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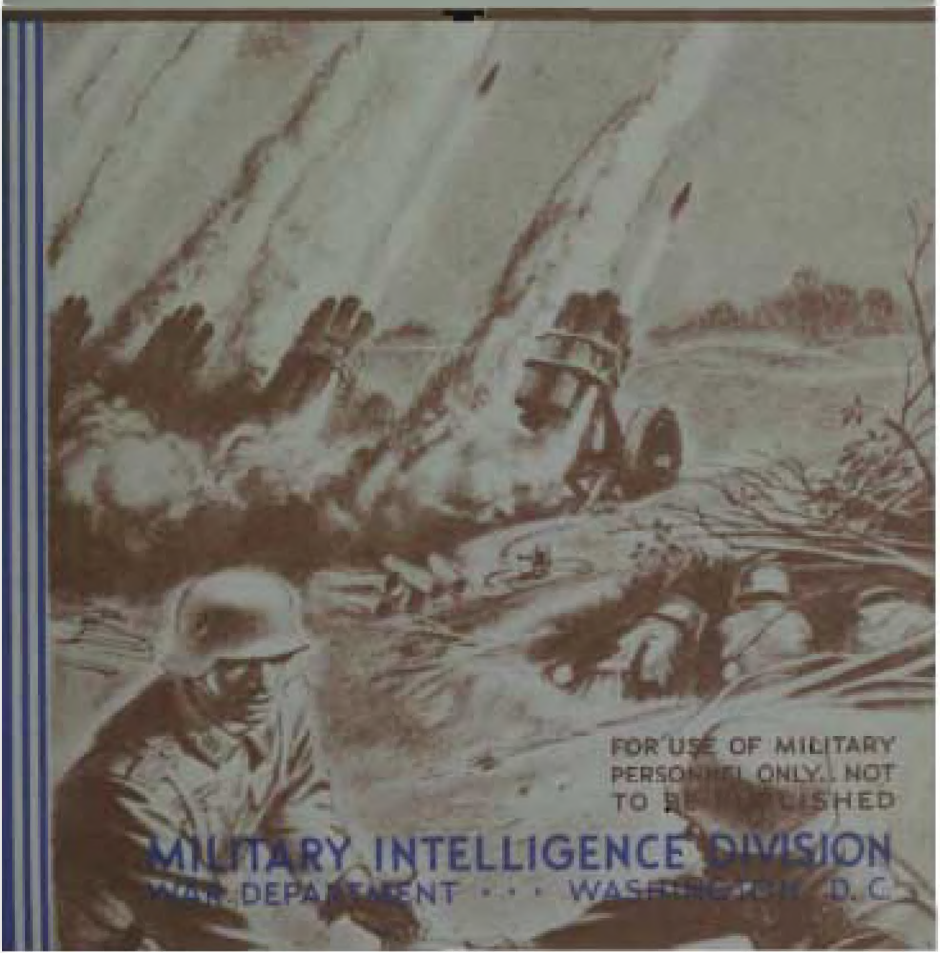
INTELLIGENCE BULLETIN



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MILITARY INTELLIGENCE DIVISION
WAR DEPARTMENT . . . WASHINGTON, D. C.

Intelligence Bulletin

VOL. II, NO. 3
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MILITARY INTELLIGENCE DIVISION

War Department

Washington 25, D. C.
November 1943

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

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PART ONE: GERMANY [1]

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1. INTRODUCTION

A letter found in an abandoned German gun position near Troina, Sicily, gives a fairly comprehensive picture of what went on in the mind of at least one enemy soldier during the retreat.

Possibly because their training has stressed offensive problems at the expense of defensive problems—the customary proportion has been 10 to 1—many German soldiers seem to lack enthusiasm for the defense. Readers of the *Intelligence Bulletin* will recall a number of articles in which high-ranking German officers have been quoted as expressing dissatisfaction, not only with the preparation of defensive positions, but with the defensive tactics of small units. This letter indicates that, although a number of factors can contribute to the lowering of the German soldier's morale while he is on the defensive, U. S. artillery barrages play a substantial part in crippling the enemy's will to fight.

[1] On page 8 of *Intelligence Bulletin*, Vol. II, No. 2, the caption under figure 3 should read "Pulk Used for Winter Transport of German Light Machine Gun." In line 12 of the same page, the word "panoramic" should be inserted immediately before the word "sights."

U. S. soldiers have been conducting a type of "psychological warfare"—perhaps without realizing it. It must be remembered that a German's mind is as vulnerable as his body. This particular letter reveals a state of uncertainty and depression which might be called the symptom of a contagious mental illness. It is to be hoped that, under the pressure of our attacks and counterattacks, this illness will spread throughout the German Army.

An order issued by the commanding general of the Hermann Goering Division is added, to illustrate how pessimism and fear can be communicated from one German soldier to another.

2. RETREAT IN SICILY

23 July 1943.

DEAR FAMILY:

I want to send you a report about these past few days, so that in case I never come home, you will know what we are putting up with down here in Sicily.

Two days after the British and the Americans had landed, they had gained so much ground, and had succeeded in bringing so many troops, that it was impossible to anticipate a battle with equal forces. On 14 July we missed being captured by just 1 hour. We took up a new position, which the Americans promptly covered with artillery fire, costing us our first victims. From this position we retreated again—toward the flank—and took up still another position. This move nearly sealed our fate. I am supposed to keep my vehicle near the commander, and serve as a communication trouble-shooter. Whenever the telephone line is damaged by artillery fire, the order is "Get out and repair." (We are fighting in the central sector, and are opposing crack U. S. and Canadian troops.) Such an order

came at 2100 on 20 July, three nights ago. Right after we had left our position, such a terrific barrage started that an infantry sergeant swore he had never experienced anything like it, even in Russia. Many were killed. Several of my comrades and I were right in the thick of it. It is impossible to describe the terror of that experience. We pressed our faces to the ground and waited for a direct hit, or flying fragments, to take our lives.

Meanwhile, people back home in Germany were vacationing, going to cafes and movies, and enjoying themselves. I asked myself "Where is the justice which is supposed to exist?"

At 0400 we got back to our position. At least, we were still alive. We could hear machine-gun and rifle fire. We went to sleep, anyway, although our commander had already departed. Half an hour later, I was awakened suddenly. There were orders for me. The Americans were in the immediate vicinity, and all lines had to be disconnected. We were 10 men altogether. We had a large personnel carrier and a small one. It was necessary to go slowly on the dirt roads, but on the highway we traveled as fast as the vehicles would go. At a junction a car was lying on its side, constituting a road block. It seemed impossible to take the vehicles any distance across country, because of the nature of the ground, but we made it. Then it happened. We rounded a curve and ran into concentrated rifle and machine-gun fire. I felt as if God had suddenly put a wall of flying steel in front of me! At this moment I thought of all of you.

I had to get the car through, and somehow or other I succeeded in doing it. Afterward, the man in the seat beside me looked at me and I looked at him. We were white as chalk. But we had survived. (May God always be with me! I am asking this, and I know you are asking it, too.) A short distance away friends were waiting for us. They had observed everything through field glasses. When we reported that the other car could hardly be expected to come through, our 22-year-old lieutenant, who was already there, gave us a tongue-lashing. He said that he had expected more of us to get through, and that we should be ashamed

to say such things. I had to hold myself back in order not to leap at his throat. He didn't know the whole story, of course, inasmuch as he had left the position an hour earlier. However, some of the missing men eventually got through by foot.

A little town, which by now had been occupied by the Americans, was shelled by our artillery. In return, the American artillery fired on our positions, costing us a number of wounded and forcing us to change our position once again. We had retreated 30 kilometers[2] and had had only a single day of rest. But here "rest" means—air attacks! (I am obliged to admit that while I have been fighting in Sicily, I have seen only two German airplanes.) Hostile enemy air reconnaissance discovered us, and the next day the Americans placed artillery barrages on our newest position. It became a miserable hell, and we had to abandon it that evening.

As a rule, we travel only at night—in pitch dark, without lights, and seldom on a main road. You can imagine what this means—especially when we are forever under fire. At noon of this day, I was ordered to take out a detail and look for our motorcycle runner, who was missing up front. We searched for him until it was nearly dark, but without success. We returned, hoping to get some sleep after the misery of the past two days, but found that everyone had moved again to a new position, taking advantage of the darkness.

We had a corporal with us who said he knew the route of march, but he gave us faulty directions. A hundred times we had to drop to the ground because of hostile planes. Planes are always around—nothing but American and British ones, unfortunately. We rode through a town, but had to stop 500 yards beyond it, inasmuch as we didn't know whether this road was still in German hands. Here we experienced a bombing attack. The town was very badly hit. Moreover, our vehicles were being shot at by mortars. We were terribly frightened, but we had to get through. Luckily, every bullet does not kill, and our venture succeeded.

[2] 1 kilometer equals approximately ⅝ mile.

We had already been posted as missing and our lieutenant himself had gone out to look for us. Not only were we safe, but our motorcycle runner had returned safely, too!

Our infantry had repulsed two heavy attacks. As a result, our light truck, which was all shot up, could be towed. While we were taking care of this, British planes appeared overhead. A moment later a nearby explosion threw my assistant driver and myself out of the car. I happened to land in the fairly soft earth of a bomb crater, and wasn't badly hurt. But my assistant driver was thrown onto the hard surface of the road and was still lying there when I found him. I took him to a field hospital. He had suffered head and face injuries. I feel very close to this fellow, since he and I have been through so many sad hours together. He will soon be with us again.

We are always being pursued. Half the time we don't know what day or date it is. As you can probably guess, I have been writing this letter piecemeal from time to time. I started it a week ago. How many new positions we have retired to since then! This past Sunday we were in still another one, and again the American artillery covered us. You have no idea what it is like to hear shells whizz over your head—all night long—everlastingly. It's so hard to sleep! At 0500 on Monday I had to go out trouble-shooting. The line was down in seven places. My car passed a field aid station, where there were men who had literally been torn to pieces. A ghastly sight! I couldn't eat anything that noon. All that day our position was shelled. We kept running and flopping down under the car—up and down, up and down. Suddenly, at 1900 a terriffic barrage came at us, and again my detail and I had to take down the communication lines while the others departed. Several times we had to stop, jump out, and take cover. The shells seemed to whistle past, a yard ahead of us or a yard behind us. At 0200 the next morning we were safe again. Unfortunately, I had developed a bad boil on my right knee. This morning they lanced it. It was very painful.

Again we have taken up new positions. For the moment it is

still quiet here—but for how long? The whole thing will start all over again.

Today we learned that Mussolini had been kicked out. This means the end of Fascism, too. Will Italy turn against us now? Whatever will become of us is debatable. It can hardly be supposed that this event will turn out for the good.

