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WAR DEPARTMENT

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MILITARY INTELLIGENCE
SERVICE

WAR DEPARTMENT
Washington, March 1943

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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.

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PART ONE: JAPAN

Section I. JAPANESE IMPRESSIONS OF U. S. WARFARE

1. INTRODUCTION

This section is based on several Japanese documents, of various types. Some of them were written prior to our capture of Guadalcanal and other islands nearby. This fact probably accounts for contradictory statements in some of the documents. Remember that this information comes from enemy sources, and therefore is not necessarily true. The individual documents are separated by dashes. Reference should be made to *Intelligence Bulletin* No. 5, for January, 1943, Section I (Japan), "Jap Estimate of U. S. Land Tactics," page 29.

2. U. S. BATTLEFIELD TACTICS

The U. S. Army's usual fighting is in accordance with the bulletin, "American Army Combat Information, Guadalcanal Island," distributed November 24, 1942. (The Australian Army fights according to Nos. 1 and 2 of the "Special Intelligence Reports.") However, some supplementary information on their usual methods of fighting is as follows:

a. The enemy (U. S.) fires at a slow rate, but is skillful in covering jungle roads and precipices.

b. He is fond of using hand grenades, and fires and throws them at close range.

c. The enemy's fighting spirit is unexpectedly intense. He does not retreat in single-firing combat. However, when charged, he will flee.

d. At a point about 1 kilometer (roughly $\frac{5}{8}$ mile) to the front are scouts who, when attacked, usually flee immediately.

e. Enemy foot patrols usually operate 200 to 300 yards to the left and right, forward and rear of their positions.

The following is our estimate of American strength and capabilities:

a. They stress cooperative firing, and never fight without artillery.

b. When assaulting they fire their pistols.

c. Their tactics are formal, and they lack initiative ability. They do no more than they are told.

d. In defense, they never counterattack and never carry out an offensive.

e. Their supply facilities are extravagant.

f. They know nothing of assault. We should assault whenever possible. Fifty yards is often the best distance for assault.

g. The Americans are untrained for night fighting, and they fire their guns all night long.

h. Their command is untrained for retreat combat. If they begin retreating, pursue them quickly.

i. Their tanks fight separately. However, they are very good at movement.

j. If the Americans are hit on the flanks or in the rear, their command becomes confused and they are unable to fight.

The following are notes on the enemy's (U. S.) methods of combat:

- a.* The Americans choose high places or curves in roads for their positions, and snipe from a short distance (30 to 50 yards).
 - b.* They are skilled in the use of hand grenades.
 - c.* Their will to resist is comparatively strong, and, although we attack them, they still resist.
 - d.* The enemy usually posts an observation party at a point approximately 1,000 yards in front of his position.
 - e.* His observation to the flanks and rear is very good. He always tries to attack our rear and flank.
 - f.* The enemy pays considerable attention to fire support.
-

The enemy's weak points:

- a.* The enemy does not pay much attention to hand-to-hand fighting.
 - b.* His front-line defense is easily penetrated. There are many gaps in his position.
-

Things to watch for in combat:

- a.* The enemy lays piano wire (small, smooth, and made of high-grade steel) in front of his positions.
- b.* He has good fire protection on his flanks.
- c.* He outflanks by using heavy firearms.
- d.* He uses diversion tactics in attack. (Do not pay much attention to enemy decoy tactics.)
- e.* He constructs many false positions.
- f.* It is easy to be deceived by the enemy's decoy tactics in the forest. Send a sentry forward. Don't choose a good position.
- g.* The enemy always shoots from the side of roads or from the edge of high ground.

h. The enemy usually places observation posts about 1,000 yards in front of his position. Watch closely for electric wire and microphones.

i. The enemy always prepares for close combat.

Their (U. S.) impressions of the Japanese Army:

a. The Japanese Army is very strong—always winning.

b. They don't take a serious view of fire power.

c. They are skillful in movement at night.

d. They have a strong esprit de corps.

e. They make minute plans for operations.

f. They charge without any thought of sacrifice.

g. They generally throw their reserves into battle immediately after it starts.

h. Their officers are skillful and industrious.

i. Assaults are skillfully executed.

j. Artillery is skillfully used.

Section II. DETAILS OF NEW RIFLE USED BY JAPANESE

1. GENERAL

The Japanese have put into use a new service rifle (see fig. 1), which is in many ways similar in operation, functioning, and general design to their Meiji 38th-year pattern (1905) rifle, except for a shorter barrel, larger caliber, and improvements in the rear sight. The new weapon is known as the 99th-year pattern (1939) short rifle.

The caliber of the Japanese weapon is 7.7 mm. (.303), the same caliber as the Lee-Enfield rifle and the Bren light machine gun, both standard weapons in the British Army. However, the ammunition is semi-rimless and not rimmed like the British .303 Mk. VII.

One of the new rifles, captured on Guadalcanal, was examined by a U. S. Army Ordnance officer. He described the rifle as a manually operated, air-cooled, shoulder weapon. It is loaded by means of a clip, which contains 5 rounds of ammunition similar to that of our M1903 rifle. However, U. S. caliber .30 ammunition will not fit into the firing chamber of the Japanese weapon, because the distance from the base to the tapered

shoulder of the cartridge case is sufficient to prevent the bolt from closing. In addition, our ammunition is too long to fit in the magazine. British caliber .303 ammunition will fit in the firing chamber, but the bolt will not close because the base of the cartridge case is too

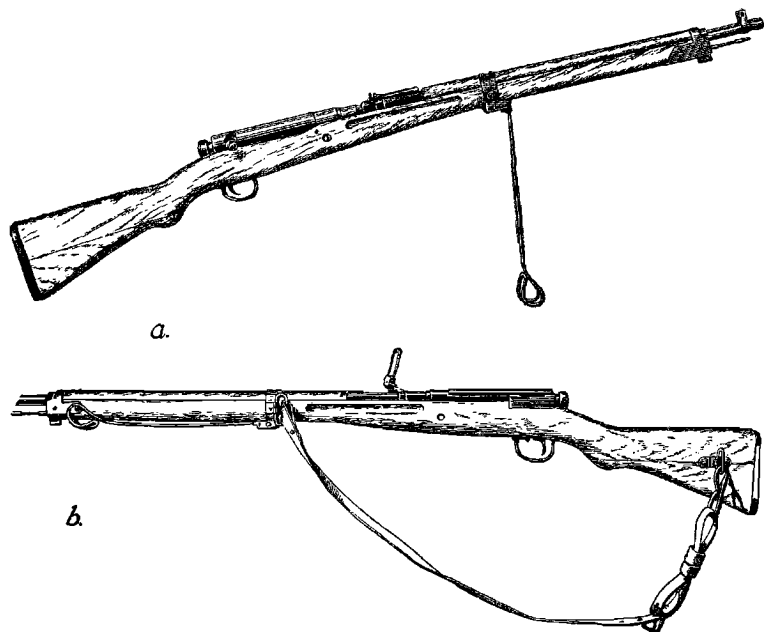


Figure 1.—New Japanese Rifle; (a) Right Side, (b) Left Side.

large in diameter and has too large a rim to fit in the recess of the bolt. Four rounds of the British ammunition will fit into the magazine.

The Japanese rifle is equipped with a cleaning rod, which is carried in a hole in the stock, just under the barrel. The rod is held secure by a catch.

A sling, made of rubberized canvas, is attached to swivels on the lower band and stock on the left side of the rifle.

The rifle has a monopod attached to the lower band. While not in use, the pod can be rotated forward to catch on the stock. This pod is about 12 inches long from the center line of the bore, and it appears to be too long for use in the prone position.

The bolt mechanism of the rifle, like that of the older 6.5-mm Japanese rifle, is covered by a semicircular cover of sheet metal that slides with the bolt in loading and extracting ammunition. The purpose of this cover probably is to keep dirt from fouling the mechanism. The rifle is not provided with a cut-off for firing single shots.

Although distribution of the new rifle may have started as early as July, 1942, it is reasonably certain that a large majority of Japanese infantry troops are still equipped with the old 6.5-mm (.256 caliber) rifle, the Meiji 38th-year pattern (1905), or with its carbine form. This old model has not been changed since 1905.¹

2. TABLE OF CHARACTERISTICS

Weight of rifle (unloaded) with sling-----	8.8 lbs.
Magazine capacity-----	5 rounds
Over-all length-----	44 in.
Length of barrel-----	25½ in.

¹ For details of Meiji 38th-year pattern rifle, see Intelligence Bulletin, No. 5, p. 53. or TM 30-480, p. 92.

Length of barrel and receiver.....	32¾ in.
Rifling (right-hand twist) one turn in (estimated same as U. S. M1903).....	10 in.
Grooves in barrel.....	No. 4
Depth of grooves.....	Estimated twice that of U. S. M 1 9 0 3 rifle
Caliber of bore (measured).....	.303 in.
Trigger pull.....	9 lbs.
Range on rear-sight leaf.....	300 to 1,500 m e t e r s (328 to 1,640 yds).
Peep-sight opening.....	1/8 in.

3. DESCRIPTION OF COMPONENT PARTS

In general, the new rifle is composed of four main groups of assemblies and parts. They are described as follows:

a. Barrel Group

The barrel, approximately 25½ inches long, is threaded into the receiver in a manner similar to the method used in U. S. rifles. An alignment mark is provided for assembling the barrel and receiver together. The bore has four right-hand lands and grooves with a twist (approximately the same as the M1903 rifle of one turn per 10 inches. The grooves are cut much deeper than those of U. S. rifles.

b. Receiver Group

With few exceptions, the receiver is constructed much like that of the Japanese 38th-year pattern rifle. A bolt stop is provided at the left rear part of the receiver by merely utilizing a piece of metal that swings a lug clear of the bolt when it is withdrawn from the rifle. The ejector is hinged in the bolt stop and operates in principle like that of the U. S. rifle M1917. (*See* TM which describes the U. S. caliber .30 M1917 rifle.) The rear of the receiver has a slot cut for a lug in the safety. The receiver has grooves cut near the firing chamber for the locking lugs of the bolt, in a manner nearly identical to those in U. S. rifles. The grooves do not appear to be tapered, providing for "slow extraction" of fired cartridge cases; this is a point considered important in the design of U. S. rifles. A gas-escape vent hole $\frac{3}{16}$ inch in diameter is provided in the top of the receiver just in rear of the firing chamber.

c. Front Sight

The front sight is practically identical with that of U. S. caliber .30 M1917 rifle (*see* TM No. 1917, which describes this U. S. rifle). An alignment mark is provided for matching the front sight with the front-sight carrier.

