at short range. These supporting weapons will include antitank guns, and possibly field guns, placed under command of the infantry, as well as heavy machine guns, mortars, and infantry guns.

When the smoke clears, all weapons open fire on specific loopholes allotted to them. Under cover of this fire the infantry and engineers move in to the assault.

2. ASSAULT

The assault on pillboxes can be made in several ways, but all these depend on the principle that if you are near enough to a pillbox, you can get inside the angle of fire of its machine guns and be safe—just as you can when you are approaching a tank.

Pillboxes, however, usually will be sited so that they are covered by machine-gun fire from their neighbors. Therefore, pillboxes can be attacked in this way only if supporting fire keeps the embrasures of neighboring pillboxes shut, or if more smoke is put down to isolate the particular fortification to be assaulted. The actual attack on pillboxes may be made either with explosives or with flame throwers.

Infantry sometimes can get close up under the embrasures and push grenades inside. Engineers, who carry more powerful charges, can blow up pillboxes and, by mounting charges on the ends of poles, can attack embrasures that they cannot reach otherwise. These pole charges are a common engineer weapon. The infantry can improvise a similar charge by tying the heads of six stick grenades around a complete central grenade.

Two sizes of flame throwers are carried by the engineers. The range of both is claimed to be about 30 yards, but may in practice be no more than 20 yards. The smaller can produce a jet of flame for 10 seconds, the larger for 25 seconds. The larger must be hauled on a two-wheeled trolley.

A method simpler than either of these has been used to neutralize pillboxes—namely, to plug the embrasures with sand bags, which may be effective for a few moments.

Section IV. ARMORED FORCE TACTICS IN THE MIDDLE EAST

1. INTRODUCTION

United Nations observers in Libya have reported that there are four principles that German armored units seldom fail to consider before advancing to attack.

a. The primary role of the tank is to kill infantry.

b. The machine gun is therefore an important weapon of the tank.

c. The tank can be successful only when it is used in conjunction with all arms.

d. Tanks must be used in mass.

As a result of these views, the Germans will not fight a tank versus tank battle if they can avoid doing so. Moreover, their tactics are always based on having their armor move with other arms, in close support, in the form of a "box" or moving defense area.

2. THE BOX

The box is that part of the German column which appears inside the solid lines in figure 5. It varies in

size, but if an armored battalion is the basic unit, the box might contain the following combat troops, in addition to tank ground crews and other service troops: 1 battalion of motorized infantry, usually carried in half-tracked, semi-armored vehicles; 1 battalion of 50-mm antitank guns; 1 battalion of 88-mm antiaircraft-antitank guns; 1 battalion of 150-mm close-support guns, sometimes on self-propelled mounts; and 1 battalion of divisional field artillery. Under these circumstances, the box would be approximately 2 miles deep, with a frontage of 200 yards.

On the move or in the attack, the dispositions of the guns in the box are as shown in figure 5; that is, the antitank and antiaircraft guns guard the flanks and the front. The infantry guns and field guns usually are inside the box only when the defensive is assumed.

The 88-mm, although a very effective antitank gun, is included in the box primarily to protect the "soft-skinned" vehicles from air attack.

3. METHOD OF ADVANCE (see fig. 4a)

Over flat terrain the distances between the various elements of the German column are approximately as follows: between the reconnaissance unit and the first echelon of tanks, 5 to 10 miles; between the first and second echelons of tanks, 1 mile; and between the second echelon of tanks and the box, 2 miles. The whole formation is directed toward an objective which, if

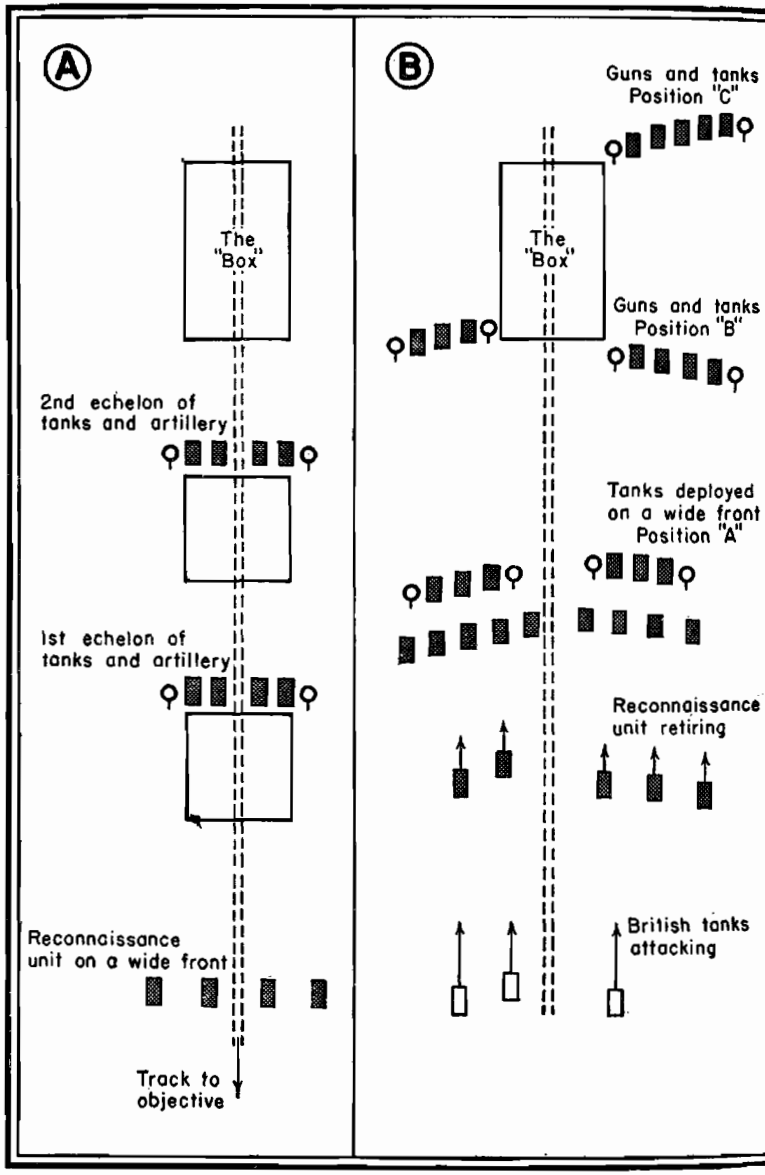

Figure 4.—German Armored Force Tactics.