Incidentally, Hans Maier and most of my other friends are all with the Services of Supply, 30 to 40 kilometers to the rear. I don't suppose anything much will happen to them. My comrade Huebner is in Germany by now, and has probably visited you and told you a small part of what is going on. He has had damn good luck. Do you know that recently we were awakened at 0300 because mail had arrived? At that time I received your letters of the 7th and 11th of July, as well as a newspaper and two picture post cards from Schala, who was vacationing in Allgaou. He said, "From a wonderful rest and furlough days, the heartiest greetings." You can't imagine what I felt like when I read that. Hourly I fight for my life, and then suddenly I get Schala's post card. I just haven't the heart to answer it.

28 July 1943.

Yesterday things were fairly quiet in our new position, although occasionally we could hear artillery in the distance. A tremendous number of planes passed overhead. Flak is constantly being fired, yet I have never seen a plane shot down. Our *Luftwaffe* must be employed elsewhere, because I still haven't seen any German planes to speak of. Tonight there is a terrific thunderstorm going on, and our comrades who are further up front must be wretchedly uncomfortable. I can hardly stand listening to the noise any longer. The lightning—coupled with everything that has happened—shatters my nerves. I find it impossible to sleep after a storm like this. All I can manage are little naps, in which I have bad nightmares. Oh, if I could only have a roof over my head again! We're always sleeping on the ground, and in a different place every night.

29 July 1943.

Last night we moved out without having been fired on. Even in transit, we did not encounter what we call "magic fire" (*Feuerzauber*). This is the name that we give to the insane artillery barrages that the enemy places on us. Around midnight we arrived at our new position. While sleeping on the ground, we heard reverberations, as if we were sleeping in a basement while somebody upstairs was moving furniture. So even though we weren't directly under the "magic fire," we weren't allowed to forget it. . . .

Our food is good. Every day we also receive a bit of hard candy, half a cake of chocolate, and a box of "Attikah" cigarettes. The cigarettes don't last long, however. You have no idea how much one smokes, just to distract one's thoughts. As to myself, I must report that I am having a great deal of trouble with my ears. The artillery fire, together with the clouds of dust that we endure while we are traveling, deprives me more and more of my hearing. I really hear very badly now, and can notice it myself. This gives me a very insecure feeling. Since I was last in the hospital, I haven't had any pus in my knee—so that seems to be coming along all right. But my sense of hearing is something I'll never be able to regain entirely. If I live, I'll always have a certain degree of deafness.

Two of our men remained too long under cover during an artillery barrage, and while they were there, the unit moved out. They didn't rejoin us until the following day. They were threatened with a court-martial. These fellows may have been a little bit to blame, but such a threat is too severe and very depressing. One can very easily fall into a "bad light" here. Everything is construed as "dereliction of duty," and the severest punishments are decreed.

1 August 1943.

Sunday again. Will I ever be able to mail this letter? Oh, I wish I could tell you, my beloved ones, what we are going through in this campaign! Our infantry suffers even more.

Yesterday I lost a very good comrade. Everything is against us. The hostile artillery fires with its heaviest-caliber guns on our road of retreat. Right now the "Tommy" is attacking. It won't last long. Our only possible line of retreat is through burning fields and woods and towns subjected to artillery fire.

The future looks terribly dark. . . .

3. A GENERAL WAS BITTER

There were many other German soldiers in Sicily who felt as did the writer of this letter. An order of General Conrath, commanding general of the Hermann Goering Division, testifies eloquently to the fact that the British-American onslaught dealt a sledgehammer blow to the morale of a unit which formerly had been the pride of the German Army.

During the past few days, I have had the bitter experience of watching scenes which are not worthy of a German soldier, particularly not of a soldier of the Hermann Goering Division.

Men came running to the rear, hysterically crying because they had heard the detonation of a single shot fired somewhere in the distance. Others, deceived by false rumors, moved whole columns to the rear. In one instance, supplies were senselessly distributed to soldiers and civilians by a supply unit which had fallen victim to a rumor. I wish to state that not only the younger soldiers, but also noncoms and warrant officers, were guilty of panic-stricken behavior.

Panic, "Panzer fear," and the spreading of rumors are to be eliminated by the strongest possible measures. Cowardice and withdrawal without orders are to be punished on the spot, and, if necessary, by the use of weapons.

I shall apply the severest measures of court-martial against such saboteurs of the fight to free our nation, and I shall not hesitate to pronounce death sentences in serious cases.

I expect all officers to use their influence in suppressing this undignified attitude throughout the Hermann Goering Division.

Section II. SIX-BARREL ROCKET WEAPON (THE "NEBELWERFER 41")

I. INTRODUCTION

Whenever the fortunes of the German Army take a new turn for the worse, Nazi propagandists attempt to encourage the people of the Reich—and influence public opinion in neutral countries—by spreading rumors of new and formidable developments in German ordnance. Recently the Nazis have been releasing propaganda declaring that spectacular results are being achieved with the German six-barrel rocket projector known as the *Nebelwerfer* (smoke mortar) *41*. Actually, this is not a particularly new weapon. Its name, moreover, is extremely misleading. In the first place, the *Nebelwerfer 41* is not a mortar at all, and, in the second place, it can accommodate both gas-charged and high-explosive projectiles, as well as smoke projectiles.

It would be just as foolish to discount the German claims 100 percent as it would be to accept them unreservedly. Although fire from the *Nebelwerfer 41* is relatively inaccurate, one of the weapon's chief assets appears to be the concussion effect of its high-explosive projectiles, which is considerable when the weapon's six barrels are fired successively, 1 second apart. The high-explosive round contains 5 pounds of explosive; this is

comparable—in weight, at least—to the high-explosive round used in the U. S. 105-mm howitzer.

In view of the mass of misleading information which has been circulated regarding the *Nebelwerfer 41*—or, as the Germans sometimes call it, the *Do-Gerät* [1]—it is hoped that junior officers and enlisted men will find the following discussion both timely and profitable.

2. DESCRIPTION

The *Nebelwerfer 41* (see figs. 1 and 2) is a six-barreled (nonrotating) tubular projector, with barrels 3 to 3½ feet long and 160 mm in diameter. The projector

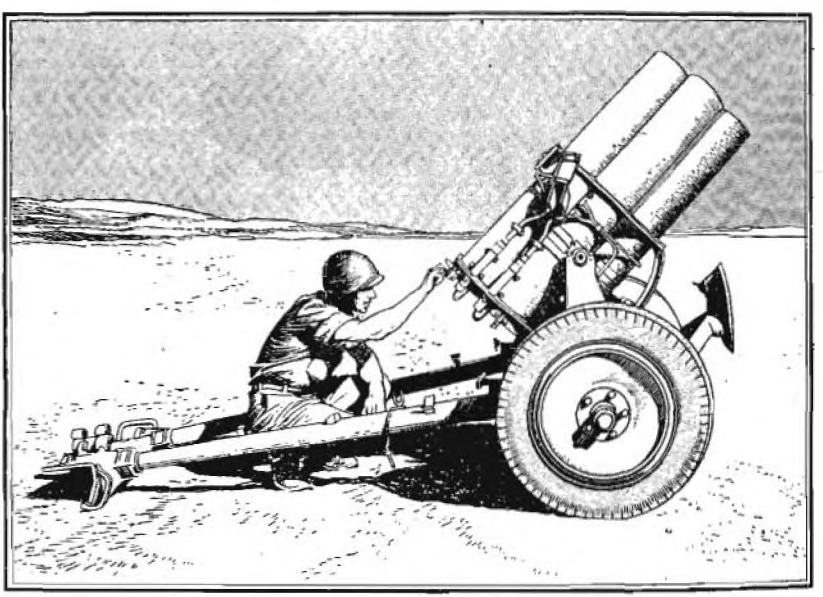

Figure 1.—German Six-barrel Rocket Projector (side view).

[1] U. S. soldiers in Sicily promptly nicknamed the *Nebelwerfer 41* the "Screaming Mimi."

is mounted on a rubber-tired artillery chassis with a split trail.

There is no rifling; the projectiles are guided by three rails, each about ⅓-inch high, which run down the inside of the barrels. This reduces the caliber to approximately 150 mm.

The barrels are open-breeched, and the propellant is slow-burning black powder (14 pounds set behind the nose cap). This propellant generates gas through 26 jets set at an angle. As a result, the projectiles rotate and travel at an ever-increasing speed, starting with the rocket blast. The burster, which is in the rear two-sevenths of the projectile, has its own time fuze. The range is said to be about 7,760 yards.

The barrels are fired electrically, from a distance. They are never fired simultaneously, since the blast from six rockets at once undoubtedly would capsize the weapon. The order of fire is fixed at 1–4–6–2–3–5.

The sighting and elevating mechanisms are located on the left-hand side of the barrels, immediately over the wheel, and are protected by a light-metal hinged box cover, which is raised when the weapon is to be used.

Each barrel has a metal hook at the breech to hold the projectile in place, and a sparking device to ignite the rocket charge. This sparker can be turned to one side to permit loading and then turned back so that the "spark jump" is directed to an electrical igniter placed in one of 24 rocket blast openings located on the projectile, about one-third of the way up from the base.

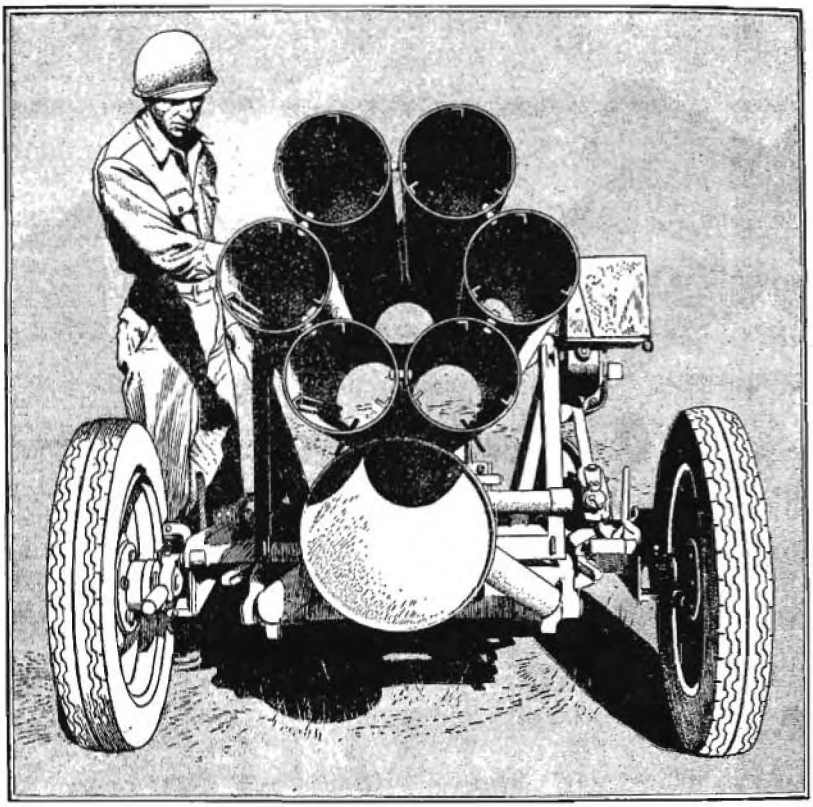

Figure 2.—German Six-barrel Rocket Projector (front view).