d. Rear Sight

The rear sight of the rifle is located approximately in the center of the rifle. The sight is of the folding-leaf

type with a regular peep-sight and a battle peep-sight; each has an opening of $\frac{1}{8}$ -inch diameter. The rear-sight leaf has calibrated notches for ranges of 300 to 1,500 meters (328 to 1,640 yds), inclusive. The sight has no means provided for correcting range or drift. The slide on the sight is equipped with two arms (right and left) that can be swung out $2\frac{3}{8}$ inches from the center of the rifle and are probably used for antiaircraft fire. The remainder of the parts of this sight are similar to those of the U. S. caliber .30 M1917 rifle, shown in FM-23-6.

e. Operating Mechanism Group

The operating mechanism consists essentially of the bolt, extractor, striker, mainspring, and safety. These parts, except for the safety, are very similar to those on the U. S. caliber .30 M1917 rifle. The safety fits into the end of the bolt and locks the bolt parts together by means of a lug on the safety, which engages in a slot in the striker, and a lug on the bolt which engages in a slot in the safety. The safety is applied when pushed forward about $\frac{3}{8}$ -inch and rotated approximately 15 degrees clockwise, engaging a lug on the safety with a circular groove in the receiver. This action locks the bolt in the receiver and also locks the striker to the safety. The trigger is not locked when the safety is applied.

f. Trigger-Mechanism Group

The parts and principle of operation of the trigger mechanism are practically identical with those of the U. S. caliber .30 M1917 rifle. The trigger is not designed for initial slack at the start of the pull, but moves with a steady resistance. The mechanism requires a very high trigger pull of 9 pounds before firing, compared to $3\frac{1}{2}$ to $5\frac{1}{2}$ pounds pull in the U. S. M1903 rifle. As the sear is released due to a camming action of the trigger on the receiver, a safety stud on the forward end of the sear is shoved into a groove in the bolt to act as a lock when a round is fired.

g. Magazine Group

The magazine group consists essentially of the trigger guard, magazine, follower, magazine spring, and floor plate; parts similar to these are shown in FM-23-6 for the U. S. caliber .30 M1917 rifle. The floor plate differs in design in that it is hinged to the forward part of the trigger guard and held in position by a catch located in front of the trigger. When the catch is released, the magazine spring and follower fly out with the floor plate. This feature of the Japanese rifle is very good.

h. Stock and Hand-Guard Group

The stock of the Japanese rifle is made in two pieces and fastened together by a dove-tailed joint in the butt of the stock—a method probably adopted to conserve

material. No provision is made in the butt of the stock for any accessories. The receiver and the trigger guard are held firmly to the stock by three screws. The butt of the stock is covered by a butt plate. The hand guard is constructed in one piece and held in place by the upper and lower bands. The wood portion of the rifle appears to be made from wood similar to the U. S. white walnut or a wood softer than the black-walnut stocks used on U. S. rifles.

Section III. JAPANESE WARFARE— FROM THEIR DOCUMENTS

1. INTRODUCTION

This section is based on various types of Japanese documents, obtained from several sources. They have been arranged according to subject matter as far as possible. Some are given almost verbatim, while others have been edited to eliminate repetition and parts considered of little or no value. The individual documents are separated by the use of dashes.

2. MOVEMENT IN JUNGLE COUNTRY

a. During the Day

Although it is said that the jungle is ideal for the individual soldier, if he does not carry woodcutter's equipment he will often find it impossible to get through. Although the density of jungle varies, a woodcutting group of 20 to 30 men under the direction of an officer is necessary for a single column (one team under the man in charge of blazing the way, and several teams under the man in charge of cutting through).

Speed in passing through jungle will depend upon its density, but in general 1 kilometer ($\frac{5}{8}$ mile) will require 2 hours.

To maintain direction, a compass should be used; even so, mistakes in direction are sometimes made because of the tendency to keep following the easiest terrain. Moreover, the magnetic declination on Guadalcanal Island must not be forgotten; that is, to advance west by compass, one must advance approximately 7°40' northwest. Therefore, it is important to search out the highest ground possible and orient one's self before proceeding.

For bivouacking in a jungle, the foot of a slope is best because it has cover from bombing or strafing. The area around streams might easily be a target for enemy planes, and so is not suitable.

Use such things as small whistles to keep contact in the jungle, but do not shout carelessly, especially at night. On high ground in the jungle, the enemy has installed microphones to learn of our approach and make it possible to bombard us. Often it is impossible to get artillery pieces through the jungle unless they are dismantled.

In the jungle the Americans build individual shelters, surrounded by wire entanglements, or concealed; and, when we approach, they fire tracer bullets or signaling shots to direct bombardment.

In grass plots in the jungle, the enemy sometimes prepares a concentration of fire. It is especially important to search in advance the border areas between jungle and grass plots.

The enemy is extremely well equipped with artillery and heavy infantry weapons, and, on seeing us advance, they freely open up with heavy fire. Therefore, in advancing through open country by day, it is important to cooperate well with our own artillery.

When the enemy discovers even an individual soldier, whether by day or night, they bring concentrated fire on him. Make use of this by causing the enemy to waste his bullets. That is, place imitation targets where troops are not disposed, and at night carry out such clever deceptions as lighting lamps.

In the jungle there are covered machine-gun emplacements at unexpected points. If the first line of troops discovers them, they must take measures to destroy them immediately.

The enemy has few tanks and they are slow, so they can easily be destroyed by such weapons as our rapid-firing gun and infantry gun.

The enemy greatly fears our assaults. Do not forget that final victory always lies in hand-to-hand battles.

b. At Night

Movement within the jungle at night, especially the movement of large units, is extremely difficult. When passing through the jungle at night, even when the course has been marked and plotted during the day, contact is often lost, especially front to rear. Therefore, it is essential to devise means of maintaining contact, such as the use of punk (made from coconut husks), fireflies, and phosphorescent substance (from decayed trees).

As the organization of fire by the enemy is precise, even at night, care must be taken to deploy to such an extent that the control of command will not be impaired. It is important to keep from giving the enemy an opportunity to fire, by making use of terrain features, camouflage, and crawling, and at the same time to devote one's efforts to continuing the advance.

The foremost prerequisite of success is that each unit reach the objective of its attack, and maintain the prescribed direction of advance. It is extremely important to avoid mixing the units of a force, and to keep friendly troops from attacking each other. Therefore, conspicuous landmarks in the jungle area, especially within and in front of the enemy positions, should be previously designated, and it is essential to make the utmost effort to maintain direction by use of the compass, by orientation from high ground, and by every other method.

3. ASSAULTING ENEMY POSITIONS

The terrain within the enemy positions is generally flat, with the exception of the Lunga River area, and traffic is unrestricted. Therefore, within the positions, expect attacks from enemy tanks, covered machine-gun positions, and, at times, concrete pillboxes in the second- and third-line positions.

As a counter measure, prepare hand-to-hand fighting (demolition) squads of infantry and engineer troops, and advance them to the foremost lines. Do the utmost to inflict a surprise attack, and bring up light and mobile guns (presumably light artillery) near the first lines. If conditions permit, have the demolition squads precede the first-line infantry to make the advance of the infantry easier.

It is important to strengthen the shock troops, and to make sure that these troops, by the use of terrain features and camouflage, reach the flank and rear of the enemy firing point and attempt a sudden penetration. At such times, the enemy attempts to fire pistols and throw hand grenades at the nearest of our penetrating troops; therefore it is necessary to penetrate by throwing hand grenades in order to hold the initiative.

Upon occupying enemy positions, it is imperative to pursue the fleeing enemy immediately. By halting, on the other hand, heavy losses from enemy fire might easily be incurred.

Section IV. COMMUNICATIONS

1. INTRODUCTION

Like their German allies, the Japanese have emphasized close coordination of land and air communications. This was especially true in the Malaya and Philippine campaigns, in which the Japanese enjoyed considerable air success. The information below has been translated freely from Japanese documents, and most of it deals with air-ground communication.

2. INSTRUCTIONS FOR LAND-AIR LIAISON

Smooth land and air communications can be maintained only by understanding thoroughly the details of both land and air communication facilities.

Anyone working with antiaircraft communications should be able to identify both friendly and enemy aircraft, and should have a knowledge of the principal characteristics of air tactics and aircraft performance.

Ordinarily one, or a combination, of the following methods of communication is used:

(a) To aircraft from a ground unit: radio signaling panel, message tube (by pick-up), heliograph, flare, smoke signaling, etc.

(b) To the ground from aircraft: radio message tube, heliograph, flare, smoke signal, carrier pigeon, etc.

(c) There may be circumstances when other methods are used. In the case of aircraft: signaling by different movements of the plane, or by dropping paper signals. In the case of ground troops: signaling by different unit formations, by flags, or by placing white panels on the ground to express characters in a message. (Japanese soldiers frequently carry Rising Sun flags for identification purposes.)

Signaling posts mainly use panel signaling methods (if necessary, however, flares or smoke signals may be employed). Pick-up message tubes may also be used if features of the terrain permit.

a. Selecting a Panel Signaling Post

(1) Choose a position from which it will be easy to establish communication. The place selected should not reveal the location of headquarters. It is preferable to establish the signaling post at a separate location.

(2) Make it easy for friendly aircraft to identify a signaling post, but difficult for the enemy.

(3) Select an area large enough for either message tubes or panel signaling. The dropping point for message tubes depends upon the direction of the flying plane, and the direction and velocity of the wind. In any event, tubes should be dropped within a radius of 100 yards from the center of the signaling post. Avoid dropping tubes in villages, forests, tall grass, rivers, or swamps.

(4) The pick-up area should be open and flat, and should be at least 300 feet wide by 1,500 feet long into the prevailing wind. Surrounding areas should be free from obstructions to flying.

b. Dropping Message Tube From Aircraft

(1) Fly over the expected location of the panel signaling post. Give a "call" signal and request a position for dropping.

(2) When the panel signaling post is located, fly low and drop a message tube aimed at the panel.

(3) When message "Received message tube" is shown on panel signaling post, depart. If the signal "Message tube not received" is shown, repeat procedure.

c. Operating a Panel Signaling Post

Communication from a panel signaling post to an aircraft is carried out as follows:

(1) Give the signals "requested" and "call."

(2) If the signal "understand" is received from an aircraft, give the panel message immediately. When the message is completed, give the signal "Message completed."

(3) Sometimes a message may be given without a call signal.

(4) Remove panels on receipt of "understand" signal from aircraft, or when it is believed your message has been received. Repeat the signal if "Repeat signal" is given.

Communication from aircraft to the panel signaling post is carried out as follows:

(1) When the call signal is given from the panel signaling post, reply with the signal "understand," and wait for a panel signal.

(2) Give the signal "understand" if the panel signal is interpreted, but, if not, give "Repeat the signal."