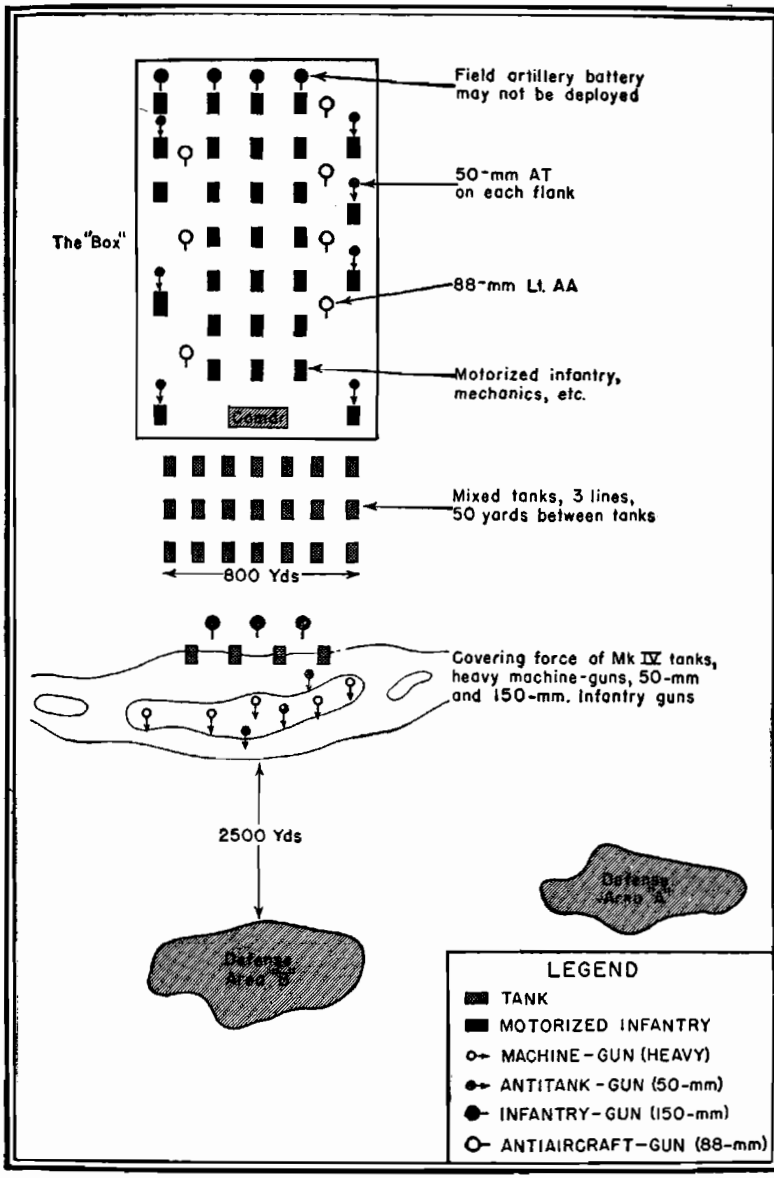

Figure 5.—German Armored Force Tactics (continued).

seized, will force the opposition to fight and thus become engaged on ground of German choosing.

On normal terrain each element of the German column moves from high ground to high ground, and the separate echelons of tanks are supported by field artillery, which moves behind them.

4. METHOD OF FIGHTING IF ATTACKED ON THE MOVE

As soon as United Nations troops are reported to be advancing and contact appears imminent, the box halts and takes up a position for all-around defense. This can be done very quickly because of the type of formation it uses while on the move. As the United Nations tanks advance, the German reconnaissance unit falls back, and the two echelons of German tanks deploy on a wide front, as illustrated in figure 4b, position "A."

If the United Nations troops continue to advance, the Germans retire to position "B," and force the opposition to attempt to break through one flank.

If the opposition attacks the German left flank, the troops on the left of the box at position "B" fall back to position "C." If the opposing tanks pursue, they not only are engaged frontally by the German tanks from position "C," but are caught in the flank by the antitank and antiaircraft guns protecting the left side of the box. The tanks of the German right flank at position "B" then swing around and engage the attackers in the rear. If the artillery has accompanied

the tanks in the advance, it may either continue to support them or may enter the box to increase its antitank strength.

5. ATTACK LED BY TANKS AGAINST A SINGLE DEFENSE AREA

The Germans realize that it usually is impossible for an attack in depth to pass between two defense areas or to cross the front of one defense area to attack another. The attack is therefore launched approximately "head on." Such an attack may be carried out in the following way:

a. Phase 1

The Germans will reinforce their reconnaissance unit with tanks deployed on a wide front, and will drive their covering force ahead until it is approximately 2,500 yards from the "crust" of the opposition's defense area (see fig. 5).

b. Phase 2

A most careful reconnaissance of the defender's positions will then be carried out by a senior commander in a tank, to decide which defense area to attack. In Libya last winter, when British defense areas were not necessarily sited on high ground, a great deal depended on whether the Germans could get a position about 2,000 yards from the British front on which to deploy the German covering force. In figure 5 it is assumed

that the Germans found this, and are going to attack defense area "B."

c. Phase 3

The covering force now deploys as follows: Tanks, generally Mark IV's, take up a hull-down position on the ridge, and with the fire of their machine guns attempt to pin the defense. They may engage visible antitank guns with their 75-mm's. Under cover of this fire, 50-mm antitank guns, heavy machine guns, and close support 150-mm infantry guns are also deployed in an attempt to knock out the antitank guns of the defense or to kill their crews.

The majority of the weapons in the deployed covering force are dependent on direct laying and therefore can be blinded by smoke.

Under cover of the fire of their covering force, the Germans form their rear in the following manner:

(1) Three rows of tanks, with about 50 yards between tanks and about 150 yards between rows.

(2) When the tanks are in position, the box forms in the rear, as illustrated. The infantry ride in their carriers.

d. Phase 4

At zero hour the entire formation moves forward at about 15 miles per hour, depending on the terrain. As the tanks pass through their covering force, they

begin to fire, not so much with a view to hitting anything as for psychological effect.

Arriving at defense area "B," some tanks drive straight through to the far side, while others assist the infantry in mopping up. The infantry usually do not dismount from their carriers until they arrive in defense area "B," when they fan out, using Tommy guns extensively.

e. Phase 5

If the attack is successful, the covering force moves forward into the captured area to stiffen the German defenses that are being established there. The tanks generally are withdrawn and serviced near what has now become the rear of the former defense area.

f. Conclusions

It takes 2 or 3 hours to prepare and stage such an attack.

If the attack proves successful, no minor counterattack is likely to drive the Germans out. Their defense is very rapidly organized, inasmuch as all the weapons they require are immediately available.

Such attacks are now being beaten off, and it is apparent that in the future they will not succeed without considerably increased artillery support.

The whole form of the attack has been reduced by the Germans to a "battle drill."

Section V. WINTER FLYING PROBLEMS

1. RUNWAYS

From numerous experiences during the winters of 1940 and 1941, the German Air Force has found that the maximum efficiency in winter operations is attained by using wheeled landing gear as long as conditions permit. Such use requires immediate rolling of the runways after any appreciable snowfall.

Where heavy snowfalls are expected, the runways are marked off in advance with relation to the prevailing wind direction, so that rolling can be started as soon as the snow is about 2 inches deep. The runways should be laid out to avoid take-offs over mounds of snow or other irregularities of ground and to eliminate as much as possible the necessity of making crosswind landings.

Snow fences must be erected as a protection against drifts. If the direction of the prevailing wind coincides with that of the runway, the fences are set at an angle of about 25 to 30 degrees to the wind in order to deflect the snow outwards. It is especially important to place fences at the intersection and at the ends of

the runways, and to erect suitable warning markers on all obstacles caused by such work.

Rolling should be carried out continuously to prevent the formation of dangerous snow heaps, and the rolled surface subsequently raked to minimize ice formation. Taxi aprons, as well as main and auxiliary runways, should be kept clear of snow as long as possible.

2. SKIS

The change-over from wheels to skis (see fig. 6) is usually made when the unrolled snow has reached a depth of one-third of the diameter of the aircraft wheels. When the snow is deeper, landing on wheels is possible without risk of turning over, but take-off is prevented by the high rolling resistance of the snow. During this period, special take-off sledges are used. These become detached as the aircraft rises, enabling the plane to land on wheels.

To safeguard the undercarriage as much as possible, landings and take-offs with skis should always be made on snow which has not been rolled. Aircraft on skis must be taxied only on snow-covered surfaces. Taxiing over snow mounds and slopes with sharp drops should be avoided because the skis have a limited range of deflection. As ski-equipped airplanes have a dangerous tendency to ground-loop in cross winds when taxiing on ice or rolled snow surface, extreme care should be taken to keep them from swinging. Multiengine aircraft may be taxied by the use of either out-

board engine, but small curves cause high stresses in the undercarriage and must be avoided. There are no brakes on skis, since on deep soft snow the length of the landing run is shorter than with unbraked wheels.