About one-third of the length of the projectile extends below the breech of the weapon.

The projectile itself resembles a small torpedo—without propeller or tail fins. The base is flat, with slightly rounded edges. The rocket jets are located about one-third of the way up the projectile from the base, and encircle the casing. The jets are at an angle with the

axis of the projectile so as to impart rotation in flight, in "turbine" fashion.

The propelling charge is housed in the forward part of the rocket. A detonating fuze is located in the base of the projectile to detonate the high-explosive or smoke charge. In this way, on impact, the smoke or high explosive is set off above ground when the nose of the projectile penetrates the soil.

3. NOTE ON OPERATION

The following note on the operation of the *Nebelwerfer 41* is reproduced from the German Army periodical *Die Wehrmacht*. It is believed to be substantially correct.

The *Nebelwerfer 41*, or *Do-Gerät*, is unlimbered and placed in position by its crew of four men. As soon as the protective coverings have been removed, the projector is ready to be aimed and loaded. The ammunition is attached to the right and to the left of the projector, within easy reach, and the shells are introduced two at a time, beginning with the lower barrels and continuing upward. Meanwhile, foxholes deep enough to conceal a man in standing position has been dug about 10 to 15 yards to the side and rear of the projector. The gunners remain in these foxholes while the weapon is being fired by electrical ignition. Within 10 seconds a battery can fire 36 projectiles. These make a droning pipe-organ sound as they leave the barrels, and, while in flight, leave a trail of smoke (see cover illustration). After a salvo has been fired, the crew quickly returns to its projectors and reloads them.

4. HOW THE GERMAN ARMY USES IT

The following statements have been made by a high-ranking German Army officer, and may be accepted as an authoritative expression of German ideas concerning the employment of this weapon.

Units of *Nebeltruppen* (smoke-laying troops) are organized as rocket-projector regiments (*Werferregimenter*), which are fully motorized and therefore extremely mobile. A rocket-projector regiment is divided into battalions and batteries, like those of the artillery. Since rocket-projector regiments are capable of playing a decisive part in battle, they may be concentrated at strategically important points along a front. . . . The organization of a rocket-projector regiment is much like that of a [German] motorized artillery regiment; organizationally, the motor vehicles and signal equipment of both are also much the same. Since the projector units usually are kept close behind the forward infantry line, their batteries may also be equipped with antitank guns. Because of the light construction of the projectors, a 3-ton prime mover is sufficient for traction purposes, and can also carry the gun crew and some of the ammunition. . . .

The *Nebelwerfer 41* can fire three different types of projectiles: high-explosive shells, incendiary projectiles, and smoke projectiles.

The high-explosive shells include those with supersensitive fuzes and those with delayed-action fuzes. The latter can penetrate reinforced cover. Because of their fragmentation and concussion effect, high-explosive shells are used primarily against personnel. It has been found that the concussion has not only been great enough to kill personnel, but occasionally has caused field fortifications and bunkers to collapse.

The incendiary projectiles are psychologically effective, and under favorable conditions can start field and forest fires.

The smoke projectiles are used to form smoke screens or smoke zones.

[This *Die Wehrmacht* article naturally does not discuss the possible use of gas-charged projectiles.]

Rocket-projector troops are employed as battalion and regimental units, in keeping with their task of destroying hostile forces by concentrated fire. One of the advantages of the *Nebelwerfer 41* is that it can mass its projectiles on a very small target area. By means of a shrewd disposition of the batteries, a carefully planned communication system, and a large number of observation posts with advanced observers, the infantry can assure for itself maneuverability and a concentration of its fire power upon the most important points. Projectors are placed well toward the front—almost without exception, at points forward of the artillery—so that they will be able to eliminate hostile command posts, destroy hostile positions, and even repulse sudden attacks effectively. The firing positions of the projectors are always carefully built up so that the weapons can give strong support to the infantry.

In Russia, during the winter of 1942–43, many breakthrough attempts by hostile forces were repulsed by direct fire from rocket-projector batteries.

Section III. PRINCIPLES OF DEFENSE AGAINST AIRBORNE TROOPS

1. INTRODUCTION

The German Army is not relaxing its long-standing vigilance in the matter of taking precautions against possible attacks by United Nations airborne troops. A German Army document of 8 April 1943 discusses methods that the enemy believes we are likely to employ, and summarizes the German principles of defense against such attacks. The Germans admit that we can choose from a variety of tactics in planning an airborne offensive, and that our chances of achieving surprise are very great. Acknowledging that we may try to deceive them with ruses and stratagems, the Germans warn their soldiers to be prepared for all kinds of unexpected and unpleasant surprises. They point out that our parachute troops and air-landing troops are likely to be employed in "the most fantastic ways," and explain that for this reason each German soldier must be trained to meet any crisis decisively and with speed.

The following statements are paraphrased from the German document.

2. GERMAN ESTIMATE OF OUR TACTICS

The United Nations have an excellent understanding of the two main methods of airborne attack:

(a) A raid in which landings are made in the immediate vicinity of the objective, so that a surprise attack may be undertaken.

(b) An attack in which landings are made at some distance from the objective, and at a place where no effective immediate defense is anticipated. The United Nations units then group themselves, and prepare to advance and launch a planned attack.

In the first type of attack, the opposition will attempt a number of separate small raids by parachutists, in an effort to gain possession of important objectives as quickly as possible. (The British, especially, will try to destroy these objectives at once in order to cause confusion.) These small detachments of parachutists with special tasks to perform may be dropped at night, some hours before the main attack. After landing, they will make the most of natural concealment, so as to approach their objectives unobserved.

In the second type of attack, the landings are very often preceded by air bombardment, followed immediately by the first wave of parachutists. However, it is always possible that, in order to gain complete surprise, a landing will not be preceded by bombing—or even that the opposition will try to create a diversion and deceive us by bombing an entirely different objective.

British parachute troops have been practicing night operations for a long time. Hence it is necessary to be constantly alert. It must be expected that well-trained parachutists will be ready to fight a few seconds after landing.

The United Nations can drop parachutists on terrain of virtually any type. It is quite feasible to drop parachutists on stony, irregular ground (as at Narvik); on ground covered with thick, low growth and even with orchards (as on Crete); and on ground crisscrossed by canals and ditches (as in Holland). The dropping of parachutists is out of the question only on

ground where there are many high-tension cables, in deeply ravined or thickly populated areas, or in woods where the trees are tall. It is self-evident, however, that the employment of parachute troops on a fairly large scale will call for open ground.

Since such a tremendous amount of ground is suitable for the landing of parachutists and even of transport gliders—the latter can land in remarkably confined spaces—one must select and indicate on maps only those areas which are especially advantageous for the landing of large numbers of parachutists and gliders, or which are conceivably suitable for landing transport planes.

A battalion of parachutists needs a jumping area of 800 by 300 yards. The landing and debarkation of an air-landing battalion on an airfield of medium size takes 45 minutes, provided hostile forces do not interfere. It takes longer if artillery is carried.

Since it is by no means necessary for transport gliders to land on airfields proper, these aircraft must be regarded as especially dangerous. Small gliders can dive and get beneath the fire of the defense. Also, since gliders are armed with machine guns, they can return fire effectively. Although gliders can often be used at night, they require a certain amount of light in the sky to land satisfactorily.

It must be expected that gliders will be used in carrying out isolated raids. For example, two 30-seater "Horsa" gliders were used in a British raid near Trondheim. It is known that the opposition is building a large number of these and of 60-seat "Hamilcar" gliders, as well.

3. GERMAN PRINCIPLES OF DEFENSE

a. Obstacles

We [the Germans] must erect obstacles on landing grounds and in areas likely to prove inviting to parachutists and gliders. Obstacles will be erected in front of, or all around, localities strategically important to the defense—for example, entrances to areas containing important establishments.

Mines and wire can be especially effective against parachutists and air-landing troops. (The "S" mine is excellent for this purpose.) In fact, the opposition is so aware of the danger of minefields to airborne troops that they will respect and avoid any area that they have reason to believe is mined. However, to help deter the opposition from attempting to land, dummy minefields, as well as true mines spaced far apart, must be maintained as though they were dangerous, thickly laid fields.

All types of dummy defense works should be employed. The defenders, as well as the attackers, must use imagination and cunning.

Poles, ditches, piles of wood and broken furniture, farm wagons piled with junk and with their wheels removed, and large mounds of earth, stones, or manure can also prove effective obstacles.[1]

b. Protection of Defenses

Defenses must have all-around protection. For this reason important defense works must be barricaded all-around against raids by airborne troops. Also, all the inhabited area within a defended work must be covered by automatic weapons. Since batteries are very inviting targets, it will be necessary to provide a sufficient number of sentries and machine guns to protect them. Vehicles must never be concentrated in areas not adequately defended.

c. Observation Posts

Observation posts must be maintained on all high landmarks (such as church steeples); this must be done everywhere, even in rear areas. Such observation posts are indispensable, especially in occupied territory, for spotting parachutists in time to give warning.

[1] See *Intelligence Bulletin* Vol. I, No. 11, pp. 48–51 for other Axis methods of obstructing airfields.

d. Communicating an Alarm

Telephone lines are extremely vulnerable to destruction by airborne troops. Therefore, there must always be an alternative method of communicating an alarm. Church bells, bugles, or drums may be employed.

e. Preparation of Mobile Reserves

As a general rule, even in preparation for minor attacks, it is best to have mobile reserves available to serve as "commando hunters." Machine guns, antitank guns, or 20-mm dual-purpose guns should be mounted on the trucks that the reserves will use, so that it will be possible to open fire from the vehicles. Machine pistols and hand grenades should be provided, and—if possible—light portable searchlights.

Flak personnel can be employed locally as combat squads.

Tanks and armored cars, if available, will offer the best possible means of combatting airborne troops.

f. Defense Tactics

The defense must be conducted offensively. Therefore, do not split up your forces, but make arrangements for a strong shock reserve. If observation posts and reconnaissance units have not supplied precise information, attack decisively whichever hostile group seems to be tactically the most dangerous. An extended period of inaction can have unfortunate consequences.

Use your reserves economically. All objectives of interest to the enemy must be adequately manned, even if your own attack is in progress. The main thing is to have an intuitive grasp of what the airborne attackers' real intentions are, and not to allow yourself to be deceived by diversionary attacks, dummy parachutists, and so on.

g. Opening of Fire

The chances of your being able to hit parachutists during their descent are very slight. It will be advisable to open fire only at close range. Experience has shown that fire is likely to be most effective just after the parachutists have touched the ground, while they are detaching themselves from their parachutes, and while they are trying to regroup themselves.