(3) The need for communication from an airplane to a ground unit can be determined by giving the "call" signal from the aircraft, and waiting for a reply from the panel signaling post.

In the event that an aircraft signals, the panel signaling post will reply.

The following precautions must be taken in panel signaling:

(1) Study the position of aircraft and facilitate observation from air.

(2) Make air observation as long as possible.

(3) If a panel is not seen from the air, leave the signal until the observer can see it.

The following precautions have to be taken in order to maintain satisfactory communication:

(1) Lay a panel in the correct position and remove any big wrinkles.

(2) Remove any object which obscures the view of the panel from the air.

(3) When using smoke to draw the attention of an aircraft, do not let smoke obscure the panel.

(4) Panels not in use will be disposed of in such a manner as to be invisible from the air.

(5) Index number panels will be laid from the first figure and down in order, and other panels will be laid or removed at the same time.

In order to speed up the finding of a dropped message tube, more than two persons (pickers) will be posted about every 100 yards.

d. Pick-up Message Tube Method

(1) *Panel signaling post.*—Give the signal “pick-up a message tube” and if the preparation is complete, give the signal “ready.”

(2) *Aircraft.*—If the signal “pick-up a message tube” is recognized, give the signal “understand.”

Wait for a “ready” signal and pick up a message tube by flying low.

e. Identifications

In addition to the Rising Sun on the wings, our planes can be identified by a white line, approximately 8 inches wide, near the tail end of the fuselage.

Friendly planes use the following signals to identify themselves to ground forces:

(1) When a plane is alone, it will waggle its wings. In the case of a formation, the plane at the extreme end will give this signal.

(2) When about to cooperate with land forces, the planes will usually circle overhead.

(3) At night, the navigation lights are usually turned on and off.

(4) When aircraft other than fighter planes approach friendly troops at night, our "shooting star" is fired if necessary.

3. MISCELLANEOUS ORDERS

In order to prevent leakage of information, all detachments will use army telephones as much as possible when communicating with each other.

In writing letters home, you will not give the following information: Name of place, military strength, matters concerning our army, establishments, future movements, or discussion of air raids.

You will be permitted to write the following: Am fighting south of the equator, need more competition, the enemy is weak, am fighting fiercely, and am living under conditions similar to those of the regular residents.

The division signal unit will install the communication net, and must carry out the communication liaison with the reserve unit, with both flank units, and with the command post.

Section V. JAPANESE WARFARE AS SEEN BY U. S. COMBATANTS

1. INTRODUCTION

What United States officers and enlisted men, under fire in the Southwest Pacific, think about Japanese methods of warfare as used against them during the past few months is revealed in individual interviews given below. The names and units of the men are withheld. For the convenience of the reader, the quotations are arranged roughly according to subject matter, and repetition has largely been eliminated.

2. GENERAL TACTICS

The Japanese method of fighting is comparable to *ju jitsu*. They count heavily on surprise and deception, endeavoring to strike suddenly where we do not expect it, and when we are not ready They avoid, if at all possible, the slugging match where weight of numbers and fire power count. They stress the principles of surprise and mobility at the expense of the principles of mass. With these tactics, the Japs have been able to use surprisingly small forces throughout the campaigns of this war to gain their objectives.

. . . . The individual Japanese hates the war and fears death as much as the average Occidental. Faced by a resolute man with a bayonet, Japanese have not stood up as well as their doctrines preach. Units have broken when involved in situations where they were outmaneuvered or outfought.

. . . . Constant practice has most probably made it possible for the Japanese to omit, in their orders for landing operations, considerable details concerning such things as missions to be carried out immediately after landing, successive objectives, frontages and boundaries between units, security measures, communications, and so on The Japanese commanding officer does not commit his forces to a definite plan of action until he has had an opportunity to estimate the situation on the ground as it confronts his troops. Also, this is in keeping with the Japanese policy of allowing subordinates to use full initiative and take independent action as the situation requires.

There are definite advantages in this, and great weaknesses, chiefly those of loss of coordination and breakdown of control, should the commanding officer become a casualty or otherwise fail to exert control. Independent action by subordinates is apt to lead to piecemeal attacks and commitment of the whole unit in a manner not advantageous for the unit, but it does instill in the subordinate the habit of acting without orders when the situation requires. This prevents the breakdown of the entire operation when higher control is lost.

. . . . One gets the impression that the perfect Japanese solution to a tactical problem is a neatly performed stratagem, followed by an encirclement or a flanking attack driven home with the bayonet. This allows the commanders to demonstrate their ability, and the men to show their courage and ferocity in hand-to-hand fighting. The Japanese plans are a mixture of military artistry and vainglorious audacity.

. . . . Bulldog tenacity in carrying out a mission, even to annihilation, will very frequently give a most erroneous impres-

sion of the Japanese strength and will often result in small forces overcoming larger ones, as their units are not rendered ineffective until they are nearly all casualties

After the recent Milne Bay action, in which my organization was very actively engaged, I reached the following conclusions:

(a) Any fear or doubt concerning their own ability which our personnel may have developed, as a result of the spectacular Japanese land conquests during the past 9 months, is gone and forgotten now. Especially in anything like open terrain, where the Jap cannot rely on his many "jungle tricks," he is no match for either the United States or Australian soldier.

(b) The fact that the men have now been able to see, in actual combat, the marked superiority of our weapons as compared to those of the Japanese, has of course given them a great deal more confidence, and the feeling that they have a definite advantage over our enemy.

(c) The 50-caliber machine gun proved itself the outstanding single weapon in stopping the Japanese attack. It was very demoralizing to them, and they had nothing with which to meet its fire effectively.

(d) The continuous strafing and bombing attacks to which the Japs were subjected during all daylight hours would have been justified, even if no casualties had resulted. Aside from the damages, the presence of our planes apparently demoralized and disorganized the enemy to a very great extent.

3. ATTACK TECHNIQUES

The Japanese approach march on Guadalcanal was almost invariably made in close formation along terrain features, such as ridges

The enemy usually attacks on a narrow front, rarely over 300 yards—some units have penetrated a gap of only 15 yards in width. The first element or wave of an attack is a silent group armed with bayonets, hand grenades, and wire cutters. This is followed by an echelon which deliberately makes noises for the purpose of confusing our troops.

When the Japanese infiltrate through our lines, they expect and intend that we will then fall back.

The Japanese fire high. Our experience is that only 10 percent of our wounds are below the knee, 20 percent are below the hips, and the balance are body wounds. Bullet sears on trees are mostly $2\frac{1}{2}$ feet above the ground.

4. DECEPTION

When the Japanese met our line of skirmishers (in New Guinea) they fired all their machine guns into the tree tops above our men. As soon as this fire was countered by our machine guns, their mortars opened up on our machine-gun positions.

On several occasions, when our line of skirmishers was met, large numbers of Japanese ran forward and were met by a withering machine-gun fire. They immediately turned and fled. Our men, with the usual cry of "After the ——," rushed after them with fixed bayonets. Immediately, the fleeing Japanese threw themselves on the ground and our fellows ran into machine-gun fire from the Japanese rear.

In the Milne Bay area, the Japanese plan was to advance and attack during the night and then to withdraw during the daytime, leaving dozens of their men at the top of coconut palms, and in the jungle, with machine guns and Tommy guns. As our forces advanced the next day, they were harassed by these remnants. Often the Japanese were tied in the tops of palm trees and remained there after they were shot.

(Comment: The Japanese policy of advancing at night and hiding during the day may have been dictated on the spot by the constant strafing and reconnaissance by our aircraft.)

5. MORALE

.... Although the state of Japanese morale (on Guadalcanal) varied a good deal with different units, as a whole they had been softened up in morale and shortened in supply before their withdrawal In the early stages at Guadalcanal after Jap reinforcements had landed, they were confident that our forces would surrender. Subsequent events shook them a great deal, and they had a "relapse" as a result of defeats, losses, diseases, poor supply, and failure to properly reorganize broken and defeated units.

.... The Jap soldier is determined and persistent, and especially tough if our forces show any signs of breaking. Whenever the Jap is met with courage and suffers losses, he loses most of his dash, although he will keep trying.

Our Marines do not consider the Jap a particularly tough opponent when met on anything approximating even terms. When cornered and hard put, the Japs very often get into a panic, and show as much fear as any other soldiers under similar circumstances.

There is evidence that some units (Japanese) are practically ostracized if they suffer defeat. Marines have come upon these units, found living apart from the rest of the troops, and apparently not having any contact or supply. It is not known how much of this is due to Jap psychology, and how much is due to the inability of broken units to secure a portion of the limited supplies of more fortunate units. A great many Japs are wandering around in small bands, which are continually being killed off, both by our own and native patrols. These broken units apparently do not reorganize well with other units, and within the

defeated unit itself there appears to be no organization whatever. Starvation is common among those who are separated from the main forces. They remain deceptive and cunning, however, and many of them will walk into certain death in order to get a shot at our troops.

Japanese prisoners talk freely, as a rule, and are truthful. They know about heavy Japanese losses (in this area); it has affected the air force in particular. For instance, they say that the "left wing" man of a formation rarely returns, and pilots prefer not to fly in this position. Pilots and crews consider Henderson Field a bad place to attack, expect heavy losses, and say that the anti-aircraft set-up is tough. . . .

6. ARMAMENT

a. Artillery

The Japs on Guadalcanal did not make as good use of their artillery as they might, and they seemed to work upon the principle of the single gun rather than concentrated battery support. . . .

There were a great percentage of duds in the Jap artillery ammunition. . . . Gun positions were hard to locate because they were well concealed in the jungle. . . .

There have been several puzzling examples of the Japs' apparent disregard for their own artillery. In one case, the Marines captured four new guns and a large quantity of ammunition within 300 yards of Henderson Field. The guns were in position to fire upon the field but had never been fired, and not a Jap was in the vicinity when the guns were taken.

b. Powder

The Japanese powder produces less flash and smoke than ours. (Comment: Recent U. S. Ordnance tests proved that the Japa-

nese powder itself produces as much smoke and flash as ours. However, the Japanese rifle has a smaller caliber, a smaller charge, a longer barrel, and a lower muzzle velocity than ours; these factors, which make combustion more complete, tend to reduce smoke and flash.)

7. DEFENSE TACTICS

a. General

The Japanese system of defense is based on maneuver, stressing to the limit the necessity of striking back when the attackers are disorganized, even to the extent of hitting them while they are deploying for the attack. It seems remarkable that the Japanese should indicate that the way to cope with our greater fire power is to increase the size of their reserves at the expense of their front-line defenses.

The Japanese counterattacks are not primarily aimed merely at driving the enemy out of areas he has taken, but rather at striking him in such a manner that the initiative passes to the Japanese and decisive results are gained. The Japanese do not intend to whittle down the attacks by a strong defense, until the attack bogs down. They plan on giving with the blow and hitting back suddenly and decisively when the attacker has become disorganized by his own penetration.