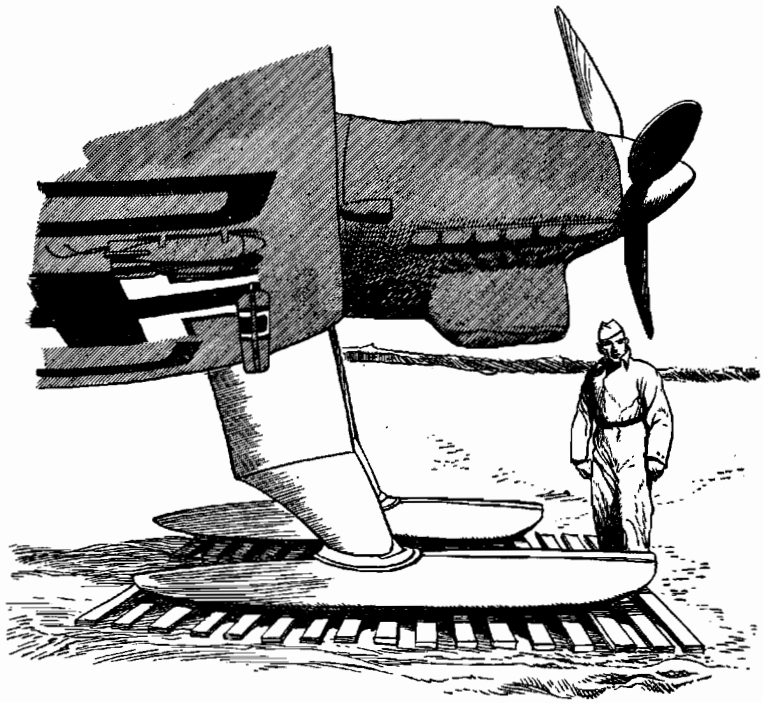

Figure 6.—German Aircraft on Skis.

The normal length of take-off may be expected when the snow is frozen and the temperature below zero, but in warmer temperatures the friction coefficients may become very high, necessitating a longer run. If con-

ditions are so unfavorable that it is impossible to take off, a runway may be created in the snow by taxiing to and fro repeatedly. The take-off run may be interrupted without danger, since an airplane on skis comes to a standstill quickly if the engine is throttled. On the take-off, the handling of aircraft with skis is the same as for those equipped with wheels.

From the point of view of flying, there has been no difficulty in operating the various types of aircraft with skis attached, although speed and general effectiveness are reduced between 5 and 15 percent. However, single engine flight with a Ju 88 so equipped is not possible, and an He 111 with skis can barely maintain level flight on one engine. The same principles apply to the landing run as to the take-off, except in night landings. Light is reflected in the direction of flight by flat expanses of snow on the field, which makes judgment as to altitude impossible, unless the surface has been walked on or ashes have been sprinkled to cut the glare and provide identification marks.

The aircraft must not be allowed to come to a standstill upon landing, but must be taxied immediately to a previously prepared parking place, equipped with suitable wooden parking gratings which have been smeared with a graphite paste or used engine oil so that the skis will slide over them. Multi-engine aircraft, because of their size, require at least 10 parking gratings while single-engine planes need only about 4.

The space between parked aircraft fitted with skis must be twice as great as for those with wheels, because it is not always possible to taxi accurately with skis.

The aircraft are placed on parking gratings so that they will not freeze to the ground. If the bottoms of the tires should become frozen, they must not be forcibly freed but can be loosened either by applying salt, saltwater, or hot air, or by inserting a wire between the tire and the ground. Skis should not be loosened by pushing the fuselage backward and forward, because no undercarriage can stand the strain. Light aircraft may be freed by shaking the wings, with the engine at full throttle. Heavy planes must be jacked up so that wooden gratings can be pushed under each ski. If the equipment necessary for this is not available, the snow must be shoveled away until only one-quarter of the ski, at the center, is still standing on snow. It is then possible to release the aircraft with full power by moving the elevator and rudder.

It is not necessary to wax the skis, but after about 10 flying hours the sliding surfaces must be inspected for signs of wear, and light damage to the hard paper or cement covering may be repaired quite easily. As the stresses on the undercarriage are greater with skis than with wheels, all parts must be carefully inspected at least every 20 hours. In case of boat skis, the cover must be freed from snow and ice before the take-off to obtain complete freedom of motion. In milder

weather, these skis must be drained of accumulated snow water daily.

Aircraft fitted with skis must never be moved over ground free from snow without using a special dolly or some other device, nor should aircraft be dragged by the tail skid, even when a moving device has been fitted to the main skis.

3. STORAGE PROBLEMS

If it is impossible to heat the main hangars properly, a separate living room, adequately heated, and a warm, well-ventilated storeroom should be provided. The temperature of the storeroom should not fall below 50 degrees Fahrenheit. Ground maintenance equipment, as well as all drums containing lubricating oil and cooling fluid, should be housed under cover if space is available, but at least one transport vehicle, engine heater, and engine starter should be kept ready for immediate use in a warm place. As much gear as possible should also be kept in heated storerooms. Everything left in the open has to be protected from the wind and condensation by use of matting, tarpaulin, or straw.

Rubber covers, inner tubes, and cables become sensitive to kinks and bends at temperatures below −4 degrees Fahrenheit, but elasticity is restored at room temperature. The most satisfactory temperature for the storage of such articles is between 40 and 60 de-

grees Fahrenheit, as prolonged higher temperatures are detrimental to rubber. Since the capacity of batteries falls off rapidly with extremely cold temperatures, it is essential that they be removed from equipment left in the open and stored in a warm place until needed. They should be kept fully charged as discharged batteries are likely to freeze at temperatures below 32 degrees.

High-pressure containers should be kept under cover and, if possible, not exposed to cold.

Lubricating oil and antifreeze solution must be stored in protected sheds, heated, if possible, with special precautions against penetration of the drums by water, snow, and ice. The containers, with the filler on the top side, should always be placed on wooden blocks, and should be protected against the weather on all sides. If a warm storeroom is not available, it is possible to warm the drums by covering them with a tarpaulin and blowing in hot air from the engine heater. Baking ovens made of stones and heated by a wood fire may also be used to heat the drums.

Lacquers and certain other finishes (known as "airplane dopes") are very sensitive to cold and dampness, but the place where they are stored must not be directly heated because of the danger of fire.

The lighters that are used for marking out landing runways or obstructions have a very short life in low temperatures, and so are stored during the day in a warm room.

4. STARTING COLD MOTORS

When starting aircraft after a snowstorm, or after prolonged inactivity, all drifted snow deposits must be cleared away. The best way to do this is to open the inspection holes, and thaw or blow away the snow. All aircraft engines require some pre-heating, if they have been left in the open when temperatures are below freezing point. At temperatures below —4 degrees Fahrenheit, it is especially difficult to start an engine because the fuel, injected into the cylinder or atomized by the carburetor, condenses on the cold walls of the cylinder and intake pipes and prevents combustion.

The method generally used to heat the engine is to cover it with a heavy canvas hood and force a draft of hot air into the bottom opening. To do this, the Germans use an engine heater (see fig. 7), which can warm an airplane motor within 15 to 20 minutes, raising the temperature of the engine approximately 50 degrees. This device heats air by passing it over burning vaporized fuel and then blowing it through double-walled canvas tubes into the hood placed around the engine. The blower of this apparatus may be operated by either a gasoline or an electric motor.

The pre-heating of lubricating oil appears to be the main factor in speeding up cold-weather starting. During cold starts, the lubricant becomes easily diluted by the unburned gasoline in the cylinders, and the oil sludge deposited in the engine dissolves. A much larger quantity than usual is carried to the oil filter. For

this reason, it is essential that oil be removed and thoroughly cleaned after each long flight. However, if cleaning devices are connected to a rod in the cockpit, the pilot should clean out the filter during flight. The oil coolers and oil lines to engines should be covered with felt or asbestos to keep in heat while the engine is running. The Germans have also been experimenting with the use of acetylene in starting aircraft engines at very low temperatures, but no operational use of this method has yet been reported.

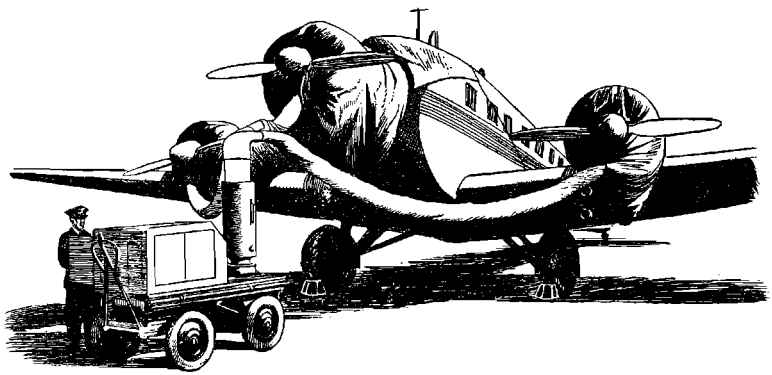

Figure 7.—German Aircraft Engine-Heating Device.