If it is not possible to cover with fire the locality in which parachutists are landing, there may be some advantage in placing sweeping machine-gun fire on the attackers while they are still in the air—even if they are not within close range.

Transport planes flying overhead should be subjected to fire as long as they are within range. Just before parachutists are to be dropped, transports slow down and become extremely vulnerable targets.

h. Conclusions

It must be recognized that the British and Americans have made great progress in developing their methods of airborne attack, and that they are capable of undertaking airborne operations on a large scale. Whenever they believe that circumstances are favorable, they will attempt to achieve decisive successes by using large numbers of airborne troops behind our coastal defenses. For this reason we must continually examine our defensive measures and keep them up to date.

When an airborne attack occurs, we must be able to estimate the situation with lightning-like speed, dispatch accurate information to the proper quarters, and launch a determined attack without regard to losses, even if we are outnumbered.

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Section IV. WEAKNESSES OF ARTILLERY DEFENSIVE POSITIONS

1. INTRODUCTION

In Sicily the positions of the Armored Artillery Regiment of the Hermann Goering Division were so unsatisfactory that on 23 July the regimental commander felt it necessary to issue a sharply worded order requiring that certain outstanding weaknesses be corrected at once. The commander had just returned from a visit to the batteries. His most significant statements are either quoted or paraphrased in this section.

2. HOW FAULTS WERE TO BE CORRECTED

a. Precautions Against Damage by Fire

The regimental commander said, at the beginning of his order:

> We are in danger of suffering great damage by fire, not only as a result of incendiary bombs, but because of the carelessness of our own soldiers. I notice that, in spite of my repeated written and oral warnings, the requisite measures for protection against damage by fire have not been put into effect. I shall hold the commanding officers of units responsible if adequate measures are not at once ordered and carried out.

The expression "repeated warnings" is interesting. Any weakness continually displayed by this regiment, once regarded as a superior outfit, may sooner or later become apparent elsewhere in the German Army,

granting the existence of such pressure as the United Nations were able to bring to bear in Sicily. Even if the weaknesses noted by this particular regimental commander are not at present widespread, they are at least symptomatic—an indication that the harder we hit, the more rapidly German efficiency is likely to decline.

The order stipulated that fire trenches be constructed around guns and ammunition supplies in such a way as not to interfere with the quick removal of camouflage, when necessary.

In every position sufficiently large detachments of fire sentries were to be ready day and night with the necessary equipment such as *Feuerpatschen* (fire brooms), filled water containers, and so on.

Prime movers and emergency trailers were to be kept nearby, so that guns could be removed quickly in case of danger or damage by fire or enemy shelling. Commanding officers were to check regularly to make sure that these measures were being followed.

b. Further Construction of Firing Positions

It was pointed out that the necessary attention still was not being paid to the construction of firing positions: the digging-in of the guns, the preparation of enough foxholes for proper cover, and the construction of ditches for ammunition, with shells and cartridges kept separate. The detachments in gun positions and observation-post personnel were not to rest until everything was under cover. This work was to be done at night. In order to preserve, as far as possible, the fight-

ing fitness of over-tired elements in action in the firing positions and observation posts, the rear services were to be utilized for such additional digging.

c. Track Discipline

In some instances deep, conspicuous tracks led into the firing positions. No attention had been paid to the planning of routes which would afford at least some semblance of camouflage against air observation. Disorganized driving in and out—that is, the movement of guns without an intelligently devised track plan—had been the cause of this. The regimental commander reminded his battery commanders that one of their primary duties was to take care of this aspect of the camouflaging of firing positions. He ordered battery commanders to inspect all positions from suitably high terrain points, for the purpose of taking advantage of all natural camouflage for tracks, and of visualizing how the positions would appear to hostile aircraft.

d. Alternate Positions

Alternate positions were not being occupied with the requisite speed, when such moves were dictated by the situation. The regimental commander ordered that batteries be made more mobile so that new positions could be occupied without difficulty. He pointed out that the shelling of German positions over open sights (with time and percussion fuzes and smoke shells) could be expected to force the abandonment of these positions. Too often, he said, batteries supplied with a large amount of ammunition, but insufficiently mobile.

had been utterly destroyed in a matter of hours by concentrations of hostile fire.

e. "Last Covering Height"

The importance of a "last covering height" was something that all members of the regiment seemed to have forgotten completely, the regimental commander said. He ordered that, inasmuch as most of the observation posts were on forward slopes or on gentle inclines, notices be put up in places most exposed to the hostile forces, and that these signs read "Warning! Last covering height! Now you are observed by the enemy!" He required that the routes from observed positions to headquarters and observation posts be clearly marked with sign posts and that, if necessary, approach trenches be constructed to these positions after dark.

f. Conclusion

The final words of the order are perhaps the most revealing.

To sum up, units containing elements which still are inexperienced or stupid or apathetic must be taken in hand, and energetically taught and controlled by the officers in command of these units. If this is done, the heavy casualties that we have been incurring up to the present time may be avoided in the future. In particular, the most careful measures are to be undertaken everywhere for the organization of an air-raid warning system. Each unit commander will see to it that the system operates smoothly and that any man who fails to perform his duty is punished ruthlessly. I have repeatedly stressed the principles contained in this order. Only when they are adhered to by everyone will the artillery avoid heavy casualties and, by maintaining its strength, be able to carry out its task.

Section V. TACTICAL EMPLOYMENT OF FLAK IN THE FIELD

1. INTRODUCTION

The original German doctrine regarding the employment of German Air Force flak artillery in the field has steadily been undergoing modification. German manuals formerly described the responsibility of flak in the field as primarily, and almost exclusively, antiaircraft defense; the engagement of ground targets was regarded as secondary, and only to be undertaken in an emergency. Although the older manuals admitted the possibility of using light flak to reinforce the fire of heavy infantry weapons, and of using heavy flak to supplement antitank and other artillery, such employment was described as exceptional. There was nothing to suggest, for example, the now extensive use of the 88-mm antiaircraft gun in an antitank role.

The transition from the defensive doctrine of the earlier manuals to the more aggressive modern conception seems to date from the introduction of the Flak Corps—units of which first appeared during the Battle of France. The Flak Corps was created to perform the tasks described in the following enemy notes.

The Flak Corps is a wartime organization, and constitutes an operational reserve of the commander in chief of the German Air Force. It combines great mobility with heavy fire power. It can be employed in conjunction with spearheads composed of armored and motorized forces, and with nonmotorized troops in

forcing river crossings and attacking fortified positions. It can also be deployed as highly mobile artillery to support tank attacks.

The Flak Corps can take part in antitank defense on a broad front, and can be employed in ground engagements at strongly contested points. Its capabilities are tremendous in antiaircraft defense, because its great mobility enables it to rush flak concentrations to strategically important points, and to transfer flak strength from one area to another, as required.

It is also responsible for protecting forward ground organizations of the German Air Force.

As these notes show, flak in the field is now intended to serve as a powerful and highly mobile striking force. The emphasis laid on its employment in the ground role, and in an offensive capacity in conjunction with spearhead formations, is most important. Experience has verified that these principles are actively practiced in the field.

2. HEAVY FLAK

a. General

In operations with the field army, the 88-mm gun, as a result of its great mobility, has become almost the universal weapon of heavy flak. Larger calibers are usually encountered only in areas where the defense is static.

The heavy flak battery consists either of four or six guns (usually 88's), with two light guns (20-mm) for close protection. Six-gun batteries are becoming increasingly common. In theory the heavy battery consists of two platoons, but in practice it is rarely divided in this manner. All the guns are generally fitted with

shields, to protect the detachments against small-arms fire, and with two sights—a telescopic sight for the direct engagement of ground targets, and a panoramic sight for indirect laying. In the interests of mobility, the fire-control equipment is often left behind. In addition to time-fuze high-explosive ammunition, armor-piercing and percussion-fuze high-explosive ammunition is normally carried. To avoid the muzzle flashes which, at night, readily give away the gun positions, the Germans now make widespread use of a flashless propellant.

The 88-mm gun can be put into action in about 2 minutes. If necessary, it can be fired from its mount, but against ground targets only.[1] Since the normal mount is conspicuous because of its height, the gun is extremely vulnerable to artillery fire. Whenever possible, therefore, the gun is dug in so that only the barrel appears over the top of the emplacement. (Actually, the time factor and the frequent moves do not always permit the Germans to devise effective concealment.) Realizing that destruction of hostile observation posts constitutes an indirect method of protecting their heavy flak guns, the Germans try to accomplish this at every opportunity.

The 88-mm guns can open fire on armored vehicles at 2,500 yards with fair prospect of success, but are most effective at ranges of about 1,000 to 1,500 yards. They may fire at ranges of as much as 4,000 yards, if other and

[1] Against ground targets on the Eastern Front, the Germans have used a self-propelled 88-mm gun, called the "Ferdinand." See *Intelligence Bulletin*, Vol. II, No. 1, p. 1.

more inviting targets are not available. With the aid of a forward observation post, 88's sometimes engage such targets as troop concentrations at ranges of as much as 6,000 yards.[2] The following are examples of the penetration performance with the 88-mm Flak 36, the most common model of this gun:

Range (yards)	Thickness of armor	
	30° angle of impact	Perpendicular (no angle of impact)
500	110 mm (4.33 in)	129 mm (5.07 in).
1,000	101 mm (3.97 in)	119 mm (4.68 in).
1,500	92 mm (3.62 in)	110 mm (4.33 in).
2,000	84 mm (3.30 in)	100 mm (3.93 in).

It is estimated that the following figures are correct for the 88-mm Flak 41:

Range (yards)	Thickness of armor	
	30° angle of impact	Perpendicular (no angle of impact)
500	150 mm (5.91 in)	175 mm (6.89 in).
1,000	140 mm (5.51 in)	164 mm (6.46 in).
1,500	130 mm (5.12 in)	153 mm (6.02 in).
2,000	121 mm (4.76 in)	142 mm (5.59 in).

[2] The telescopic sight is graduated up to 10,340 yards, and theoretically it would be possible to engage targets up to this range. In indirect fire, when the panoramic sight is used, the maximum range of the 88-mm Flak 36 is 11,445 yards with time-fuze high-explosive ammunition, and 16,132 yards with percussion-fuze high-explosive ammunition.