To the Japanese military, tactics is an art, with decisions gained by skill, not by sheer power. Their policy for the use of maneuver may appear to lead toward complicated evolutions. Training and the delegation to subordinates of the initiative for independent action are most probably the factors that make such tactics simple.

b. In the Buna Area

The first highly organized Japanese defense positions encountered by U. S. troops in the present war were in the New Guinea area. American observers considered the positions very strong, despite the fact that the area is low and practically level.

The positions consisted of bunkers and trenches, which were never over 3 to 4 feet deep because the water level is approximately 5 feet below the surface of the ground.

Because of the sandy soil, the trenches were only about 1 foot wide at the bottom and $4\frac{1}{2}$ to 5 feet wide at the top. The bunkers were built of logs and dirt. Narrow slits were made for machine-gun fire.

The trench systems, or defense areas, were arranged in sections which permitted excellent fields of fire to the front and both flanks. To facilitate this, the flank trenches were constructed at an angle of about 40° to 45° to the front. Each defense area, accommodating not more than a platoon, had four separate dug-outs.

A large portion of the trenches was covered with a mixture of coconut palm logs and dirt which was 8 to 10 inches thick. Coconut logs are tough and do not splinter much. This protective cover was strong enough to resist direct hits of all our weapons of less than 88-mm caliber. (The British 25-pounder gun-howitzer is 88 mm)

The defensive area consisted of jungle, open spaces covered with high grass, and coconut groves, which had a high grassy undergrowth.

Both light and heavy machine guns were used extensively by the Japanese, who seemed to have plenty of ammunition.

PART TWO: GERMANY

Section I. GAS WARFARE

1. GENERAL

Since World War I, when the German Army first made use of poison gas, German scientists have conducted exhaustive research in the field of chemical warfare. The Germans are known to be well prepared for this type of combat, both offensive and defensive, and there is little doubt that they would use gas with their characteristic vigor and thoroughness should they decide that the situation seemed to demand it.

The agents that Germany may use do not differ materially from those available to the other Powers, and may be classified as follows:

American classification

Vesicants (blister gases).
Lung irritants.
Lacrimators (tear gases).
Irritant smokes.

German classification

Yellow Cross (*Gelbkreuz*).
Green Cross (*Grünkreuz*).
White Cross (*Weisskreuz*).
Blue Cross (*Blaukreuz*).

When applied as code marking to ammunition, there is some alteration of this classification. Rings replace crosses, and two rings of different colors indicate a gas with dual properties. For example, a green ring and a yellow ring indicate that the charging is a lung irritant gas with some vesicant properties.

In general, German chemical warfare troops are organized in regiments, battalions, and companies. Although they are called "smoke troops" (*Nebeltruppen*), it is to be emphasized that they are as well equipped to work with gas as with smoke. For defense, decontamination companies are included, and there are also some specialized decontamination companies among the medical troops.

2. DEFENSE

If all troops are adequately supplied with antigas devices, gas warfare loses much of its effectiveness and power to terrorize. Before initiating gas warfare, an army must protect its own troops against retaliation. In the German Army antigas training is very well organized; as a basis for this work, there are a number of antigas schools to which officers and non-commissioned officers of units are sent.

Of all the agents mentioned in paragraph 1, the vesicant type, or a lung-irritant type possessing vesicant properties, seems to be preferred by the Germans. Such gases are really liquids which evaporate quickly,

yielding heavier-than-air gases which collect and persist in low portions of the terrain. Both the liquid and the gas will produce severe burns if they come in contact with the skin. Ground and matériel which have been contaminated by these agents are dangerous over a period of hours or even, in extreme cases, for days.

All German troops are equipped on an adequate scale with standard materials for decontamination of personnel and weapons. These include the gas mask, anti-gas tablets called "Losantin" (to be moistened and made into a paste), an antigas sheet in a pouch (for protection against vesicant spray), and a pocket flask of weapon decontaminant. Each soldier is impressed with the importance of being able to protect himself, and of knowing how to decontaminate his personal equipment. In addition, certain unit equipment is issued, such as light and heavy protective clothing, and gas-detector sets for gas scout sections or gas sentries. Special equipment for decontamination on a large scale includes decontamination vehicles, which are half-tracked trucks equipped with rear hoppers for distributing bleaching powder; and clothing decontamination vehicles, which are large, windowless, six-wheeled trucks containing a boiler for generating steam quickly, a steam chamber, and a drying chamber. Some sections among the veterinary troops specialize in decontamination of horses.

The Germans lay great stress on not allowing contamination of terrain to hold up an advance. The gas

scout sections are equipped with light antigas clothing, and have the duty of finding and marking off contaminated areas. A special plow is used to make safe, narrow paths which permit the rapid passage of troops in single file. This implement is a ditching plow with a rubber-tired, single-axle carriage and two plowshares; it is drawn by a decontamination truck. The two plowshares turn the sod over in opposite directions so that a shallow trench about 20 inches wide, as well as the slopes of the overturned earth, are free from contamination. For large areas, specialist troops are brought up for decontamination in accordance with a definite plan.

3. OFFENSE

a. Weapons of Smoke Troops

If gas warfare breaks out, the primary role will be assigned to the smoke battery, as it is intended to fire gas as well as smoke. There are two different versions of this mortar; the model 35, which has a range of about 3,000 yards, and the model 40, which has a maximum range of about 6,500 yards. Ammunition charged with the various agents mentioned in paragraph 1 is believed to exist.

In 1942 the Germans were distributing a new type of weapon, the *Nebelwerfer 41*, which they classify as a mortar, although it is really a rocket weapon with six barrels set in a circle like the chamber of a revolver.

The barrels have no breech and are open at both ends. This weapon can be used for firing high explosive, gas, or smoke projectiles.

The decontamination batteries of the smoke troops may also engage in bulk contamination. For this purpose they are equipped with contamination vehicles. These are standard half-tracked vehicles on which containers have been mounted. The liquid vesicant is emitted by what appears to be a spray arm extended well beyond the back of the vehicle. Emission, which is produced by compressed air, is controlled from the driver's compartment.

b. Equipment of Other Arms

Although the smoke mortars are perhaps more efficient for gas projection, it is believed that extensive supplies of gas-charged shells have been set aside for the 105-mm and 150-mm field howitzers. Also, gas shells may be fired from the light and heavy infantry guns.

Aircraft are important in gas warfare. The Germans consider low-altitude (under 1,000 feet) vesicant spray especially effective, both against personnel and for ground contamination. Moreover, the use of aircraft bombs with chemical charging is a possibility to be taken into account, if gas warfare should start.

c. Miscellaneous Gas Weapons

The Germans possess gas grenades, with which their parachute troops might be equipped. Ammunition for

antitank rifles, models 38 and 39, includes armor-piercing tracer bullets charged with tear gas.

4. THEORETICAL USE OF GAS IN THE FIELD

The Germans distinguish between gas attack for cloud effect and gas attack for contamination.

a. For Cloud Effect

Gas attack for cloud effect by means of nonpersistent gases, may be attempted to achieve the following purposes:

(1) The Germans might choose to put the opposition out of action before antigas measures could be adopted.

(2) The Germans might employ gas bombardment for several hours, or even days, to neutralize opposing units, weaken their gas discipline, and inflict casualties.

(3) The Germans might employ intermittent gas bombardment to compel opposition troops to wear gas masks during a long period, and thus weaken gas discipline.

(4) The Germans might introduce gas ammunition into a mixed bombardment of high explosive and smoke bombardment.

b. For Contamination¹

The German theory of contamination by means of persistent gases (such as mustard) is more concerned with defense and withdrawal than with attack. However, in attack they might consider contamination useful for neutralizing centers of resistance which could then be bypassed, and for safeguarding a flank. When contaminating with artillery or aircraft, there is also the possibility of hindering the opposition's withdrawal or of changing its direction. However, the scope of such tactics is limited, inasmuch as they can hamper the advance of friendly troops.

¹ It must be remembered that contamination, in a military sense, means the process of spreading an injurious, persistent chemical agent, which will remain in effective concentration at the point of dispersion from a few minutes to several days, depending on local conditions.

Section II. VISUAL SIGNALS BETWEEN AIR AND GROUND FORCES

1. INTRODUCTION

The German system of visual communication between ground troops and aircraft is well developed. Extracts from a German document explaining the system are reprinted below. It must be remembered, however, that the Germans take the precaution of changing their signals as often as possible. Perhaps the chief value of these extracts is that they illustrate basic methods of air-ground visual signaling and the importance attached to them by the Germans.

2. COORDINATION

Coordination between Army and Air Force is to be arranged through the respective headquarters prior to each action. The appropriate headquarters of these two branches of the service are also responsible for keeping themselves mutually and speedily informed regarding all movements in their battle area, both on the ground and in the air.

To speed up recognition, ground troops should possess detailed knowledge of our own aircraft types, of the prearranged signals, and of the air situation. This information should be distributed

down to companies, whose commanders may give orders to signal. If air crews are aware of the situation on the ground, of the general conduct of ground troops in battle, and of the pre-arranged signals, gunners will be able to distinguish more quickly between enemy troops and friendly troops.

Ground troops must give their signals early and in a position easily observed from the air. Aircraft must be able to see the signals before arriving over the position.

Aircraft must not give their signals too soon, inasmuch as cover often interferes with observation by ground troops. Only when the ground is flat, and when the aircraft are flying low, may early signals be given. Since recognition by ground troops is difficult when planes appear overhead too suddenly, unnecessarily low flying over our own troops is to be avoided.

3. DAY SIGNALS USED BY GROUND TROOPS

In the daytime, ground troops must give recognition signals when air units call for them by giving their own recognition signals, or if friendly aircraft threaten to attack.

Also, ground troops may give daytime recognition signals without being called upon to do so if they consider it necessary to identify themselves to friendly aircraft—especially where terrain features tend to obscure ground troops from air observation.

a. Orange Smoke

Orange-colored smoke is the signal most easily recognized from the air. It means "own troops are here." It is the chief recognition signal for all ground troops.

b. Identification Panels

Identification panels will be laid out so that they may be read from aircraft flying toward the front. They must be arranged in good time, and on a background against which they can be

picked out clearly from the air, so that the aircraft will not be obliged to circle over the battle area.

The panels should be spread on open ground, wherever possible, since aircraft usually observe while approaching, and not when directly over a position. Trees, bushes, and other objects may prevent aircraft from seeing the signals obliquely. Every effort must be made to make the signals as large as possible. Panels may be lifted only when the aircraft are out of sight.