As variable-pitch propellers are subject to freezing, the blades should be placed in take-off position, with a small angle of attack, when the engine is stopped. During cold starts, the pitch of the propellers should be altered several times backwards and forwards by operating the speed control. This insures that the control mechanism and the oil servo-motor become filled

with the cold-starting mixture. This also applies to electric, constant-speed propellers, where the pitch-changing mechanism should be operated over as large a range as possible to distribute the grease uniformly over the gears. This prevents the propeller from changing pitch of its own accord. The gear mechanism should be warmed if the air temperature is below —4 degrees Fahrenheit.

To protect the cooling system against frosts, a mixture of 50 percent glycol and 50 percent water is recommended. Any outside openings or vents leading to the instruments should be covered when in flight, so that snow or rain cannot enter the lines and freeze. All control hinges should be covered with a thin oil to prevent the collection of moisture and subsequent locking of control surfaces.

5. ANTIFREEZING METHODS

The Luftwaffe has developed a special anti-ice paste to be used on the wings, turrets, and tail unit when there is danger of icing. However, as this paste causes the camouflage paint on the aircraft to peel off, it is applied only when there is real danger of ice formation.

When the snow is thick, the control surfaces are likely to be damaged on take-offs and landings by pieces of ice. Care must be taken to insure that the fuselage and lower side of the wings and control surfaces are snow- and waterproof, since snow may penetrate into the aircraft and be deposited there. Subsequent

freezing may block the controls or the mechanism for retracting and lowering the landing gear. At very low temperatures, too tight control cables may contract enough to tear away from their supports.

Since ordinary bombsights are electrically heated, they are not affected by extreme cold, but the noses of all bombs exposed to the airstream must be treated with anti-ice paste.

To insure satisfactory operation of guns at low temperatures, maintenance must be carefully checked and guns, appliances, and mountings tested before every flight. During prolonged flights at very low temperatures, the guns should be operated at regular intervals to prevent excessive cooling. Muzzle caps should be fitted on all guns so that snow or ice will not enter the mechanism. When Oerlikon "FF" 20-mm fixed cannon are mounted on aircraft operated under winter conditions, they must be equipped with a special recoil spring, as otherwise the gun may stick when it is fired.

Section VI. MISCELLANEOUS

1. FIELD PATCHING OF ARMORED TROOP CARRIERS (HALF-TRACKED)

In the field the Germans have made use of an unusual type of patch to cover holes pierced in the armor of their half-tracked armored troop carriers.

The plates are secured by conical-headed bolts inserted through the holes and—in the case of patches examined to date—held by steel strips at the back (see fig. 8). Apparently the plates have been designed especially for this purpose. Their peculiar shape permits them to be fitted anywhere on the armor service.

The plates are drilled in five places; the three top holes are countersunk, while the lower two are not. It is worth noting that in specimens of patching observed, the fixing bolts did not fit into the countersinks. Although the reason for the three countersunk and two plain holes is not entirely clear, it is quite possible that one plate is meant to serve as a background or securing plate—hence the two plain holes. This theory seems borne out by the fact that the securing bars which have been observed to date appear to have been makeshift jobs.

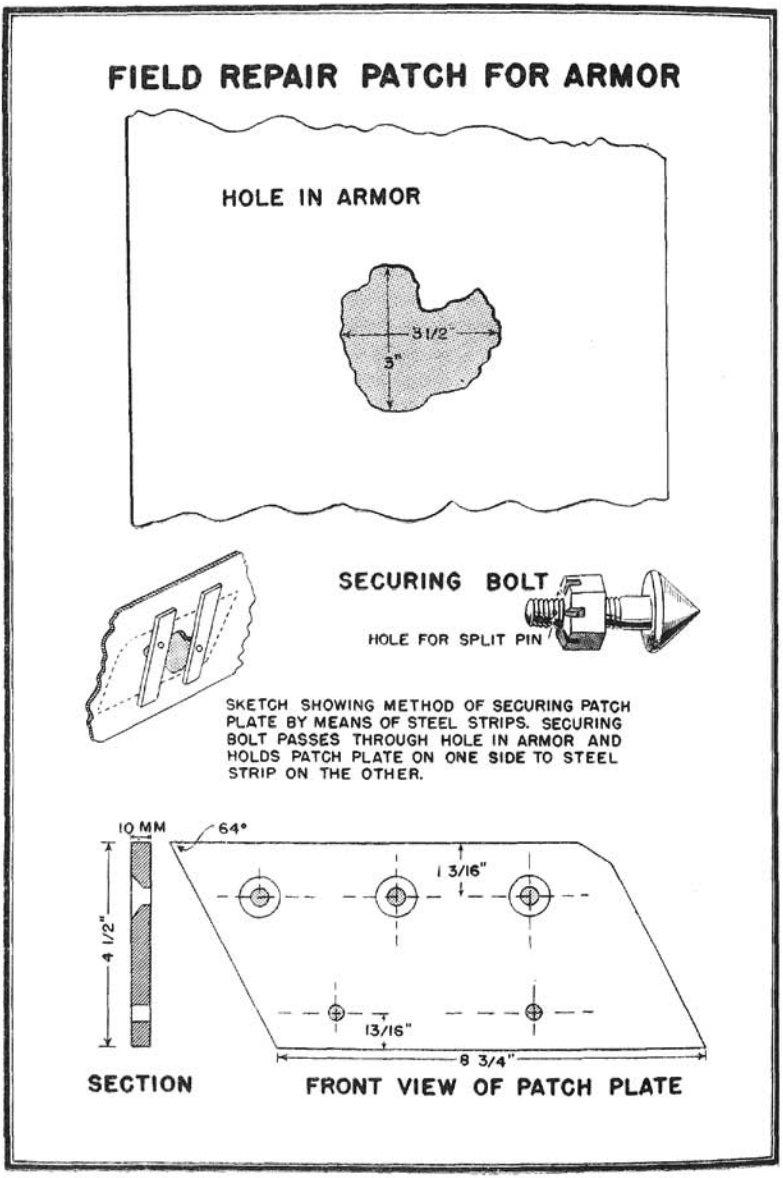
FIELD REPAIR PATCH FOR ARMOR
HOLE IN ARMOR
3 1/2"
3"
SECURING BOLT
HOLE FOR SPLIT PIN
SKETCH SHOWING METHOD OF SECURING PATCH PLATE BY MEANS OF STEEL STRIPS. SECURING BOLT PASSES THROUGH HOLE IN ARMOR AND HOLDS PATCH PLATE ON ONE SIDE TO STEEL STRIP ON THE OTHER.
10 MM
64°
4 1/2"
1 3/16"
13/16"
8 3/4"
SECTION
FRONT VIEW OF PATCH PLATE

Figure 8.

2. MAP SIGNS FOR OBSTACLES

The following symbols, which the American soldier may find on German maps, are taken from a German Army document.

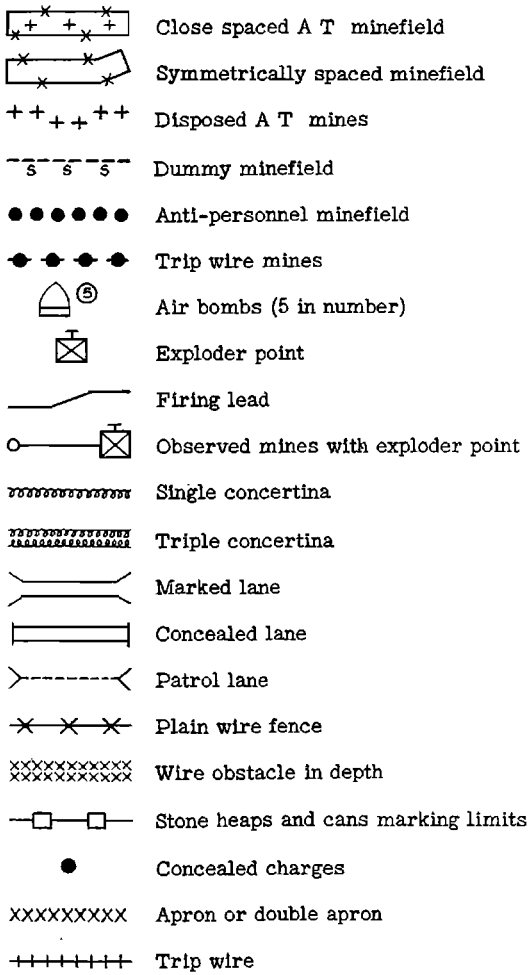

Figure 9.