Corresponding maximum ranges with the 88-mm Flak 41 are:

	Yards
Direct fire (with telescopic sight)	11,770
Indirect fire (with panoramic sight):	
Using time-fuze HE	13,561
Using percussion-fuze HE	22,091

b. Employment in Rear Areas

In rear areas heavy flak has the normal task of providing antiaircraft protection for ports, airfields, dumps, headquarters, and points of importance on lines of communication. Predictors and/or auxiliary predictors are employed, and mobile radio-location equipment may also be allotted. Although flak units in rear areas primarily have the task of providing antiaircraft protection, even these units are normally provided with armor-piercing and percussion-fuze high-explosive ammunition, and therefore can operate against any hostile troops or armored vehicles which may break through. The heavy flak's degree of preparedness to meet such attacks naturally depends on the distance between the guns and the front.

c. Employment in Forward Areas

It is in the employment of heavy flak batteries attached to the Army, for operations in forward areas, that current German methods depart most noticeably from the doctrine expressed in earlier manuals. Formerly, German doctrine outlined a primary antiaircraft role, a secondary antitank role, and, under exceptional circumstances, employment in a field-artillery role. It may be said that the antitank role now has assumed virtual priority, for experience has shown that the 88-mm gun has become an indispensable complement to the German Army's antitank artillery. A certain proportion of heavy batteries in forward areas is still deployed in an antiaircraft role, chiefly to protect forward airfields, and during periods of inactivity or prep-

aration the antiaircraft role still predominates. For example, an assembly prior to an attack will usually be protected by heavy guns, and under these conditions the ground role is assumed only in the event that the Germans are subjected to a surprise attack. However, once battle is joined, whether in attack or defense (and especially when armored forces are involved), the heavy flak guns are usually employed against ground targets only, and the antiaircraft role becomes the exception. If necessary, even guns originally deployed to give antiaircraft protection to forward airfields are sometimes pressed into service as antitank weapons.

The employment of heavy flak batteries naturally varies considerably, depending on the terrain and the nature of the fighting. In open country the 88-mm gun's long range gives it a distinct advantage as an antitank weapon. In North Africa, where so often there was no well-defined "line," heavy flak batteries often served as the nucleus of defensive "hedgehogs." In an advance the primary function of the batteries usually has been to provide antitank protection during the movement of German armored vehicles. The 88's have also been known to accompany tanks in an assault-gun role. Although the battery is the normal fire unit, large numbers of 88-mm guns have occasionally been employed under one command when the situation has required that maximum antitank strength be concentrated at a single point.

A striking example of the value of heavy flak in defense is afforded by the final phases of the Tunisian

campaign, in which heavy flak units frequently provided the backbone of German resistance to the Allied advance. For this purpose several units were formed into mobile battle groups, a procedure which had been resorted to on previous occasions, and which presumably is dictated by the stress of circumstances. These flak battle groups are purely temporary units, formed for a specific purpose. They consist of a number of platoons, usually with two heavy and three light guns each, and may be employed either alone or in combination with other arms. They are used both in defense and in attack. Since they are mobile striking forces, there is always a possibility that they will be used by the Germans in attempts to repel landings on the European continent. They would afford a means of rapid counterattack in threatened sectors. The employment of these temporary units, which has become increasingly common, demonstrates the flexibility of flak organization in the field and the extent to which the Germans use heavy flak to complement antitank artillery.

The employment of a heavy flak battery is naturally governed by the type of operation that is being undertaken by the Army unit to which it is attached. Although the lessons learned from desert warfare are not necessarily applicable to other theaters, the activity of a heavy flak battery during the early stages of the German counteroffensive in Cyrenaica in May 1942 affords some very good tactical illustrations. During this action the battery accompanied the Army unit to

which it was attached, and provided protection both against air attacks and tank attacks. The ground role predominated. Not only were tank engagements fought by day, but at night the battery was deployed in an antitank role to protect its "parent" Army unit. The battery was continually on the move during the day. More than once it detached some of its guns to strengthen another Army unit, and at other times it, in turn, was given added strength. When opposition was expected, the battery took up an antitank siting, generally on high ground and facing the probable line of attack. The choice of this position was not hard-and-fast. The battery moved to a different position when reconnaissance had established the location and course of the hostile tanks. When in position, the battery often had to site its guns so that they faced in two directions, because of uncertainty as to the exact line of attack.

3. LIGHT FLAK

a. General

Light flak units operating in the field are generally equipped with 20-mm guns (single- or four-barreled), sometimes with 37-mm (1.45 in.) guns, and once in a great while with 50-mm (1.97 in.) guns. A light battery normally consists of four platoons of 20-mm guns, or three platoons of the larger caliber light guns, with three guns to each platoon.

Light flak guns are especially useful in combatting surprise attacks, because of the rapidity with which

these pieces can be put into action. The 20-mm Flak 30, for example, can be put into action in about half a minute, and in extreme emergencies all light flak guns can be fired (although with a limited traverse) from their mounts. In addition, it is known that self-propelled models of the 20-mm and 37-mm calibers exist and can engage both air and ground targets. Like the heavy guns, the light guns in the field are usually fitted with shields for protection against small-arms fire. They are also fitted with flak sights and/or telescopic or linear sights, and carry armor-piercing ammunition in addition to percussion-fuze high-explosive ammunition. Light flak guns may engage ground targets, especially "soft-skinned" vehicles, at ranges of as much as 800 yards, but are most effective at ranges up to about 300 yards. The following are examples of the penetration performance of the 20-mm Flak 30 firing armor-piercing projectiles:

Range (yards)	Thickness of armor	
	30° angle of impact	Perpendicular
100	31 mm (1.22 in)	48 mm (1.89 in).
200	29 mm (1.14 in)	44 mm (1.73 in).
300	27 mm (1.06 in)	41 mm (1.61 in).
400	25 mm (0.98 in)	38 mm (1.50 in).

b. Employment in Rear Areas

In rear areas light flak batteries have the normal task of giving antiaircraft protection to such vital points as airfields, bridges, railroad stations and junctions, headquarters, and depots. For this purpose batteries are

generally deployed as a whole, with the guns sited by platoons. Although the antiaircraft role predominates, these batteries constitute an important element in the ground defense plan for the vital rear points they are protecting, and are prepared to engage any armored or other forces which may succeed in penetrating to that depth.

c. Employment in Forward Areas

Light batteries attached to Army units in forward areas may also operate as a whole, but platoons are usually detached to perform special tasks.

On the march, platoons are generally spaced at intervals along the column, or are sited at particularly vulnerable points along the route—such as bridges, defiles, or crossroads—and subsequently "leapfrog" forward. Their principal task is to protect the column against attack by low-flying aircraft; their secondary task is to engage ground forces.

In battle light flak units afford protection for headquarters, field artillery concentrations, infantry concentrations, engineer units, motor parks, and so on. Also, it is sometimes considered necessary to assign a light platoon (three guns) to a heavy flak battery engaged in antitank work—presumably because, under certain circumstances, the two light guns belonging to the two batteries do not afford enough protection. In all these tasks the antiaircraft role predominates, but engagement of personnel and armored vehicles is also regarded as highly important and often takes place. Experience

has shown that during tank attacks, light guns, as well as heavy guns, have ignored air targets and have concentrated on hostile armored vehicles, leaving German ground units to defend themselves against air attack by means of rifle and light machine-gun fire. (As previous issues of the *Intelligence Bulletin* have explained, German Army training stresses the importance of small-arms fire in defense against low-flying aircraft.)

It will be seen that whereas heavy flak—which is well suited to combat ground targets, partly because of its penetration performance—is now being given wide tactical employment in a ground role, light flak with the Army still clings pretty much to the principles outlined in German pre-war manuals. Although the capability of light flak in a ground role is always something to take into account, this type of employment seems to be the exception, rather than the rule.

NOTE.—This section has dealt solely with German Air Force flak. There are also (1) Army flak (*Heeresflak*) units, which include "mixed" battalions (containing both heavy and light batteries) as part of the artillery, and (2) light companies (*Fla*), which have light guns only, as part of the infantry. These other types are not numerous, however. As a rule, they are GHQ troops, and are attached to army units in much the same way that German Air Force flak units are attached. Recent enemy documents show that an Army flak battalion, consisting of two heavy batteries and one light battery, is now included in the tables of organization of armored and motorized divisions.

Section VI. MISCELLANEOUS

1. IMPROVISED BANGALORE TORPEDOES

Besides employing a standard Bangalore torpedo, the Germans make considerable use of improvised versions. The materials used in constructing weapons of this type depend entirely on local resources, while the method of construction follows one of two general principles:

a. The tubular model, which is not built to any particular dimensions, utilizes any convenient length of piping, such as a drain pipe or metal water pipe. The pipe is filled with explosive, and each end is plugged with a piece of wood or any other suitable material that may be at hand. A detonator and a length of safety fuze are fitted to one end.

b. The other version consists of a plank, or any convenient length of timber. At one end a number of charges are laid side by side. The exact number depends on the task to be performed. These charges are fastened to the plank by means of wire or stout cord. A detonator and a safety fuze are attached to the charge at the far end. A typical example is a specimen which was captured recently; it consisted of a plank, 6½ feet by 1½ inches by 1 inch, to which 15 ½-pound (approx.) slabs of TNT had been tied. These were to be detonated by means of a detonator

and a length of safety fuze that would give a delay of 30 seconds.

2. NEW ARMY CAP

The adoption of a standard field cap (*Einheitsmütze*) for the German Army has been ordered (see fig. 3). The cap, which resembles that worn by U. S. railroad men, will replace the former German garrison ("overseas") cap. If the visor interferes with the handling of weapons or equipment, the cap will be worn back to front. Units wearing a black field uniform will wear a black cap. Generals caps will have gold cord around the top; all other officers' caps will have silver cord around the top.

PART TWO: JAPAN

Section I. NEW JAPANESE WEAPONS

1. INTRODUCTION

Several new types of Japanese weapons are described in recent reports from observers in combat areas of the Pacific. These weapons include:

a. A hand grenade which is actuated by a pull-type igniter;

b. A small, smooth-surfaced hand grenade which is actuated by striking the fuze against a hard surface—as in the case of the Model 91 and the Model 97 grenades;[1]

c. A 47-mm antitank gun which is completely modern in design; and

d. Four types of booby traps.

2. PULL-TYPE HAND GRENADE

a. Description

This grenade, which has an over-all length of 3¾ inches and a diameter of 2 inches, is easily distinguished from Models 91 and 97 because it has no lengthwise grooves. The weapon has five traverse grooves, however, and it also has a lead cover which is grooved to

[1] *Intelligence Bulletin*, Vol. II, No. 1, included a section devoted to these and other grenades and mines which have booby-trapping possibilities.

provide a grip for the fingers in removing the cover. On one side of this grenade, fitted to the top and bottom, are two rings. These could be used for carrying the weapon, or for anchoring in case it is used as a booby trap.

b. Table of Characteristics

Over-all length	3¾ inches.
Length of body	2¾ inches.
Length of cover	1 inch.
Diameter of body	2 inches.
Diameter of cover	1⅛ inch.
Body (material)	Cast iron.
Cover (material)	Lead.
Weight (total)	449 grams.
Weight of filler	39.5 grams.
Weight of body	509.5 grams.
Loading factor	8.7 percent.
Filler	Granular TNT.

c. Operation

To remove the lead cover, depress the cover thumb release on the side of the grenade (see fig. 4). The cover then screws off in 1½ turns. This exposes the firing string. When the firing string is pulled, it draws a friction igniter between two pieces of match composition and fires them. The match composition, in turn, fires a 5½-second delay train, which fires the detonator, thus setting off the main charge.