Yellow cloths mean "here is our own front line." They are to be used only for this message, so that the front line will always be clearly indicated. The aircraft can draw its own conclusions as to the battle situation. In general, yellow is easily recognizable from a moderate height; a number of yellow cloths spread out side by side will make identification easier. When our own troops advance, the yellow cloths must not be left behind.

In addition, the orange smoke signal is to be used as extensively as possible.

c. Swastika Flags

Swastika flags can scarcely be identified at all from great heights, and only with difficulty from moderate heights. They mean "own troops are here." As a rule, they are used in rear positions, but may be used in the front line if yellow cloths are not available or if no particular value is attached to a distinct recognition of the front line as such. Since swastika flags alone are generally not sufficient for identification purposes, it is advisable to use the additional signal of orange smoke.

d. Improvised Signals

If the usual recognition signals are not available, troops may improvise signals, such as the waving of steel helmets, handkerchiefs, and so on. However, these signals afford no guarantee that the ground troops will be recognized.

4. DAY SIGNALS USED BY AIRCRAFT

In the daytime, aircraft must give recognition signals when fired on by friendly troops. Daytime signals may also be given by aircraft which suddenly emerge from clouds over friendly territory, or which wish to request signals from ground troops.

Ground troops will generally identify friendly aircraft by noting the type of plane, the national marking, or special painting. When security permits, messages will be dropped in message boxes which emit a yellow smoke while dropping and after reaching the ground. If these boxes are not available, messages will be dropped in message bags, to which a red-and-white streamer is attached. Aircraft may improvise such signals as the dipping up and down of the nose and tail of a plane, wing dipping, or repeated spurts of the motor ("jackrabbiting").

5. NIGHT SIGNALS USED BY GROUND TROOPS

At night, ground troops must give recognition signals when these are requested by our own aircraft, and when the situation warrants anticipating a bombing attack by our own aircraft. Ground troops use light signals of all types, making extensive use of Very lights. Codes are changed continually, of course, and are made known down to companies.

6. NIGHT SIGNALS USED BY AIRCRAFT

Aircraft must give night signals when there is danger of attack by friendly troops. Further, aircraft are permitted to signal at night if they have lost their bearings and wish to know whether they are flying over friendly territory; if they know, or believe, that they are crossing the front on a return flight; when they wish to request friendly troops to give signals; and when they are

about to land at an airdrome. Aircraft must continually change the meanings of their fixed light signals and flashed searchlight signals.

7. USE OF VERY LIGHTS

The Germans use white, green, and red Very lights. At the time the above instructions were published, German aircraft used white Very lights to request ground troops to give recognition signals; green, when a plane was about to drop a message and wished ground troops to indicate where they preferred to have it dropped; and red, to convey the message "Beware of enemy antitank weapons." Red smoke signals also were used to convey this last message, while blue or violet smoke signals were used to indicate the presence of enemy tanks.

Section III. INFANTRY FIELDWORKS

1. INTRODUCTION

The following extracts from German Army documents illustrate the general principles that the Germans follow in constructing infantry fieldworks. The Germans preface their doctrine on this subject with a reminder that the construction of positions "must conform to factors determined by the enemy, the ground, one's own forces, and the time and supplies available. Fire positions and fields of fire must be established on the fire plan before the work is marked out and construction begun. Fire positions must merge with the surrounding country in such a fashion that the maximum possible use is made of natural concealment. Furthermore, all positions, even those to the rear, will be kept camouflaged as much as possible while they are under construction."

2. GENERAL PRINCIPLES

The time required for the construction of fieldworks must be calculated carefully. Periods of time given at the end of this section represent the minimum requirements. A few com-

plete and well-concealed positions are worth far more than a large number, half-finished. When our troops are in the immediate neighborhood of the enemy, construction must be carried out in such a fashion that some form of defense is possible at all times.

In order to decrease vulnerability to high-angle enemy fire, weapon pits must be constructed no larger than is necessary. The walls of the pit must at all times be kept at a suitable angle, varying with the nature of the ground, so that they cannot fall in. In the case of loose ground, and in constructing fire positions in permanent fronts, it may be necessary to revet the walls of the pit. Revetting with resistant material makes the work of clearing out the pit after a shell-hit more difficult; the pit must then be excavated to a larger size than before.

If the situation and enemy action permit, the surface soil is removed from the immediate neighborhood of the pit, to be used later in camouflaging the position. The spoil, or subsurface soil, must be deposited far enough from the pit to forestall the necessity of moving the earth a second time. The parapet must be extended far enough on each side to afford the riflemen a field of fire on all sides, meanwhile protecting them against enemy flanking fire. Also, the parapet should be kept low. The field of fire should not be affected by irregularities in the surface of the ground.

A firing position that can be readily assumed remains the first consideration. The depth of the excavations for arms or weapons depends on the required firing height. Dimensions must also be adjusted to conform to the height of the riflemen. In setting out the work, measurements can be taken by the length of a spade.

Length of short spade.....	20 inches.
Length of long spade.....	3 feet 7 inches.
Approximate length of blade.....	8 inches.

The excavated earth should be disposed of in the least obvious manner, and by a single route leading from one side of the pit. The path by which the earth is transported must be regulated carefully.

Each position must have an alternative position. This must be at least 50 to 60 meters from the original position. It must fulfill the same requirement. "Field of fire comes before cover." As always, camouflage is of primary importance.

If time allows, pits should be connected by communication trenches.

Along lengthy communication routes, antitank pits should be dug at intervals of 50 yards. The communication trenches should follow a zigzag course, and should be constructed with rounded, rather than sharp, edges.

The type and construction of positions is determined above all by the time available for the work. Ground conditions, drainage, weather, facilities for concealment, available personnel, entrenching tools, other tools, and construction materials must also be considered.

The following will serve as a guide for the construction of positions on average terrain:

Available time

Type of construction

A few hours--- Machine gun and rifle pits, affording protection against machine-gun fire and fragments of shells with impact fuzes. Simple wire obstacles should be constructed. In the case of light machine guns, antitank rifles, heavy machine guns, light mortars, and antitank guns, overhead protection for riflemen and their weapons may be provided at the same time. With heavy mortars, light infantry guns, and heavy infantry guns, overhead cover for the crew must be constructed before that for the weapon.

*Available time**Type of construction*

- Half day-----** Thorough construction of pits and recesses under parapets, providing protection against light high-angle fire and splinters from ricocheting and time-fuze shells, protection against weather, and increased comfort for the crew.
- Whole day-----** Strengthening of wire obstacles, strengthening of pits and firing bays. Connection of weapon pits within the system by crawl or communication trenches.
- Several days---** Continuous trenches.
- Several weeks--** Systematic construction of defenses with continuous trenches and shelters.

Section IV. INTERROGATION OF BRITISH PRISONERS OF WAR

1. GENERAL

The material in this section consists of two items: a translation of a German printed form issued in pads and designed to be filled in after the interrogation of British prisoners of war, and a translation of a set of German instructions entitled "Notes on the Interrogation of British Prisoners of War." These instructions were found attached to the inside cover of a pad of the forms. This material should give the reader an excellent idea as to what kind of standard information the Germans make every effort to obtain from United Nations prisoners.

2. A SPECIMEN BLANK

No. 01061

FORM FOR P. W. INTERROGATION (ENGLAND)

 (Interrogating Unit) (Place) (Day)
 To
CHIEF OF THE GENERAL STAFF OF THE ARMY
 Dept.—Foreign Armies.—West.
 To be transmitted by the quickest means.

Name:	Taken	Unit	
Christian Name:	At	Name	Army Corps.
Year of Birth:			Division.
Rank:			Brigade.
Number:	On		Battalion.
			Type of Company.

Regular Army or Territorial Army	Place	Command	Mobilization and transport overseas				
			Date	Table of organization of unit	Embarkation Place, Date	Disembarkation Place, Date	Route taken (places and dates)
Unit arrived in the line			What units in the same Division?			Other units known	
At From To						Name. Division. Place. Date.	

Particulars of weapons, tanks, equipment, antigas equipment

Morale: (Losses)

Other important items.

REMARKS:

1. Important papers (diaries, orders) are to be attached to the copy sent direct to the Chief of the General Staff in the Field.
2. Items of local interest only are to be put on a special sheet only for units interested.

3. THE INSTRUCTIONS

Notes on Interrogation of British Prisoners of War.

a. The blanks are to be filled in as fully as possible.

b. Exact identification of the unit is particularly important. In the infantry, "regiment" actually means the parent unit. It has no number—only a name. The tactical formation that corresponds to our "regiment" is the British "brigade." The brigade is identified by a number, and consists of three battalions from various regiments. Since battalions from one regiment will be found with different brigades, it is especially important to find out the battalion's number.

Units of other arms are numbered, except for certain tank and armored units which were cavalry, originally and which have kept their names.

For further remarks on British Order of Battle, list of regimental names, explanation of ranks, badges, and English abbreviations, see the handbook, "The British Army."

c. Further questions to be put to prisoners:

(1) Have there been any alterations in the Order of Battle as printed in the handbook? Are alterations in progress, particularly with regard to armored formations?

(2) How far have infantry and other units been equipped with antitank and light antiaircraft units? With which units are there signal units that do not belong organically to Division Signals? What is known about the Army Air Corps or the Airborne Division (parachute and airborne troops)? Strength, organization, training, equipment, and armament of Commandos and Special Service Troops?

(3) Effect of our weapons and tanks, morally and technically? Losses in personnel, weapons, and equipment?

(4) What is known about Amphibious Transport (*Landungsfahrzeuge*)? New weapons (machine pistol, antitank, artillery, explosives, and hand grenades)? New tanks, especially new in-

fantry tanks, and new armament and armor on known types of tanks? Active and passive Chemical Warfare preparations?

(5) What is known about operations in conjunction with Americans and other Allies.

(6) What rumors are there about future operations?

(7) What about the home front? Formation of new units? Movements overseas? Situation regarding supply and food? Opinions as to prospects in the war? General morale?

Section V. AIR FORCES

1. HENSCHEL 129 BOMBER

The Henschel (Hs) 129 is a single-seat attack bomber used for close support of ground forces and for attacks on armored ground targets.