PART THREE: UNITED NATIONS[1]

Section I. HOW TO USE YOUR EYES AT NIGHT

1. INTRODUCTION

Modern war is often fought at night. This means that men must learn to see in the dark—or at least to use their eyes in new and unfamiliar ways.

This article is written to tell you how to make the best use of your eyes at night. It will help you, whether your job is in an airplane or a tank, on a ship, or driving a truck, or just getting about on your own feet.

It will not give you the uncanny eyes of an owl or a cat, but it may give you just the edge on the enemy you need to get in the first shot—and to get home.

You already know that when you go into a dark room from a bright one, it is hard to see until your eyes have become used to the gloom. At a movie it takes a minute or two to see the vacant seat. It may take another minute or two to be able to recognize a friend. During these minutes your eyes become more sensitive to the faint light.

[1] In *Intelligence Bulletin* No. 4 (December 1942), "Part Four: United Nations," page 77, subparagraph c, substitute "2 degrees" for "20 degrees" in the sentence which reads "The pole star is never more than 20 degrees away from true north."

2. ADJUSTING FOR DARKNESS

Your eyes adjust in two ways for seeing in the dark. One way is by opening up to let in more light or to make maximum use of what little light there is. This works in the same way as a camera diaphragm, which can be opened up wide for taking pictures in dim light. Your eye pupils open wide in dim light and close to a pin-point opening when the light is very bright.

But this is not the most important change in the way your eye works in dim lighting.

You actually have two kinds of sight. Your day eyes use one kind of vision cells known as "cones." They are principally located in the very center of the eye.

Your night eyes use an entirely different kind of cells, the rod cells, which are mostly around the outside edge of the eye.

The rod cells used by your night eyes are color blind. That is why "all cats look gray at night." If you see a colored light shining at night, and it looks red or green or blue, it is only because it is bright enough so that you can see it with your daylight eyes.

But your night vision is much more sensitive to light of some colors than to others. Red is seen equally well by night and day vision. Blue light, however, affects your night eyes 1,000 times as much as it does your day eyes. For this reason it is extremely dangerous to use blue lights in a blackout because it affects the enemy's eyes just as much as it does yours.

Night eyes lack the sharp vision for detail that your day eyes have. If you want to see to read, if you want to watch the dial of an instrument, if you must look at a map, a road sign, or your watch, then you must use your day vision. For this you must have good light—the more the better. Especially if the print or other forms are small, the light must be bright.

Night eyes are extraordinarily sensitive to faint light. This is shown by calculations that an ordinary candle flame could be seen at a distance of more than 100 miles if the night were completely black and if haze, dust, and the curvature of the earth did not interfere. A lighted match is about as bright as a candle flame. Under ordinary night conditions, a match can be seen from a plane for many miles away.

Night vision is not in use as soon as you step into the dark. It takes time—a half hour or more—before your eyes are completely adapted to the dark. When you leave a sunny street to go into a darkened theater, or step from a brightly-lighted room into the dark outdoors, you are completely blind at first.

Then several things happen. First the pupil of your eye dilates, letting more light into your eyes. This is a mechanical action.

Next the cones of your day vision adapt to the darkness. This takes about 5 minutes, and after that you feel more comfortable about moving around in the pitch dark.

After a much longer time, your rod vision adapts itself to the darkness and you can begin to see shapes and outlines in the gloom that were not even vague bulking shadows when you first came in.

Just how this change-over from cone to rod cells is accomplished is not completely understood, but it is at least partly a chemical process.

The soldier who, at a command or an alert signal, leaves a lighted room to run on duty without having prepared his eyes is completely at the mercy of the enemy insofar as his vision is concerned. By the time he gains the use of his night eyes, the emergency may be all over.

And even when your eyes are adapted to the dark, flashing on a light, even for a very short time, may ruin your night vision for another half hour. You can lose in a few minutes all you gained by half an hour in the dark. The brighter the light and the longer you look at it, the more you lose.

3. GETTING YOUR EYES READY

Complete darkness is the best preparation for night fighting. It pays to protect your eyes from light before you start and while you are out. If you can't stay in darkness, keep the lights around you as low as possible and don't look straight at them. If it is necessary to look at any lighted object, be as quick as you can about it. Experiments have shown that looking

at an instrument dial lighted only by radium paint will cut down the distance at which you can see a friendly or an enemy plane by 50 percent. Don't look at the dial any longer than you must or the loss will be greater.

Experienced gun pointers and spotters know that they must not watch the flash of their guns as they fire. The flash of a 6-inch gun may dull the eyes for a minute or more. Under continuous fire at dawn or dusk it is impossible to aim some rapid-fire guns accurately at a target more than 7 times a minute if the gunners watch the flash. At night the blinding effect would be even greater. Looking away from the flash gives almost complete protection. Luckily the flash of rifles and small-caliber machine guns has much less effect on the eyes.

There are several ways by which one can become dark-adapted or maintain dark-adaptation, even though working in a fairly bright light. Each method is suitable for certain types of jobs, and each has its limitations and dangers. A patch worn over one eye will keep this eye ready for night duty at any time, but vision from one eye alone is not as accurate as binocular (two-eye) vision, especially in judging distances of nearby objects. An individual may work in red light, or wear close-fitting red goggles, either of which are effective since red light has little effect on the rod cells and leaves one ready for nearly instant action in the dark. It is wisest to consult a medical

officer concerning the necessity for such preparation, and the methods best suited for the task at hand.

4. USING YOUR EYES PROPERLY

Always remember that you must look a little to one side in order to see best on a very dark night. Learn to pay attention to things which are just a little off to the side. Learn to keep from looking directly at any object. As you feel your eyes drawn irresistibly toward what you want to see, just let them slide on over it to the other side and look again with the tail of your eye. It takes practice to learn to do this without fail, but it is worth the trouble to learn the trick.

And don't keep looking steadily to the same side of an object. This will make it disappear, too.

Try it out yourself and see how your eyes at night can play "parlor magic" tricks on you.

When in your darkened room or outdoors, hold up your finger and look steadily at it. It will disappear. Look a little to one side and it will appear again. But if you keep staring at this side it will soon be gone again. Move your eyes to the other side and back and it will reappear.

This means that in searching the sea or the sky for a dark object, you must look at first one area and then another. When you think you have spotted something, keep looking first on one side of the object and then at the other, or above and below it.

But don't try to sweep your eyes over the sky or the horizon—you can't see well while the eyes are moving. "Scan" the sky, don't sweep over it. Night eyes are slow in responding. At night a faint object may not be recognizable until after you have looked near it a number of times. If you have ever hunted quail in the morning or watched deer in the dusk, you know that you can look right at such a camouflaged object for a while before you notice it. In darkness such an object is even harder to pick out because you won't see it at all if you stare. You have to look again and again at points near it.

5. CONTRAST HELPS NIGHT VISION

Another thing that affects our vision at night is the contrast between an object and its background. If the thing observed is very different from its background, it is much more easily seen. An airplane may be clear if you look up at it against the night sky, but invisible if you look down on it against the dark ground. A ship may show up clearly against a star-lit sky, but fade into the background if you are looking at it against a background of dark water.

If light from the moon is reflected onto the under side of an airplane from white clouds below, the plane may become almost invisible from any angle.

To notice small differences in contrast, it is essential to have clear vision. It is for this reason that windshields must be kept clean and free of scratches or fog.