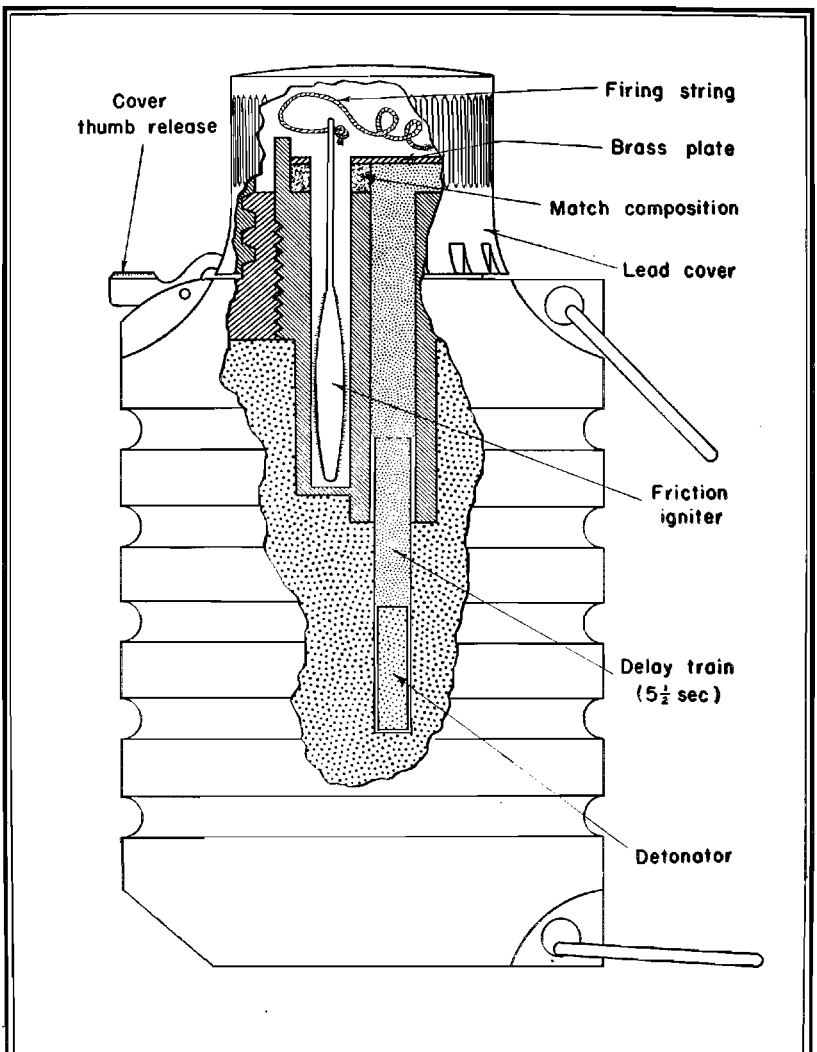

Figure 4.—Japanese Pull-type Hand Grenade.

d. Booby-trapping Possibilities

Since this grenade can be activated by a pull on the firing string, it is better adapted to booby-trapping purposes than the Model 91 and the Model 97 grenades.

The grenade booby-trap sketch (taken from a Japanese document) in figure 5 is of the pull type. The enemy may rig up such booby traps on dead soldiers in battle areas in a manner so that a pull of a leg or some other part of the body will cause detonation.

Figure 5.—Japanese Grenade Booby Trap.

3. OFFENSIVE HAND GRENADE

a. Description

This grenade is small in comparison with the Model 91 and Model 97 Japanese grenades (see fig. 6). It is

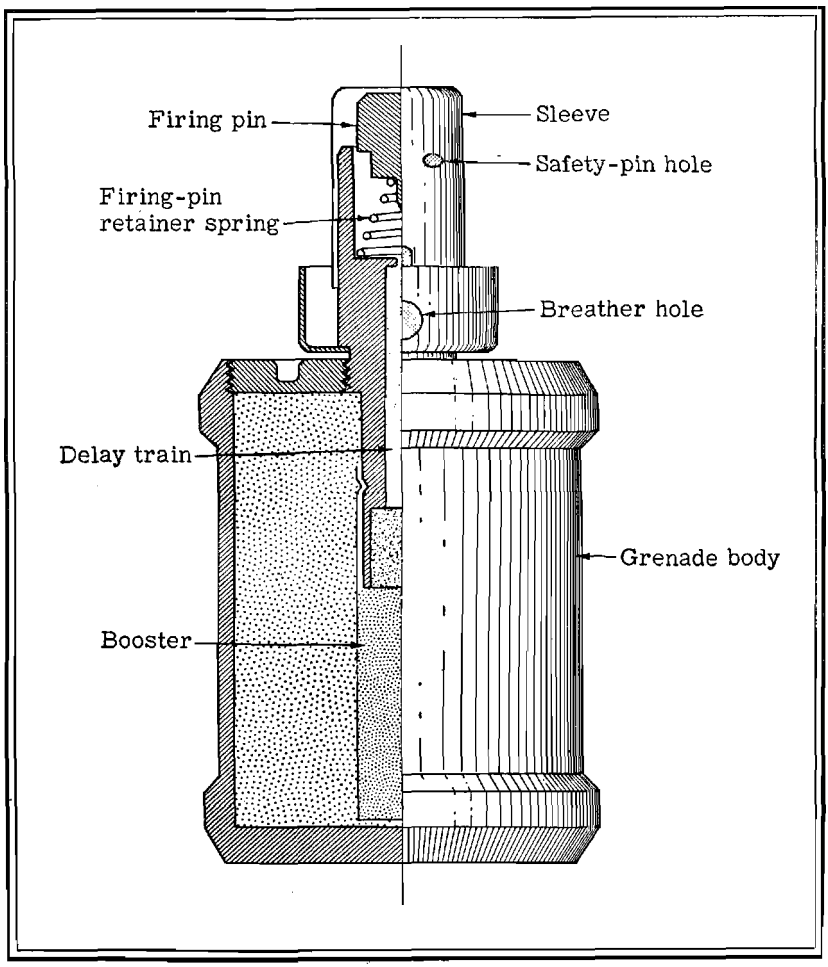

Figure 6.—Japanese Offensive Hand Grenade.

3.5 inches long and 1.75 inches in diameter, and weighs approximately 10 ounces. Because of its light weight, the grenade can be thrown almost as far as a baseball. This fact indicates that the weapon is designed primarily for use in offensive operations. It is called "offensive" hand grenade in this section because its model number is not known.

The body of the grenade is smooth and cylindrical, both inside and outside, and has a rim at each end. Its nonserrated body is an additional help in distinguishing the weapon from the other types of Japanese hand grenades. It is closed by a threaded plug, which has a hole in the center to receive a threaded fuze.

The workmanship of the grenade is good, and ordnance experts consider the fuze an improvement over that of the Model 91 and Model 97 grenades.

b. Operation

A sleeve that holds the firing pin and the firing-pin retainer spring in place is held to the fuze by means of a small screw. The detonator booster is crimped to the lower part of the fuze body. The safety pin, which prevents the firing pin from striking the primer, is held in place by a cord. To arm the grenade, remove the safety pin and strike the head of the weapon against some hard object, such as a helmet. Thus the operation is like that of the Model 91 and 97 grenades.

4. MODEL 1 (1941) 47-MM AT GUN

This new Japanese weapon is a split-trail piece of modern design (see fig. 7). Its silhouette is low, and

its tread is unusually wide. Because of these features, plus the fact that the wheels are fitted with pneumatic tires, it is evident that the piece is adapted for towing by a motor vehicle.

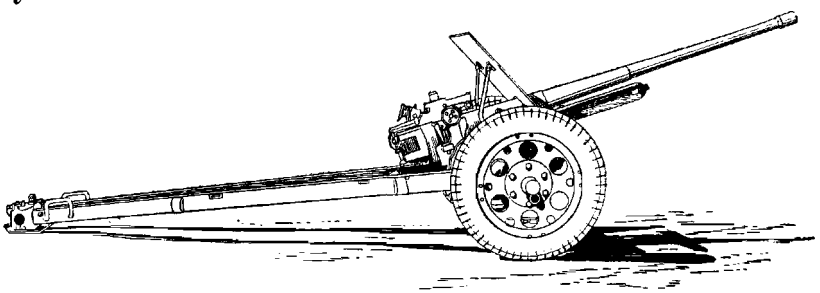

Figure 7.—Japanese Model 1 (1941) 47-mm AT Gun.

The barrel of this weapon is extremely long, and is heavily reinforced at the muzzle. This indicates a high muzzle velocity. The trails, also unusually long, are equipped with a locking yoke and handles. The wide tread and small wheels permit a wide traverse. A wide shield, cut away at the bottom, is provided.

A complete check has not been made on the ammunition used for this weapon. However, the armor-piercing round is 15.5 inches long and weighs 6 pounds 5 ounces, complete. The case, made of brass, is unusually large and long, and is necked down to take the 47-mm projectile. The projectile has a red tip, a black body, and a white band just in front of the copper rotating band.

5. BOOBY TRAPS

Four types of booby traps which the Japanese may use in future operations are described below. The

sketches and explanatory wording were compiled from various Japanese notes. They may have been copied from enemy military instructions or they may have been devised by individual Japanese soldiers with technical experience.

a. Device Using a Parasol

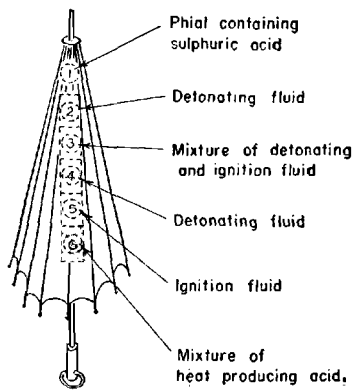

Figure 8.

This booby trap apparently is a combined explosive and incendiary device. Opening of the parasol prob-

b. Device Using a Flashlight

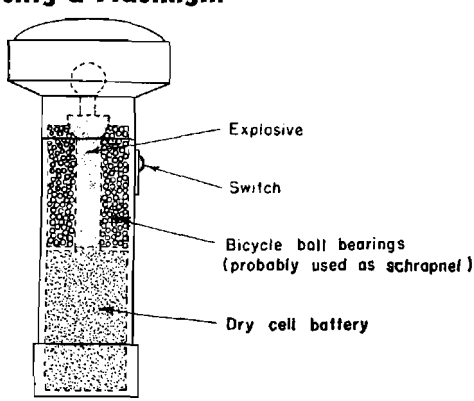

Figure 9.

ably breaks the acid vial, which in turn, ignites the detonating and ignition mixtures.