It is a twin-engine, low-wing, single-rudder monoplane of all-metal, stressed-skin construction, with retractable landing gear (see fig. 2). When the wheels

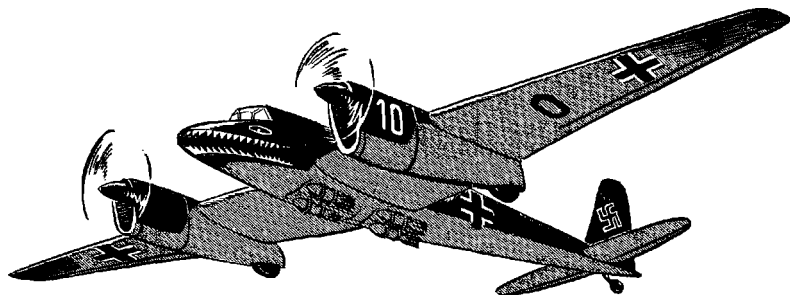


Figure 2.—Henschel (Hs) 129 Bombers.

are up, they protrude slightly from the engine nacelles. The center section of the wings, inboard of the nacelles, is gull-shaped and the tail section is of cantilever design with a tall fin and rudder. The nose of the fuselage

drops steeply away from the cabin, thus affording the pilot a better downward field of vision.

This aircraft is powered by two 450-horsepower air-cooled, in-line, inverted V-12 engines and has two-blade, variable-pitch propellers. One version of the Hs 129, however, may be fitted with Gnome-Rhone 14-cylinder radial engines. The plane has a cruising speed of 170 miles per hour at 10,000 feet, and a normal cruising range of approximately 400 miles.

The "129" has an estimated wing span of 50 feet, a length of 38 feet, and a gross weight of about 9,000 pounds. The maximum bomb load is believed to be about 2,200 pounds and to consist both of antipersonnel and combined splinter and high-explosive bombs.

The armament consists of one 30-mm cannon, for use against tanks and armored vehicles, and four machine guns—two light and two heavy—all rigidly mounted in the nose of the fuselage.

The aircraft is heavily armored on the underside. The cabin is also armored, although the distribution and thickness of the plating has not been determined.

The nose of the fuselage is painted to resemble a pike fish's head, which seems to be a standard marking on the Hs 129. A similar design has been previously noted on Messerschmitt 110's, and may have been adopted in the hope of increasing the demoralizing effect of low-flying attacks on troops. It is believed that machine guns are mounted in the eyes of the "pike's head."

In tactical operations, the take-off is made in echelon by sections. En route to the target, planes fly in echelon formation, with the sections stepped up—a closed formation is flown when there is danger of attack by enemy fighters. Antiaircraft defenses are avoided, as far as possible, by changing course, by making use of weather conditions, and by approaching from the sun.

The attack is made by sections, one section diving as another leaves and as a third approaches the target. The aircraft keep close formation and dive straight onto the target at about a 45° angle. However, the angle of dive varies according to the thickness and slant of the armor plating protecting the objective. For maximum effectiveness, the shell should strike the armor as near to the perpendicular as possible. The plane should not be dived at an angle of more than 70° nor at a speed in excess of 345 miles per hour.

Antipersonnel bombs are released during the pull-out from a height of 65 to 165 feet and thereafter the target is subjected to cannon and machine-gun fire.

After leaving the objective, the planes fly close to the ground in line-ahead or in echelon, and strafe any available ground target. The formation is ultimately reorganized over a weak antiaircraft defensive area and the return flight is made at an altitude varying between 1,700 and 3,300 feet.

Ground-attack aircraft are usually accompanied by fighter escort, but the size and method of escort depend

on the strength and employment of the enemy air force in the area.

2. DORNIER 217E BOMBER

The Dornier (Do) 217E bomber is a twin-engined shoulder-wing monoplane, which has several improvements over the earlier Do 17Z and Do 215 models. The plane is powered by two 14-cylinder radial engines, each of which has 1,600 horsepower. There are four men in the crew: The pilot, a bombardier, and two gunners, one of whom acts as a radio operator.

The estimated speed of the Do 217E is 310 to 325 miles per hour at an altitude of approximately 17,000 feet. The normal range of the plane is about 1,100 miles—almost twice this distance by use of extra fuel tanks. This range is far greater than that of the Do 215. The maximum bomb load of the improved plane is about 6,600 pounds, several times greater than the Do 215. Little change has been made in the armor.

The addition of tail dive-brakes is one of the most interesting improvements found on the Do 217 E. Since the brakes resemble an umbrella or parachute in descent, the aircraft has been nicknamed the “umbrella” or “parachute” plane. The brakes are said to have greatly increased the stability of the plane while dive-bombing. However, recent developments indicate that tail brakes alone are not sufficient to control the speed of this type of plane in steep dives. In the latest mod-

els of the Do 217 E, additional brakes are mounted on the underside of the wings, inboard of the engines.

The umbrella-like brakes consist of four flaps, which, when in a closed position, lie flat against the four sides of an extension of the tail. They open much like an umbrella, unfolding in gradual stages in ratio to the steepness of the dive. When opened to the fullest extent in the maximum dive, the flaps—which have slots and holes along the edge to act as vents—hold the speed of the plane to about 350 miles per hour. In an emergency, the four pins that secure the entire tail assembly to the fuselage may be withdrawn. The brakes are thus jettisoned (detached and dropped), and the plane is controlled in the normal manner.

Other improvements in the plane include installation of torpedo and mine-laying apparatus, and a new type of automatic pilot.

Section VI. MISCELLANEOUS

1. LIGHT ASSAULT BRIDGE

a. Version 1

The Germans make use of a portable light assault bridge (*Kradschützensteg*), which can accommodate manhandled antitank and infantry guns, light cars, motorcycles with and without sidecars, and infantry in file.

This light assault bridge (see fig. 3) consists of prepared wooden sections which, when assembled and laid across small, inflatable boats, become the superstructure of the bridge. A single boat with its superstructure is known as a "bay." The work of assembling is carried out on land, preferably under cover, and the finished bridge is then carried to a desired site and launched.

The bridge is constructed in lengths of approximately 80 feet, each length consisting of 5 bays. A strong individual timber frame is lashed to each inflatable boat. Track supports are then laid down and secured by screw clamps, and finally the tracks themselves are screwed, nailed, or lashed into place. The tracks consist of planks which are 16 feet 5 inches long, 8 inches

wide, and $1\frac{1}{2}$ inches thick, with two planks on each side of each boat unit (see fig. 3b).

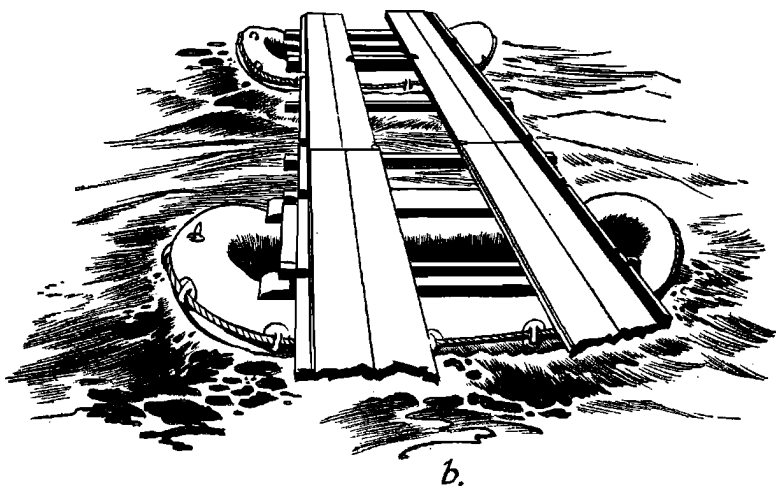
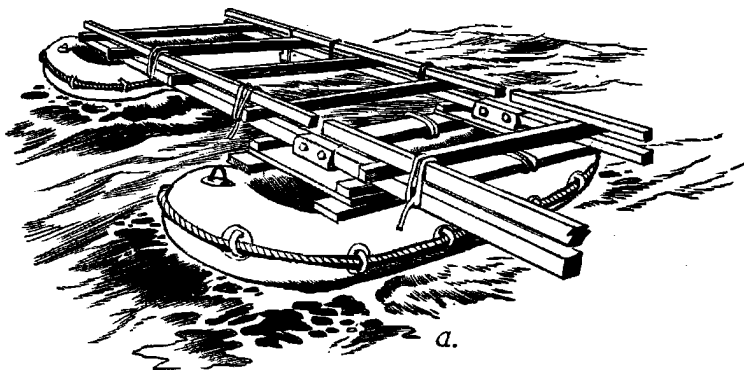


Figure 3.—German Light Assault Bridge (Version 1).

Water obstacles less than 10 feet wide can be spanned by a single unit without floating support. Such a unit can be carried and assembled by two men.

b. Version 2

The tracked light assault bridge also comes in a heavier version, which will carry light motor transport with a maximum load of 1 ton, provided that the track width does not exceed 4 feet 6 inches.

Although the two bridges resemble each other, the heavier version is decked, rather than tracked, and affords a track 5 feet 1 inch wide. There are two boats per bay, so that the bridge can be separated into independent rafts, unlike the tracked bridge, in which the joints of the superstructure meet in the center of each boat (see fig. 3a).¹

2. USE OF SMOKE AGAINST TANKS

The Germans have been conducting experiments to test the effect of smoke weapons used at close quarters against tanks. No information is available as to the type of tank and the type of grenade employed in these tests. However, it is known that the results convinced the Germans that smoke can be an important factor in combatting tanks. Four experiments under varying conditions yielded the following data:

a. Experiment 1

A smoke hand grenade was set off beside a stationary tank; the tank's hatches were closed, and its engine was

¹ U. S. troops should not use these bridges unless they have been inspected and approved by Engineers.

running. Not only the suction of the engine fans, but leaks in the forward entrance hatch, the mantlet of the hull machine gun, the turret ring, and the turret ventilators, filled the tank with a thick accumulation of smoke. Opening the hatches did not ventilate the tank sufficiently.

The Germans decided that a tank crew, fighting under these conditions, would be forced out of the tank after a short period, and that the driver and hull machine-gunner would suffer most from the effects of the smoke.

b. Experiment 2

In a second experiment the conditions were duplicated, except that the engine was turned off. It was discovered that although smoke entered the tank, evacuation would have become necessary only after several minutes—and, even then, probably for no one but the driver.

c. Experiment 3

A third test was held, this time with the tank moving and its hatches closed. Smoke grenades were thrown at the tank, and failed to lodge on it. The crew lost almost none of their capacity to fight, and were affected more by limitation of their vision than by the actual penetration of smoke into the tank.

d. Experiment 4

In the fourth experiment, a moving tank with closed hatches was used; but this time a cable 6½ feet long,

with a smoke grenade tied to each end, was thrown across the barrel of the gun. (After a little practice, the thrower became quite adept at this.) It was found that evacuation of the tank was necessary after 30 seconds. Observation from the tank was, of course, out of the question. The Germans felt that if members of a crew were to show enough presence of mind to put on their respirators instantly, and rotate the turret through 180 degrees, it would be possible for them to avoid the effect sufficiently to bring the tank to safety. However, it was clear that in any case the fighting capacity of the crew would be seriously affected.