These tend to scatter light in all directions and reduce contrast. Careless night fighters have been known to tolerate enough dirt on their windshields to double the time it takes to see a plane moving along near by. And sailors on ships sometimes let the salt from spray pile up in blotches on the glass. This is courting death.

For the same reason it is important to keep down the lights on your side of a windshield. Any light on your side reduces the contrast because stray light spreads over the whole glass and reflects in your eyes. That is why you push up close to a window when you try to look out at night. By coming up close, you shade part of the glass and increase the contrast of the objects seen through this part. If it is necessary to have any light on your side, keep it as dim as you can and screen it from the glass. This also helps your adaptation to darkness.

6. VITAMINS

There has been a good deal of talk about the effect of shortages of vitamins A and C on ability to see at night. These are the vitamins in fresh vegetables, cheese, and fruit. People who don't get enough of these vitamins do become poor in night vision, but regular Army and Navy rations supply plenty of these vitamins. Occasionally when boats are on long trips or when fighting lasts until fresh foods are all gone, a shortage of vitamins may occur. In these cases medical officers will

supply men who are likely to be on night duty with vitamin capsules. Extra vitamins don't improve night vision if your diet or your night vision is already normal.

Night vision is affected by fatigue. Anything that reduces your physical well-being has a greater effect on night vision than on day vision. Experiments have shown that hangovers, slight illnesses, or excessive fatigue may double or even triple the amount of light needed to see an object. The night fighter must train for his job as a boxer trains for a big match. The boxer who is not at the peak of training is likely to be knocked out. The night fighter whose eyes are not at the peak of efficiency is likely to be killed.

7. REMEMBER THESE THINGS

a. Protect your eyes from light before you go on night duty and while you are out.

b. Don't look directly at any light or illuminated object. If you must, be quick about it.

c. Use the corners of your eyes. Night targets are more clearly seen when you don't look directly at them.

d. Keep your eyes moving. Quick, jerky movements and short pauses are better than long, sweeping movements and long pauses.

e. Keep your windshield spotless and free of scratches and fog.

f. Keep yourself wide awake and on the alert. Don't break training. Use good sense about eating, drinking, and smoking.

g. Practice what you know about seeing at night until it becomes second nature to use your eyes to the best advantage. Use every possible device to aid you in learning to recognize ships, planes, and other important objects from slight cues.

Section II. BRITISH TRAINING NOTES

1. INTRODUCTION

The following article is a summary of a set of training notes prepared by the British Army, and should prove of special interest to our junior officers. The British stress the point that the object of all training is success in battle. "Modern battles," they say, "are fought by 'teams of fighters,' whether the team be a section, platoon, squadron, battalion, or regiment." They reason that since good training instills confidence and morale, their soldiers have an obligation to themselves and their outfits to seize every opportunity to train.

2. FOUR ESSENTIALS TO VICTORY

a. The Right Beginning

Troops must be launched into battle correctly; otherwise, it is difficult for large or small units to recover the initiative. All officers must understand the conduct of battle operations, especially with regard to their own level of responsibility.

b. Efficiency of Subordinate Units

Once the battle is joined, the issue passes to the junior leader and his subordinate unit. If the junior leaders are not well

trained, and if the standard of minor tactics is bad, we fail—no matter how good the higher leadership may be.

c. Fighting Spirit

If our troops are not mentally and physically fit and tough, and do not have the "light of battle" in their eyes, again we fail—however good the higher leadership and minor tactics.

All ranks must be made to feel the offensive spirit. They must be trained to fight and to kill. Every soldier must be the master of the weapons with which he is armed, and must be ready and willing to use them. This applies to clerks, drivers, cooks, and other specially employed men.

d. Battle Drill

Battle drill is a procedure by which we insure a common line of approach to the battle problem of subordinate units, and a common procedure within these units.

A good system of battle drill, wisely used, will permit the speeding up of deployment and will enable the small unit to develop its maximum battle power quickly.

If every officer and man in the field army and the training depots is taught this common procedure, it will insure full cooperation in battle. When all personnel are taught the same battle drill, there need be no changes in methods when reinforcements arrive or when casualties require substitutions in junior leaders.

3. ORGANIZATION OF TRAINING

Well organized training will produce good results. Individual and collective training must be sandwiched, and the available time allotted in accordance with the needs of the unit.

The degree of training that is possible will vary with local conditions. Formations in reserve and in rear areas will be

able to devote their whole attention to training. Formations in forward areas in contact with the enemy obviously will not be able to do this; in these formations, however, units in local reserve can do a great deal of training, and all units can do something. Wherever you are, observance of the following points is essential to produce good training:

(1) Prepare your programs well in advance.
(2) Be enthusiastic.
(3) Make all training interesting and varied.
(4) Introduce realism.
(5) Keep your training simple.

4. INDIVIDUAL TRAINING

a. Enlisted Men

The individual training of the rank and file should be based on three main principles:

(1) *The Grading of Every Man.*—Every man must be graded carefully. After this, instruction is given in accordance with the needs of the individual. The grading applies chiefly to weapon-training subjects, gas, and specialist training, but a commanding officer may grade for any other subject he wishes.

There are three grades:

Grade A—Men who pass all tests, and are above the average. These men are earmarked as potential noncommissioned officers or specialists, and receive training as such.

Grade B—Men who are average, and who require half the full instruction.

Grade C—Men who are below average—who cannot pass their tests, and who require the full-time instruction in all subjects.

The whole unit should be graded in this manner once every three months.

(2) *Rewarding Merit.*—Men are dismissed from parade or instruction if they are doing well. The instructor, after 30 minutes, may fall out the good men—or, if the whole squad is good, let them all fall out.

b. Officers

(1) *Preliminaries.*—Commanders must train their own officers. Officers' days should be held at least once a week, wherever a unit may be, and the following subjects are among those that must be taught:

The technique of movement.
Battle drill, or general management of battle.
How to plan and carry out various types of operations.
Reconnaissance and deployment.
The cooperation of all arms in battle.

Officers should be instructed first by means of situation models, discussions, and demonstrations. The models need not be elaborate, especially since sand models are easy to make. Next come tactical exercises without troops, and then skeleton exercises. The headquarters exercise, the artillery exercise, the signal exercise—all these are of the greatest value.

(2) *Verbal Orders.*—Officers must learn to give simple and clear verbal instructions. Orders will produce only the results they deserve. You can train as much as you like, but unless your plan is clear and your orders decisive—and unless junior commangers know not only what their immediate task is, but what the main object is—you will not get the best results. (Often you will get no results at all.) It is for this reason that officers must have continual practice in giving verbal orders.

(3) *Ground and Distance.*—All leaders must be trained in the selection of ground. In country where features are not numerous,

it is of the utmost importance to be able to pick out dominating ground. Most soldiers are bad at judging distance, but experience will remedy this.

(4) *Intercommunication.*—Efficient communications, which must be maintained throughout all phases of a battle, are primarily the result of training. All forms of communication must be practiced. Within the infantry battalion's area of responsibility, visual signaling and radio, singly or together, may provide the means at any time in battle whereby just the vital order or item of information may be transmitted and received. These means are complementary to each other, and alternatives must always be provided when communication lines are of paramount importance.

Regimental signaling personnel must be especially selected.

The standard of radio efficiency must be high in all units, including infantry battalions.

Infantry company commanders must practice indicating artillery targets and correcting artillery fire. Field officers and company officers must continually practice together.

Good maintenance of equipment, especially wireless sets and batteries, is vital. This includes routine testing.

Assistance in all communication problems must be a part of the responsibilities of chief signal officers, officers commanding divisional signals, and brigade and regimental section signal officers. Full use should be made of these officers.

c. Noncommissioned Officer and Specialist Cadres

Noncommissioned officer and specialist cadres (for reinforcements) are necessary at all times. Formations and units in the forward areas should train cadres in their rear echelon. It is important to maintain a high standard in training for specialists.

To insure a uniform standard, specialists must be tested by a neutral board.

d. Sniping

Every infantry battalion must have a proper sniping organization, so that the battlefield may be dominated.

It is suggested that each company should select two known good shots for training as company snipers and in addition, one man in each section to be trained as the section sniper. Wherever possible, snipers should be issued telescopic sights or special sniping rifles.