In this type of booby trap, the flashlight switch is used to connect a circuit through an electric detonator. When the switch is pressed, the explosive is ignited.

c. Device Using a Pipe

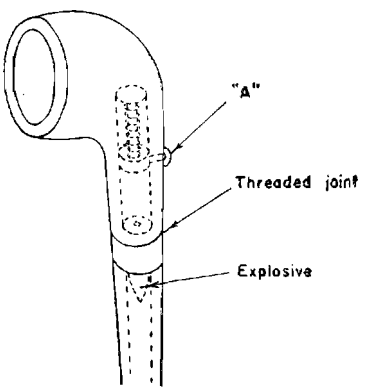

Figure 10.

"A" is probably a safety pin, which, while inserted, prevents the unscrewing of the pipe stem. When the device is placed as a bobby trap, the safety pin would be removed; after this, unscrewing of the stem would release the striker pin, which would fire the percussion cap and explosive.

d. Device Using a Bottle

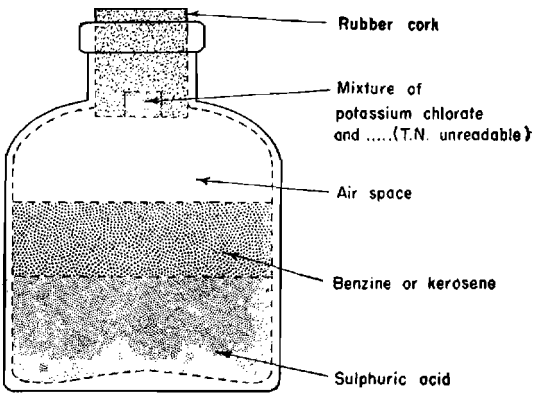

Figure 11.

If the bottle is picked up and shaken, or if it is tipped over, sulphuric acid coming in contact with the mixture in the cork would cause a small explosion and ignite the benzine. This type of booby trap is probably designed primarily for its incendiary effect.

Section II. NOTES ON JAPANESE LANDING OPERATIONS

1. INTRODUCTION

The information contained in this section has been extracted from several translated Japanese documents dealing with landing operations. Some of the statements come from enemy field manuals, while others appear to be based on results of landing maneuvers. In connection with this section, reference should be made to information previously published in the *Intelligence Bulletin* and other M. I. D. publications on Japanese landing operations. For example, *Intelligence Bulletin,* Vol. I, No. 8, included a lengthy article which was paraphrased from a translated enemy document titled "Amphibious Tactics Based on Experiences at Wake."

In the paragraphs which follow, the reader must bear in mind that he is reading Japanese doctrine, some of which is experimental, and he must not confuse it with our own doctrine on landing operations.

2. ACTION BEFORE LANDING

a. Selection of Landing Points

In selecting landing points, take into consideration the probability that hostile forces have a lot of mechanized vehicles and an excellent network of roads and other means of communication.

The landing points should be suitable for landing installations,

and especially convenient for the landing and subsequent advance of vehicles.

In landing on hostile coasts where breakers are anticipated, it is best to select one or two alternate landing points because the actual condition of the surf may be different from that which was expected. For example, we had expected large breakers at one of the points considered for landing in the Philippines, but a close reconnaissance revealed that they were small. Therefore we landed there the first day. Toward nightfall, the surf became rough, so we changed anchorage and continued the landing operations at another point, where the surf was not heavy.

b. Reconnaissance of Landing Points

A thorough air reconnaissance of proposed landing points must be made by a competent officer who is scheduled to participate in the landings. Also, air photos must be made and distributed to each unit designated to take part in the landings. These photos must show views of the landing points during high tide and also during low tide.

Reconnaissance of landing points from the sea must be carried out secretly and quickly. If possible, this reconnaissance, with the aid of air photos, should determine passages and points navigable by boat. Reconnaissance of coasts with unusual characteristics must be continued, even after the first wave of troops has landed. This is especially true if the first wave lands at high tide, because at low tide it may be necessary to change the route of approach or even the landing point.

c. Selection of Time for Landings

Ordinarily, landing operations will start early enough to allow the front-line units to reach shore at dawn. Where an attack by a superior air force, or an advance up a long defile, is expected after landing, it may be necessary to start landings about midnight, so that most of the personnel will be landed by dawn.

On shores where it is difficult to land at night, a daylight landing in force may be necessary.

3. ACTION DURING LANDING

a. Water and Terrain Difficulties

When the nature of the terrain around the landing point cannot be determined in advance, it will be necessary to rely on a compass and navigational skill in landing. As much information as possible should be gained from tide charts, air photos, and sailing directories.

If the characteristics of the coast necessitate the use of more than one landing place, collapsible boats, ponton boats, rafts, and so forth will be used.

In seas where the current is swift and parts of the landing point are obscure, each boat should carry a searchlight as a navigational aid. Preferably, an experienced naval man should handle the searchlight.

b. Overcoming Resistance

(1) *General*

It is fundamental that we gain as much surprise as possible in landing operations. Surprise can sometimes be gained, at least for a time, by maneuvering the first wave of landing craft or by approaching by a roundabout route.

In countering resistance by hostile forces, Army troops usually will handle the land opposition, and the Navy will take care of the opposition on water. However, to handle the destruction of small hostile boats and to give direct cover to the convoy, the Navy generally depends on the D engineer regiment's armored boats and other special craft.

When landing on a coast directly defended by fortified positions, the fighting usually begins with the arrival of the landing craft offshore. Under heavy fire from such land positions, it is not only difficult, as a rule, to control units, but it is usually impossible to carry out a planned attack. Therefore, officers of all ranks in the front-line units must make the most thorough preparations to deliver a surprise attack or to counter the hostile

attack successfully. These first-line units must strike hard against the enemy's [United Nations] weak points, and advance resolutely to the advance line agreed upon previously. They must also take advantage of deficiencies in the hostile plan of fire and of any other weaknesses—and it must be clearly remembered that the hostile forces will have many weak points.

(2) *With Artillery*

When artillery is firing from transports to cover landings, the divisional commander must closely watch the progress of the landing units and give orders to fire at the right time. Premature fire might seriously expose our plans.

To give direct support to the infantry in their battle near the water's edge, part of the field artillery and mountain artillery is sometimes attached to the first-line infantry and landed in the first echelon. This attached artillery is often given the task of advancing into the hostile lines, immediately after landing, for the purpose of neutralizing fire from loopholes of fortifications and of neutralizing the weapons protecting the hostile flanks.

The artillery landed with the first echelon of infantry must at all costs follow the first-line units as supporting weapons. Liaison with adjacent artillery units in the forward area must be maintained so that the development of the artillery battle may be coordinated and controlled.

The infantry commanders must give the accompanying artillery units any assistance necessary for changing positions, or moving forward.

Immediately after landing, positions for artillery should be chosen near the point of arrival. If possible, these positions should not be on a distinct coast line. They must be well concealed from the air and easy to enter quickly. Also, these positions should be inaccessible to hostile tanks.

(3) *With Tanks*

The first-line infantry commander decides, according to circumstances, whether he will use attached tanks at the water's edge

or in the battle after landing. Tanks to be used at the water's edge are allotted to the first-line infantry battalions for close cooperation in the infantry fighting. The battalion commanders must consider the strength of the hostile forces, the amount of light, the nature of the terrain, and especially the difficulties involved in landing tanks; and they must not hesitate to allot these weapons to the different companies. Tanks to be used in the battle after landing may be coordinated with the general plan, detached to subordinate units to break through the main hostile defense lines, or used as the cores of the assault units.

The tanks cooperating in the battle at the water's edge must also reconnoiter the hostile positions and the adjacent terrain. They will lose no opportunity to demolish systematically all the wire entanglements, protections against flank attack, fortified positions, lighting equipment, and so forth. The tank commander quickly takes control of his subordinates, maintains close liaison with the infantry and artillery, and warns against advancing recklessly and getting cut off from friendly forces. If necessary, the commander stops the tanks and, after determining the location of our troops and studying the "lay of the land," he may choose hostile localities easy for maneuvers, or dead ground, and then wipe out objectives at close quarters.

The leaders of tank platoons must keep in touch with neighboring tanks and also with their company commanders. They must see to it that no hitches occur in the fighting after daybreak.

Tanks landed during the daytime to assist the infantry fighting are given protective cover by infantry and engineer troops who are fighting near the water's edge. The tanks assemble quickly near the landing point and complete their battle preparations, such as amending orders, removing waterproof equipment, and so forth. In cooperation with the front-line infantry and artillery, these tanks neutralize hostile flank defenses and small obstacles, take key points, and crush hostile counterattacking units.

(4) *With Special Assault Detachments*

If necessary, each company commander should organize and train in advance a special assault detachment. These detachments are designed to neutralize fortifications and to reduce centers of resistance, generally by attacking them from the rear. Personnel of the detachments use automatic weapons, demolition bombs, armor-piercing bombs, hand grenades, flame throwers, gas, smoke, and demolition charges placed in groups. Depending upon circumstances, it may be possible to block loopholes and use flame throwers from the beginning.

It is best to put all members of the special assault detachment in one landing boat so that they may push forward to the infantry front line immediately after landing, and carry out their duties with as much speed and secrecy as possible.

(5) *By Use of Smoke*

Smoke can be used so as to cover our operations, prevent illumination of our movements by searchlights, cause deficiencies in the hostile plan of fire, or prevent the enemy [United Nations] from paying attention to other developments.

How smoke will be used should be determined according to weather conditions (particularly the direction of the wind), according to our plans, and according to the available manpower and the quality and quantity of our smoke equipment. Smoke may be spread directly in front of the hostile positions, it may be laid on the enemy [United Nations] objectives, it may be used so as to split up the coast on which we land, or it may be thrown as a curtain on the flanks and over the sea between the opposing forces.

When surrounding the hostile forces with smoke, it is sometimes a good idea to combine it with toxic smoke.

The time for starting the emission of smoke depends on the strength and disposition of the hostile forces, our situation and plans, the amount of light, and the speed and direction of the

wind. Necessary preparations must be made in advance so that smoke may be emitted as soon as it is ordered.

At night do not use smoke merely to interfere with searchlights and artillery fire, but use it for the first time when the advance ashore is obstructed.

With a moderate wind velocity, 10 to 20 smoke candles (floating type) thrown upon the sea at the same time will form an effective smoke cover for about 1½ miles.

When making a frontal or flanking smoke screen with the wind to your back, you can make the smoke continuous by throwing two of the floating smoke candles on the sea at the same time and providing an interval of about 20 yards between each pair of candles.

An armor-plated boat can carry about 150 floating smoke candles.

Four to seven men will be needed to carry out a smoke-emission assignment involving the use of floating smoke candles and smoke generators.