PART THREE: UNITED NATIONS

Section I. NOTES ON SECURITY FROM THE MIDDLE EAST

1. INTRODUCTION

“Security in the military sense consists not only of denying information to the enemy, but also preserving information about the enemy which is of use to ourselves.” This statement sums up the British attitude regarding security. All members of the armed forces are continually reminded of the importance of acquiring and guarding enemy documents and matériel so that they may be studied by the proper experts, even though the items may not seem important in themselves. In the following notes the British illustrate very clearly how troops in the field are in a position to cooperate with intelligence officers in preserving information about the enemy, and why the individual soldier is to regard such cooperation as “must.”

2. PRESERVING ENEMY AIRCRAFT

Proper guarding of enemy aircraft which has come into our hands is essential. It is especially important to insure against the looting of such planes. Personnel have sometimes been heard to ask "Why bother? Don't we know all about enemy aircraft already?" No, we certainly don't! And even if we did, it could only be because flawless security work had been done in the past.

As an example of the information that can be obtained from a crash, consider the case of a Heinkel which was shot down by night fighter action. This aircraft crashed in flames, and the wreckage was spread over a square mile. At first glance, it seemed as though nothing remained but charred and unrecognizable fragments. Nevertheless, examination by the proper authorities quickly revealed new points of technical value, as well as production details about where and when the engines and various other parts were made. In addition, valuable papers were retrieved. It cannot be overemphasized that even a scrap of paper may be of value from an intelligence point of view.

At the moment, we are searching for an important development in German radio. A certain apparatus is fitted with a destroying device, and if anyone should happen to tamper with one of these devices on an enemy aircraft which has come into our possession, the apparatus will be lost and essential information along with it.

Therefore, individuals who tamper with items of enemy equipment are doing the Axis a service and are slowing down our own war effort.

3. SAFEGUARDING ENEMY DOCUMENTS

During the Libyan campaign a New Zealand intelligence officer made quick use of some maps that a German major general had not been given time to destroy, and therefore was able to inform

the New Zealand commander that the German 21st Armored Division was due to arrive in the immediate future. The New Zealand general was able to plan his strategy accurately.

A truck serving as an office for the adjutant general and quartermaster of the German 15th Armored Division was captured intact during the Libyan campaign. Intelligence officers rushed its contents back to G. H. Q. by air. There probably had been no greater find in the course of the war up to that time. Not only did the truck contain documents of enemy operational value, but also up-to-date German manuals, publications, and other items, which were enormously useful. Thus, from the military intelligence point of view, it is not an exaggeration to say that the contents of a single truck preserved intact may influence the whole course of the war.

On October 17, 1942, an alert trooper of the 7th Hussars snatched a document from a German prisoner who was in the act of tearing it up. This bit of quick thinking enabled us to identify and locate several German units at a time when information was more than usually scarce.

When charred remnants of paper are salvaged, the complete destruction of which has been prevented just in time, it often turns out that they contain some useful items of information.

Whenever documents are captured, every possible step must be taken to destroy all evidence pointing to the fact that they have been captured; that is, the office in which they were found must be burned, the officer from whose person they were taken must be removed from the scene, and so on.

4. THE SOUVENIR HABIT

A desire to keep captured documents and equipment as souvenirs sometimes results in the loss of much information which

would be helpful to the armed forces as a whole.¹ This point is well illustrated by the case of a battalion commander who, in forwarding his unit war diaries to second echelon, made a special request that certain attached captured documents should not be removed from the file in which he was sending them. It was discovered that these documents had been captured sometime before, and unfortunately had never been passed on to the proper authority. Soldiers sending parcels home have included the following articles as souvenirs:

(1) Binoculars and compasses, of which our own fighting troops are short.

(2) Many rounds of ammunition (for a German antitank gun) that our own tank designers needed urgently for test purposes.

(3) An electrical gyroscopic compass, also urgently wanted for research.

(4) Enemy tank logbooks giving us valuable information regarding enemy tank production.

(5) Many useful photographs of enemy equipment about which our information was not yet complete.

(6) Valuable items of signal equipment.

(7) Specimens of Axis food which would have provided useful clues for our blockade authorities.

(8) Many types of fuzes, or igniters, and detonators, some of which were new to us and all of which were helpful in some way.

(9) Italian shoulder straps and a German football jersey with a badge, which gave us valuable identifications, including the fact that a new unit had been formed.

¹ These statements by the British regarding captured documents and equipment are equally applicable to our own troops. See that all enemy documents and matériel get to your commanding officer for inspection. Should you desire any of these items as souvenirs, make arrangements with your commander for them to be returned to you after they have served their purpose.

Section II. BRITISH TRAINING FOR SPECIAL DUTIES

1. INTRODUCTION

A discussion of the methods of maintaining direction, largely based on a lecture given by Maj. Lord Lovat of the British Commando School, appeared in *Intelligence Bulletin* No. 4, for December, 1942. Extracts from Major Lovat's lectures to the Commando School on "Scouts and Observers," "Ambushes," "Street Fighting," and "Woodcraft and Bivouac" appear below. Although his views do not necessarily represent official British doctrine, they are reprinted here as a matter of fundamental interest to American troops.

2. SCOUTS AND OBSERVERS

The importance of maintaining observation superior to that of the enemy cannot be overemphasized. In this connection it is the duty of scouts and observers, who are highly trained specialists, to supply their commanders with information which cannot in the normal way be provided by other troops. These specialists must be able to obtain accurate information under all conditions of

warfare, and in all kinds of terrain, with or without the aid of maps, field glasses, or other instruments. "No Man's Land," whether it is 100 yards or 100 miles wide, must be kept under continuous observation and regarded as a network through which no piece of information, however small, should be allowed to escape.

Although scouts must have a knowledge of the organization and work of other arms—especially of the infantry—they should be expert at the following special activities:

- a.* Using field glasses for long-range observation.
- b.* All map reading.
- c.* Writing reports and messages; keeping logbooks.
- d.* Taking bearings; using the prismatic compass.
- e.* Patrolling long distances by day and by night.
- f.* Fieldcraft, stalking, concealment, and living off the land.
- g.* Bivouacking; personal care in the field.
- h.* Planning, constructing, and manning observation posts.
- i.* Use and care of arms.
- j.* Identification of troops, both friendly and hostile.

In addition, it is desirable for a scout to be competent at evaluating air photographs, executing field sketching and plans, and performing first aid. He should also be able to ride a horse, drive a motorcycle, sail a boat, swim, and cook.

There are numerous roles in which scouts are invaluable, including:

- a.* Patrolling, observing in small detachments, sniping, and verbal reporting.
- b.* Penetrating enemy lines and working inside them.
- c.* Moving skillfully and silently over difficult country at night.
- d.* Constructing field defenses and erecting obstacles.
- e.* Executing demolitions and sabotage.

Scouts and observers not only must be physically fit, but must have 100 percent self-confidence. There are more occasions in

their work when they need a cool hand, a clear eye, and a quick imagination than in any other branch of the military service.

3. AMBUSHES

a. General

In guerrilla warfare it is always necessary to be on the look-out for opportunities to surprise the enemy, and to attack him when and where he least expects it. Ambushing him whenever possible will make him respect you a great deal, especially if you can get away without losing any of your own men.

b. Choosing a Locality

In choosing a locality, it is necessary to take the following requirements into account:

(1) A safe, sure line of retreat, such as wooded or broken ground, for all men in the ambush.

(2) Firing positions from which fire can be opened at point-blank range. It may be helpful to let the men prepare their own positions with rocks or sandbags, but this must not be allowed if there is any real likelihood that air or ground observers will detect the positions.

(3) The locality should provide at least two firing positions; very often it is better if these are on opposite sides of a road.

(4) If possible, the locality should permit the ambush to see the enemy while he is as much as 300 or 400 yards away, so that if his strength is dangerously superior, he can be allowed to pass.

c. Planning

Having found out by what routes enemy patrols or small detachments are accustomed to move, it is necessary to obtain the fullest possible answers to the following questions:

(1) Do the enemy patrols move on foot, by motor transport, or mounted?

(2) What is the average strength? How armed? How many vehicles?

(3) Do they patrol in armored cars or tanks?

(4) At what time do they use the routes?

(5) How do they move? In one block? Or do they have protective detachments out in front or rear? Do the detachments move far from the main body?

(6) How will they summon assistance when attacked? From what point can they get assistance most easily?

(7) If the enemy carries supplies, can they be used if captured? If they cannot be used, can they be destroyed easily?

(8) What sort of troops are they? Young or old? Trained or untrained? Alert or careless? Can the officers and noncoms be picked out readily, and killed by the first volley?

d. Action

Having found out as much information as possible, and having chosen the locality, it is advisable to make a detailed reconnaissance of the position. If it is impossible to take the entire ambushing force to the place, the next best procedure is to make a sand model of it and of the surrounding country. Every man should be shown where he is to go. When this is physically impossible, the noncoms should at least be shown where they are to place their sections.

(1) Keep the whole operation as secret as possible.

(2) Almost invariably, the preliminary movements from camp or base must be made in the dark, and the actual taking up of positions must be done in the dark, too.

(3) Sentries must be posted to give warning of the enemy's approach. If possible, make use of a local man or woman who need not remain concealed.

(4) Adopt a simple signaling system.

(5) If the enemy detachment has scouts out in front, these must be allowed to pass unobserved. If one or two men are

posted farther up the road to deal with them, the scouts must not be touched until the main attack has begun.

(6) The leader of the ambush will give the command to open fire. Fire must be rapid, so as to have an immediate, overwhelming effect.

(7) A few of the ambush's best shots should be selected beforehand to dispose of enemy officers and noncoms.

(8) If vehicles are to be destroyed, men must be detailed beforehand for this work. The remainder must remain concealed to deal with any reinforcements or with enemy troops hiding in trucks.

(9) When the ambush is scheduled as a night operation, take along as many Very pistols as possible, and use them liberally as soon as the fighting starts.

(10) Movement should be as silent as possible; for this reason, all troops should be equipped with rubber-soled shoes or rubber boots, if available.

(11) Remember that soldiers will usually face the direction from which hostile fire comes. It is useful for an ambush to be divided into two distinct groups; one of these can fire first, and the other can then fire on the enemy from his rear.

(12) When using light machine guns for your ambush, place them so that they fire directly along the track.

(13) At the beginning of hostilities, road blocks are useful for halting convoys abruptly. In later actions the enemy will suspect road blocks of indicating the presence of troops in ambush; under these circumstances, various types of land mines, expertly hidden, will be more effective.

(14) It is most important for sentries to remain in position until the order to retire is given.

(15) All wounded men should be removed; ponies or mules are useful for this.

(16) If the ambush is successful, take away or destroy all matériel on the scene. All papers should be taken for examination. Search the dead for anything that may be useful.