These snipers must be highly trained in fieldcraft, camouflage, and marksmanship. Normally, they should be trained to work in pairs.

Their main task will be to locate and kill enemy commanders and reconnaissance parties.

e. Maintenance

The importance of daily routine maintenance inspections must be taught to all ranks. There must be a morning and evening maintenance period. All officers below the rank of major who are in charge of vehicles should attend these periods. They should not stand about idly, but should pitch in and do a good job of work.

The daily maintenance task system must be introduced and insisted on, so that it will become automatic under any conditions. The tasks for armored force vehicles may be based on mileage, to some extent.

During maintenance periods, all specialists must carry out maintenance on their particular equipment—wireless sets, mortars, and so on.

5. COLLECTIVE TRAINING

a. Instructions by the Commander

The commander must issue instructions covering the following:

(1) The object of the training.
(2) The principle on which it is to be based.
(3) The standard aimed at.
(4) The phases of war to be studied.
(5) How he wishes the available time to be used.
(6) Special instructions regarding night operations.

b. Rules to Observe during Training

The following are important points to observe during collective training:

(1) The training must be mixed. During company training, battery training, and so on, the whole battalion or regiment with full equipment should go out once every two weeks.

(2) Collective training must be based on preparing all units to live hard, move light, and fight simply.

(3) All arms must study how to operate efficiently without taking their full equipment into every battle. In certain battles, and in certain country, it may be possible to leave various types of equipment out of the battle. The carrying of unauthorized equipment in vehicles is forbidden.

(4) During unit training, every exercise must include dusk and dawn operations. These are the times when things happen in war.

(5) Realism must be injected into the training, and the conditions of the battlefield be reproduced as far as possible. Troops must be trained to advance under cover of artillery and mortar fire.

(6) Full-scale collective training should be real tests of endurance for commanders, staffs, and troops. They should be made to face difficult situations when really tired. If they are not tough, they will fail.

c. Operations to Be Taught

The following operations must be taught and practiced:

(1) The attack planned in complete detail.
(2) The dusk attack.
(3) The night attack.
(4) Penetration of obstacles.
(5) Reorganizing and holding the ground gained.
(6) Disengagement and withdrawal.
(7) Defensive tactics.
(8) Counterattacks.
(9) Patrolling by day and night (from one leader and two men to a platoon).

d. Unit Drills

(1) Movement by motor transport and on foot.
(2) Reconnaissance and deployment.
(3) Occupying a position by day and night.
(4) Bivouacking.
(5) Night attack.
(6) Mine lifting and laying.
(7) Infantry attacking with tanks.
(8) Consolidating an objective.

e. Night Training

Efficient training in night work is most important. Whenever possible, all units must carry out night training at least three nights a week. A continuous week of night work is strongly recommended for all training units. At first, all personnel must be taught how to move, observe, and listen at night. All units must be able to operate on dark nights, as well as when the moon is bright.

In training for a night attack, sufficient time must be allowed before daylight for consolidation of an objective already won, and for proper digging-in.

f. Crossing Minefields

All troops must be taught the technique of crossing a minefield, which is similar to the technique of crossing a river. It must include:

(1) Careful reconnaissance.
(2) Clearly marked routes and gaps.
(3) Alternative crossings.
(4) Mine-lifting party.
(5) Covering party and artillery support (if by day, smoke).
(6) Control and collecting points for motor transport vehicles manned by officers. Maintenance of good communications with an officer in charge of lifting operations.
(7) Order of priority of crossing.
(8) Lights and tape for marking.
(9) Recovery posts.
(10) Lines of departure. Assembly and re-assembly areas.
(11) Wire-cutting party.

6. GENERAL PRACTICES

a. Infantry vs. Tanks

Infantrymen must be trained to stand their ground when attacked by tanks. They must be taught that the heaviest possible concentration of small arms fire must be directed against all attacking tanks, from the moment they come within range, to force the tanks to close down. When the tanks are close enough, they must be attacked with sticky grenades.

All ranks must be taught the general characteristics of tanks, and at training depots tanks should be attached for a few days so that men may get used to them. All men must practice remaining in slit trenches and allowing tanks to run over them; also, they must ride as gunners in tanks. This will teach them

that, at close range, tank guns cannot place fire on men in slit trenches.

Tank-hunting parties must be trained so that they can go out and destroy disabled tanks, and attack them when in bivouac.

b. Artillery

It is most important to train units to control their ammunition expenditure, and to render ammunition returns; if this is overlooked, it leads to waste.

c. Antitank Guns

Antitank units must be trained in the selection of defiladed positions, and taught to dig their guns in.

d. Concealment

It is of the utmost importance that all defense works be well camouflaged and that all subordinate units have alternative positions to which they can move. Troops must be taught to dig in at once when taking up a position. This applies equally to artillery and infantry.

There are three types of positions. They are constructed in this order:

(1) Fire positions.
(2) Alternate fire positions
(3) Dummy positions (when there is time to make them).

e. Organized Rest

If all ranks are going all-out on fighting and training, it is essential to have organized rest. This must be adhered to strictly by all personnel.

f. Map Reading and Navigation

Map reading and navigation can always be improved. It is a great help in map reading if all commanders shade, in two or three different colors, the high ground on their maps.

g. Assault Courses

All training units should make assault or blitz courses. These are excellent for testing the fitness of all ranks. The courses can be laid out on any piece of ground—if possible, in an area in which live ammunition can be used. Blank ammunition, smoke, and fireworks will provide realism. Battle inoculation must be introduced at all training depots and reinforcement camps. Troops must be trained to advance under cover of artillery, mortar, and small-arms fire. They must also be shot over.

h. Observation

(1) *General.*—Too often during exercises infantry soldiers confine their attention to the back of the man in front. They fail to notice any objects or indications of military significance. Trivial details may disclose a great deal to an alert mind and keen senses.

Men must be taught to use their eyes. This training must be systematic and progressive.

(2) *A Suggested Exercise.*—A suggested form of exercise in the latter stages of observation training is as follows:

A route is selected over varying terrain. The route should avoid roads and tracks, and should pass through both open and close country—if possible, where the going is moderate at first but becomes rougher. Approximately 2 miles is sufficient for initial exercises. A number of objects should be laid along the route, and at varying distances from it—a fixed bayonet projecting from a

bush, a steel helmet appearing above a rock, a clumsy imitation of natural camouflage, trip wires, men placed in position both close at hand and in the distance along skylines and crest lines, suspicious movement of individuals, rifle and light machine-gun fire, and prearranged noises and signals.

Students, accompanied by an instructor, follow the route and note objects seen, and the kinds and directions of noises. The men are not allowed to halt, but are kept on the move the whole time. The exercise is done best with small squads. Men should not march in formation, but should be at liberty to march as they please, provided that the prescribed route is adhered to.

Common faults are:

(a) Confining one's attention to a single suspicious object for too long and neglecting the rest of the area, thereby falling into a trap.

This fault can be demonstrated to squads by surprise attacks staged from a direction other than that in which their attention is fixed.

(b) Focusing either on the foreground or on the distance; thereby failing to include the whole perspective in one's sphere of observation.

A squad on a recent exercise, after spotting individuals in the distance, failed to observe a man with a light machine gun in the open at 25 yards, and, once having spotted certain nearby objects, failed to notice distant movements on skylines.

i. Marching

The fact that infantrymen often are carried by motor transport must not result in any reduction in the capacity for marching. Infantry must train to march at least 15 miles a day and fight a battle at the end of it. There is always a tendency to use vehicles for short journeys which could easily be done on foot.

j. Speed of Vehicles

Speed limits for each type of vehicle are laid down to prolong the lives of the vehicles, and to conserve spare parts and tires.

Excessive speeds and dangerous driving still are common and unchecked. This is simple unit discipline, and must be enforced.

k. Cooperation

It cannot be emphasized too strongly that successful battle operations depend on the initial cooperation of all arms, whether in armored or unarmored units.

No one arm, alone and unaided, can achieve successful results in battle. In training it should be made clear at an early stage that all arms must work together in the closest possible cooperation.