(17) When the withdrawal has begun, it should be completed as fast as possible, with the ambush group dispersing to meet again at a place designated before the beginning of the operation.

4. STREET FIGHTING

It sometimes happens that one or more unattached companies are ordered to surprise and occupy a town or village which is in the hands of an enemy garrison, and to hold it for a limited period. Not only surprise but speed is essential in such an action. If the enemy has any warning of the attack, he will quickly try to turn almost every house into a fortress. In this case an unattached company, lacking artillery and air support, will find it costly, if not impossible, to turn out the enemy. The greatest care in planning and the utmost secrecy are therefore necessary.

At the beginning of the attack, troops should advance in single file along both sides of the street, keeping close to the walls and maintaining intervals of about 3 yards between men. Each file will watch the windows and doorways of the houses opposite, and be prepared to engage enemy snipers. It may also be convenient to place a Bren gun on each corner at the end of the street to give effective supporting fire. When movement along the roofs of the houses is possible, snipers selected for their agility and marksmanship should be sent up to the roofs to support the advance that is taking place in the street.

A doorway leading into a house, or into a room, must never be approached directly from the front. It is best to approach it from one side, hugging the wall, and then to hurl one or two hand grenades through the doorway. Immediately after the explosion, the attacker should enter, with his pistol (or rifle) ready for firing. Even if the defenders are not killed or wounded by the gre-

grenades, there is a good chance that they will be knocked out—for a few seconds, at least.

A strongly defended house will have to be taken floor by floor, or even room by room—hence the danger of allowing the enemy to organize any resistance. Once a house has been entered, and fighting is in progress on the upper floors, the attackers should post one or two men on the ground floor to watch the street and guard against surprise.

The best way to deal with strong resistance in houses is to work around the flanks and toward the rear, and thus enclose the defended localities in a number of small pockets which can be reduced one by one. Three-inch and two-inch trench mortars are most effective in street fighting, because of their extreme accuracy and the demoralizing effect of their grenades and their rapidity of fire. They are especially useful against strong barricades.

Once the attack has been launched, the enemy must be kept on the run and deprived of any opportunity in which to rally and organize his resistance. All the attackers must be trained to display the greatest initiative, since the slightest hesitation may prove fatal to the whole operation. Subordinate commanders, in particular, must combine a dare-devil recklessness with a cool head. In this type of warfare, the motto is "Hit first, hit hard, and keep hitting!"

Finally, it must be emphasized that a small attacking force cannot afford to take prisoners in the course of street fighting. It is too easy for the prisoners to escape and, once having escaped, to harass the attackers. Furthermore, men cannot be spared to serve as escorts.

5. WOODCRAFT AND BIVOUAC

a. General

Woodcraft is the art of making the most of the natural physical features of a countryside, so that one may work and live in com-

parative comfort. The object of using woodcraft in bivouacking is not so much to "rough it" as to "smooth it."

The following are useful articles to carry: rifle, scissors, needle, thread, buttons, safety pins, rubber bands, strong cord, copper wire, adhesive tape, nails and tacks, waterproof matches (see subpar. *d*), flashlight, emergency rations, and first-aid supplies.

b. Bivouac Site

A good bivouac site should provide water, fuel, dry and level ground, concealment from ground and air observation, a covered line of approach and retreat, security against surprise attack, and security against spread of fire. Old camp sites should be avoided, because they may harbor disease and because the best fuel will have been used up. Do not choose the lowest part of the available ground; rain may make it uninhabitable.

Choose the sheltered side of a rock or fallen tree; if there is a gap between the tree and ground, block it with stones or earth.

A good windproof and snowproof shelter can be constructed by laying branches with one end on the ground and toward the wind and the other against a pole supported by two stout stakes about 3 feet high. The branches should slope at an angle of more than 45°.

c. Bed

Earth draws heat out of the human body; therefore, one must have more protection underneath than on top (the greenhorn is usually unaware of this fact). A sleeping bag for two men can be made of blankets temporarily sewn together on three sides. To keep the feet warm on cold nights, it may be worthwhile to fill a sack or sandbag with hay or straw, place the feet inside, work the straw around the feet, and tie the sack at the knees.

If it is possible to have a camp fire without risk of enemy observation or danger of the fire spreading, it is an excellent idea to spread fuel over the place selected for bivouac and then burn

out the ground. This makes a warm bed, since heat is not drawn from the body, but is given out from the ground.

d. Campfires

If the ground is dry, a trench for the campfire should be dug in line with the wind.

Hard woods are best for cooking; they burn slowly and do not give too much heat. Soft woods burn quickly; although they are good for lighting fires, they generally give off sparks. If possible, always use dead branches taken from the lower part of a tree, or dead wood which is not too moist from lying on the ground. If a fire smokes, give it more air.

The waterproof matches (mentioned in subparagraph a) are useful and easy to make. Dip ordinary matches in shellac and lay them out to dry. They should be struck only in an emergency, when the supply of regular matches is damp. Sometimes it is possible to dry matches satisfactorily by rubbing them through hair.

To light a fire without matches, assemble very small dry shavings, remove a bullet from its case, tip out some (but not all) of the powder from the cartridge case onto the shavings, insert a small piece of frayed cotton rag into the case, and fire the cartridge into the air. The rag should catch fire, and must be applied to the shavings at once. It is important to remember that bone-dry shavings are likely to be found in dead birch trees. Always make certain that fires are out before your departure.

e. Important Note

It is absolutely essential, in bivouac, to place all articles so that they may be assembled quickly and moved during the night, if an unexpected need arises.

Section III. MISCELLANEOUS

1. STEEL HELMETS AND HEAD WOUNDS

Of special interest to American troops is a study recently completed by the commanding officer of a British medical unit in the Middle East. The officer has examined 150 consecutive cases of localized skull fractures sustained during battle, more than 90 percent of which occurred in the Western Desert, and has demonstrated the following points:

a. That a considerable area of the skull is not protected by the British (old type U. S.) steel helmet from missiles moving horizontally or upward.

b. That severe wounds of this unprotected area are common. The medical officer was unable to secure accurate data as to how many of the 150 casualties were wearing a steel helmet when injured; the available figures suggest that not more than half were wearing their helmets.

Herewith is a composite sketch (fig. 4) based on radiographic observations of the 150 fractures, considered in relation to the areas covered by the British steel helmet, by a proposed British helmet, and by the U. S. helmet

M1. In this sketch, black dots show the positions of the fractures. It can be observed that of the 150 cases, 65 wounds are below the brim of the British steel helmet, whereas 85 are above. There are no skull wounds be-

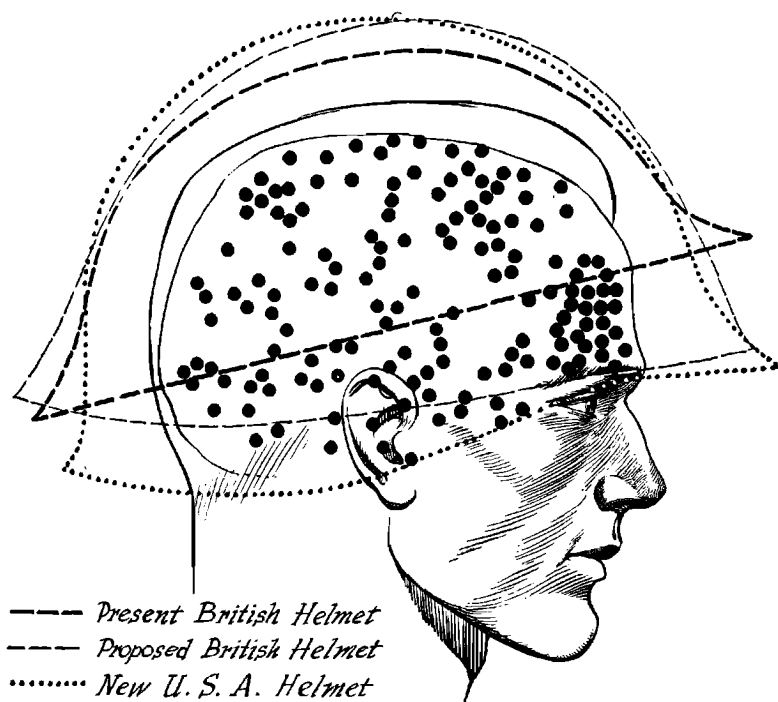


Figure 4.—Steel Helmets and Head Wounds.

low the brim of the U. S. steel helmet. The heavy concentration of wounds in the forehead is worth noting.

The proportion of casualties in this series produced by high-velocity missiles (bullets) has not been determined, but it is common knowledge that not more than

10 percent of casualties with head wounds caused by high-velocity missiles live to reach the base. Fragments extracted from these cases indicate that the majority were caused by low-velocity missiles (grenade or shell fragments). These fragments usually remain within the cranium as foreign bodies. This indicates that one thickness of the skull stopped the missile; therefore, it is reasonable to assume that one thickness of a steel helmet will stop such a fragment before it injures the brain.

An additional point of interest is that a high proportion of fragments that produce head injuries travel in a horizontal or slightly inclined trajectory. Examples of such fragments are those caused by bomb burst, mortar burst, or high-explosive shells bursting on contact with the ground. Very few head injuries result from air bursts.

The American medical officer who reports the results of this study adds the following comment: "This series of cases, which are the result of actual warfare, supports the wisdom of those officers who designed the present U. S. Army steel helmet M1."

2. BRITISH NICKNAMES OF TANKS

a. British Tanks

<i>Nickname</i>	<i>Official designation</i>	<i>Characteristics</i>
Matilda (medium)-----	Infantry Mk. II-----	Heavily armored, slow, used with infantry for attacking prepared posi- tions.
Valentine (medium)-----	Infantry Mk. III-----	
Churchill (heavy)-----	Infantry Mk. IV-----	{ 40-mm gun, fast, long- range; standard tank of armored divisions.
Covenanter (medium)-----	Cruiser Mk. V-----	
Crusader (medium)-----	Cruiser Mk. VI-----	{ Used with airborne forces and for mountain war- fare, reconnaissance, and protection of airdromes.
Tetrarch-----	Light Tank Mk. VII-----	
Harry Hopkins-----	Light Tank Mk. VIII-----	

b. American Tanks

General Lee-----	Medium M3 with U. S. turret.	
General Stuart-----	Light M3-----	
General Grant-----	Medium M3 with British turret.	
Ram I-----	Canadian-built-----	Same as U. S. Medium M3, except that 2- pounder replaces 37- mm gun in turret.
Ram II-----	Canadian-built-----	Same as U. S. Medium M3, except that 6- pounder replaces 37-mm gun in turret.
General Sherman-----	Medium M4-----	