It will be stressed that intercommunication is a primary factor in the cooperation of all arms.

Every man must know the exact location of his own immediate headquarters during all phases of the battle.

Section III. HOW TO USE TROUSERS AS A LIFE PRESERVER

1. INTRODUCTION

The idea of using trousers as an auxiliary means of keeping a man afloat was submitted to the Office of Naval Intelligence by the commanding officer of the Naval Training Station, San Diego, Calif. All recruits trained at the station are taught the technique. This technique, with illustrations, is given in the *Intelligence Bulletin* because troops of all Army branches may be placed in situations where such knowledge might mean the saving of lives.

2. THE TECHNIQUE

The first step in the process is to tie each leg of the trousers with a suitable string or cord about 3 or 4 inches from the bottom (study fig. 10). If no string or cord is available, tie an overhand knot with each leg. The trousers are then grasped in the position commonly used for dressing and swung overhead from the back. The man then jumps into the water, holding the trousers at arms' length over his head. Upon strik-

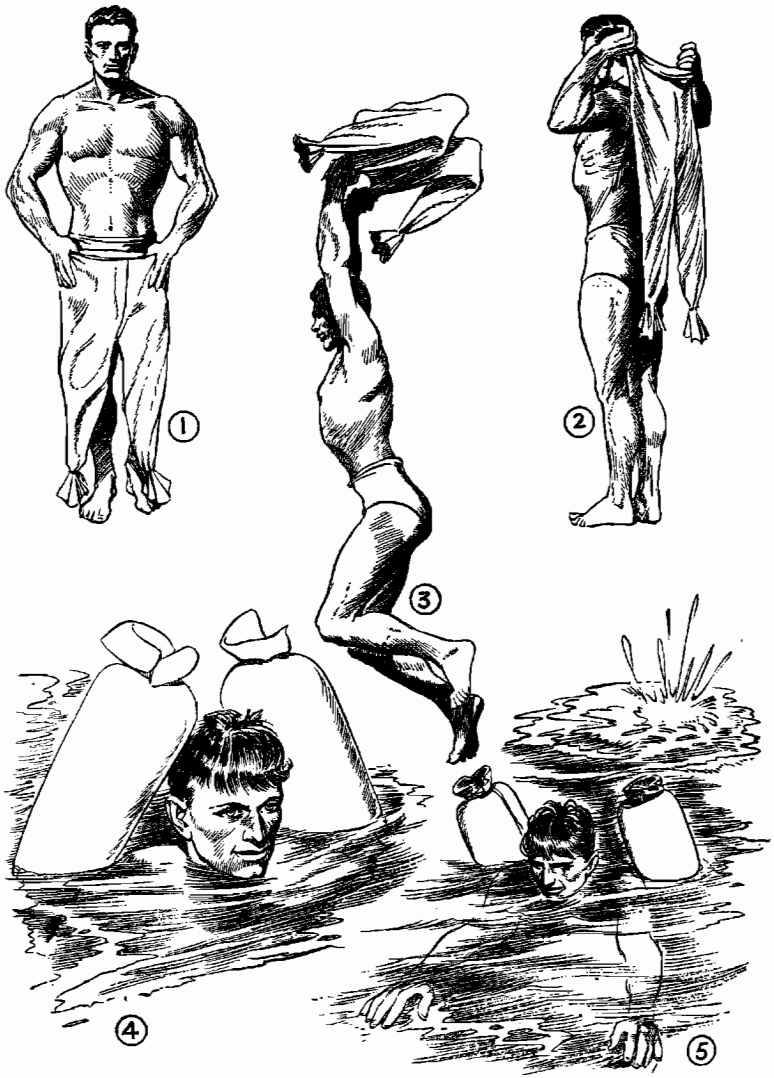

Figure 10.—Trousers Used As a Life Preserver.

ing the water, the trousers are inflated. If time and facilities permit, wet the trousers thoroughly before inflation—this enables them to hold air better.

Recruits at the San Diego station are also trained to remove their trousers while in the water and prepare them for life preservers. The trousers are slipped off and the overhand knot is tied in the end of each trouser leg. The trousers are then brought quickly over the head at arms' length, from back to front, thereby inflating them with equal efficiency.

Tests have been made which prove that inflated trousers will hold a man's weight in water for as long as 2 hours. By re-inflating the trousers, the time can be extended as long as the man can repeat the inflating process.

To float or swim, after the trousers are inflated, the man places the inverted crotch of the trousers under his arms and chest.

Khaki cloth will hold air better than the more porous navy blue trousers. The navy white and khaki have about the same inflation value.

Section IV. HOW NEW ZEALAND TROOPS PENETRATE WIRE OBSTACLES

New Zealand troops have successfully used the following methods of getting through wire obstacles in the Middle East. In considering this report, the reader should keep in mind that it refers to a New Zealand rifle company which, in approaching enemy wire, has two platoons forward. Each platoon has its three sections forward, also. Nos. 3 and 4 of each section carry wire cutters.

a. Triple Concertina Fence

As the leading sections approach a triple fence of concertina wire, they deploy into a line and lie down about 10 to 15 yards from the wire. Nos. 3 and 4, under covering fire from supporting weapons, or from the section's own light machine guns, dash forward and throw themselves—relaxed—against two adjoining pickets. Screw pickets normally will bend under the weight, and the fence will partly go down. If a strand of barbed wire runs through all the concertina loops, and is tied to the pickets, it may have to be cut.

No. 5 man runs forward almost simultaneously, and, with his rifle held well in front of him at high port, hurls himself full-length against the length of wire between the pickets. As a result, the whole stretch of wire flattens almost to the ground.

Nos. 1 and 2, with their light machine gun, move quickly and carefully through the gap, and lie down about 10 to 15 yards past the wire. The section commander and the remaining men follow closely, lying down deployed in line, with Nos. 3, 4, and 5 joining Nos. 1 and 2. If necessary, the light machine gun gives covering fire while the rest of the section comes through. Simultaneously, all other forward sections are doing the same, and should be ready to resume their attack. If the wires are not tied, two men may be sufficient to crash the fence between pickets.

b. Double Apron Fence

In approaching a double apron fence, the sections follow the method outlined above. Nos. 3 and 4 throw themselves at the pickets (whether screw, angle-iron, or wood), with rifle at high port. These men quickly cut the top wire and any other fence wires that are tied to the pickets. No. 5 then dashes forward as before, throwing himself, with rifle held well out to protect his face, onto the stretch of wire between the pickets. All these men should throw themselves boldly, but with muscles relaxed. The section then hurries through

the gap and deploys as before, ready to continue the attack.

Another method is for Nos. 3 and 4 to jump into the wire, cut the top few strands, and then fall on the remaining wire to make it sag, the section moving through as before.

c. Two Double Apron Fences, Close Together

The procedure described in sub-paragraph b, above, is followed, except that Nos. 5 and 6 crash down the second fence.

d. Combined Wire Obstacles

Sometimes troops encounter the combination of a double apron fence, a triple concertina fence, and another double apron fence—all close together. In breaking through these combined obstacles, six men are used, two per fence, who jump in, cut wires if necessary, and crash down on the fence. Here, as in the situation covered by sub-paragraph c, it may be advisable for the platoon to be divided so that only two gaps are made, instead of one per section. Two adjoining sections can then go through one gap; the remaining section, together with platoon headquarters, can go through the other. A definite method should be practiced and adopted by each unit.

Wiring gloves are advised for Nos. 3 and 4, but are not essential inasmuch as the rifle will bear the brunt of the contact with the wire. Burlap or some similar

protection can be used around the hands, if necessary. It can be wrapped around the knees, also, if the men are in shorts. It is emphasized that this is not essential, however. Every man must realize the importance of speed, and must feel strongly determined to get through the wire.

e. Comment

The time in which a forward platoon gets through wire varies from 6 seconds, in the case of troops encountering triple concertinas, to less than a minute in the case of troops encountering the combined wire obstacles. Under cover of artillery and medium machine-gun fire, an entire forward battalion has succeeded in getting through wire in 2 minutes and immediately continuing the attack.