First-line units which lay smoke screens in landing operations generally use grenade dischargers, smoke shells, discharging smoke candles, smoke candles, and so forth. When the wind is blowing toward the landing point at a speed greater than that of the landing boats, lay a smoke screen spread out widely over the water. This can be done if each boat emits smoke as it moves toward the landing point. As far as possible, each boat moves in the thin part of the screen. If there is a cross wind or head wind, personnel in the first boats to land should lay a smoke screen immediately, in front or to the flank, in order to facilitate the landing operation.

Artillery and debarkation work units on transports lay smoke screens against important parts of the hostile positions, such as observation posts, searchlights, and flank-defense preparations. Depending upon the direction of the wind, it is sometimes advantageous to use red smoke shells along with the other shells.

Eight smoke candles discharged from a boat with a simultane-

ous firing device will cover a frontage of about 50 yards at the water's edge. When using the Type 99 discharging smoke candles (old type of discharging smoke candle), fire them when about 350 yards from the shore.

c. Communication and Liaison

The success of the landing operations largely depends upon the close cooperation between the units landed for immediate combat and the debarkation work units. Therefore, the liaison officers must do everything possible to unite the efforts of these units.

For liaison and communication, do not wait until a regular boat and communication network is established, but use boats, radios, flag and light signals, and, when the anchorage is close, lay a cable. It is also possible to use carrier pigeons.

Anchorage headquarters must immediately build a lookout tower for the purpose of establishing command liaison with ships and boats at sea.

d. Duties of Debarkation Work Units

Immediately upon landing, the debarkation work units must make a quick reconnaissance of the coast line and the traffic ashore, and then hastily construct on-the-spot landing installations and open traffic routes.

For landing large or heavy equipment, it is necessary to choose the most suitable places. These need not necessarily be the original landing points. When unloading motor vehicles, gun carriages, and so forth, the work units must lay steel mats, wheel mats, boards, and so forth. If possible, tractors, trucks, and sometimes tanks or armored cars should be used. The work units must arrange for the necessary equipment to carry out these operations. However, each regular combat unit must make plans for its own unloading beforehand, and must prepare pulleys, nets, and other equipment before embarking.

To reduce losses, it is necessary to spread out on the landing shore the various installations, the troops, and the munitions and

other supplies. Troops and matériel should be disposed so as to prevent confusion. Each combat unit must keep in close touch with the work unit for its landing sector. It is important that each fighting unit quickly move its men, horses, and vehicles away from the coast.

When the line of advance from the coast is limited, unloading installations easily become crowded together. It is necessary to do everything possible to disperse these, and to establish traffic routes parallel to the shore.

When possible, utilize to the fullest extent any native labor. Also seize any shipping in the landing area and utilize it in the landing operations.

4. ACTION AFTER LANDING

The traffic control organization is assisted by sentries in the task of directing vehicles and personnel from the landing points to the various unit combat sectors.

While the troops are embarking, the division commander must allot bicycles to the infantry and engineer units which are to lead the advance, or to the reserves who are to be thrown into the battle quickly at any opportunity to exploit success. At the time of landing the division commander must lose no opportunity to let the men have their bicycles. Depending upon circumstances, the bicycles are assembled on the coast at the various landing points. The main object in using bicycles is to supplement shortages in motor vehicles for long-range operations, especially during pursuit, and to increase the division's mobility.

Each unit should be in position to summon its vehicles quickly from the landing area or the vehicle-assembly point. Vehicles landed in the area of the division traffic-control organization should first be collected at the assembly point before following the unit to which they are allotted.

As a rule, vehicles—especially motor vehicles—should avoid advancing parallel to each other or going in a reverse direction.

A vehicle repair center must be set up as the units move into

action. To accomplish this, part of the vehicle-repairing organization must be landed as quickly as possible.

Particularly for the sake of increasing our maneuverability, commanding officers of all ranks should pay attention to achieving quick capture of hostile communication facilities, especially motor vehicles, railroads, and repair shops.

The quick repair of demolished and obstructed roads is of the utmost importance. Regardless of the aid of engineers, all troops should be charged with opening up their own line of advance. The division commander must attach the necessary engineers to the front-line troops for landing operations, and give to the remainder the task of repairing roads, railroads, bridges, and so forth. It is essential that engineers quickly repair roads and bridges.

Section III. ANTIAIRCRAFT MEASURES

1. GENERAL

The following notes on Japanese antiaircraft measures were obtained from U. S. observers and from enemy documents.

Observers report that, until recent months, the antiaircraft defenses on Japanese naval ships have been more accurate and more concentrated than the land-based antiaircraft fire. This distinction is no longer true, the observers say, because of improvements in the quantity and quality of land-based weapons.

The nature of antiaircraft fire over enemy targets can frequently be predicted by evaluating certain factors concerning the target. For example, if the target has tactical or economic importance but is far distant and has not been visited in recent months, all types of antiaircraft guns may be encountered. However, they usually are not numerous and the crews are poorly trained. A less important but remote target frequently has only medium and light antiaircraft guns. A new target under development and not previously attacked may have no antiaircraft defense. The number and caliber of guns at frequently bombed targets will, as a rule, be continually increased. Apparently the enemy feels that such targets are strategically important to us because we bomb them often.

2. AT SEA

a. Weapons

The size of Japanese sea-borne antiaircraft weapons generally is in proportion to the size of the ships. Merchant ships of 5,000 or more tons frequently carry heavy guns, while those between 3,000 and 5,000 tons usually carry medium guns. As a rule, smaller merchant vessels are armed only with light weapons, but torpedo boats and even smaller vessels usually mount medium guns, while heavy guns are always found on destroyers and larger naval vessels.

In arranging antiaircraft weapons on ships, the Japanese concentrate the guns at the bow and stern in order to obtain effective vertical (or near vertical) fire. Antiaircraft machine guns and pom-pom guns are generally placed on the top bridge or near the bow and stern. Light machine guns and rifles are placed around the front, back, and sides of transports in order to "cover" dead space caused by equipment. Sandbags are used to secure the tripods of the light antiaircraft weapons, and also to protect personnel from hostile fire and sea waves.

b. Tactics

Japanese ships usually execute sharp evasive movements, with frequent changes in course, when attacked by aircraft. These tactics, the Japanese admit, lessen the accuracy of antiaircraft fire.

The following notes were extracted from translations of Japanese documents dealing with antiaircraft defenses.

Air sentries and soldiers will report airplanes according to the direction of the clock, using such expressions as "2 o'clock direction."

Open fire against hostile planes as soon as they come within effective range. Fire heavily, concentrating on the most threatening targets, and seek to break up the hostile plan of attack before it can be executed.

In firing at aircraft with rifles and light machine guns, it is essential to have a good position. Rest your body and your left elbow on the gunwale and keep alert. Fire when the ship is at the top or at the bottom of a wave. Get the bearing of the hostile planes, align your sights, and then use following fire. If the hostile aircraft are over 2,000 feet high, and if their cross-country speed is small, you will find it profitable to fire on fixed lines.

The following are the most important points in antiaircraft firing:

a. Do your best to judge the height of aircraft with your measuring instruments, and to judge their course and speed with your naked eye.

b. Because of the pitching and rolling of the ship, the height-finder generally is accurate only to within 4 to 5 degrees. If the pitching and rolling is considerable, special adjustments are made, or corrections are made when the boat is level.

c. When attacked by a dive bomber, wait until the plane pulls out of its dive and then try to shoot it down.

d. Against a torpedo bomber, it is necessary to open fire quickly and try to shoot it down at a range of more than 1,000 yards.

Since the torpedo bombers fly low over the water as they come in to attack, fire shrapnel at them with field artillery and mountain artillery guns, which are distributed aboard ship. A rapid rate of fire should be used.

To prevent hostile planes from strafing at low altitudes, small balloons should be raised quickly.

3. WHILE LANDING

The protection of landing coasts against air attacks is the responsibility not only of the divisional antiaircraft dispositions, but also of each individual unit commander. In accordance with this policy, the first-line units must form detachments for antiaircraft protection while landing, and must prepare for air raids immediately after landing. These detachments and the unloading units must dig the necessary protective trenches near the shore.

During landing operations, antiaircraft boats must be properly disposed, and part of the antiaircraft artillery company must be landed immediately for shore protection.

When hostile planes dominate the skies, try to use the weapons attached to the large and the small motor landing boats.

Boats which are not being used should be hidden immediately in the shade along the edge of the water, or camouflaged with materials similar to the surroundings.

If boats in use are attacked, the formation and the direction of travel should be changed immediately.

To reduce damage from hostile bombs, transport ships should be anchored in an irregular formation. Anchoring in a straight line would limit the field of fire of machine guns. As a precaution against bomb damages, ships should be anchored some distance apart.

4. ON LAND

According to observers, Japanese land-based antiaircraft guns usually open fire while United Nations planes are still out of range, and continue firing until our aircraft are well away from the target. In most cases the fire is of the barrage type, although a good deal of aimed fire has been encountered.

In one Southwest Pacific area, Japanese searchlights were slow in picking up planes—perhaps because the

planes approached in a glide. However, after picking the planes, the searchlight crews held them well.

One crew observed two or three banks of searchlights. Each bank consisted of 12 searchlights, and each acted as a unit. In the meantime, 15 or 20 other searchlights operated individually. Individual searchlights were spaced at intervals of not more than 400 yards along the shore of the defended area.

Section IV. SOME DEFENSE TECHNIQUES USED BY THE JAPANESE

1. AS SEEN BY OBSERVERS

Particularly in some of the less active combat zones, the Japanese do practically no moving about during the daytime, and do no firing until attacked. These tactics, plus excellent use of alternate positions, help the enemy to achieve surprise whenever day attacks occur.

Almost all enemy positions in certain areas of level country were dug deep into the ground and were mutually supporting. Back of these positions the enemy sited a large number of mortars. The crews for these weapons apparently determined in advance the exact range to the dug-in positions. And after United Nations forces had assaulted these positions and had taken over part of the area, the Japanese mortars opened a terrific barrage. The enemy soldiers still occupying dug-in positions lay low until the barrage stopped and then counterattacked.

Revetments, either of logs or concrete, were constructed at night around some Japanese positions as a protection from artillery fire.

In the jungle the enemy frequently digs observation posts close to our own positions, primarily to prevent our forces from infiltrating into the area they occupy.

In some areas the Japanese open fire with mortars, machine guns, and rifles immediately after our forces start an artillery or mortar barrage, or a concentration. Part of this enemy fire is trained on areas from which it is suitable for our troops to launch an infantry attack, and part of it is laid down on fixed lines.

2. ACCORDING TO DOCUMENTS

The following extracts on Japanese defense tactics were taken from translations of Japanese documents:

Only to defend is not enough; always to attack is going too far. Even in cases where our mission is only to defend, if we fall into a purely defensive attitude, we will not have enough men, no matter how many thousands may be available. In such cases we would suffer great losses because the enemy [United Nations], with insufficient forces to assault us, would undertake to destroy us by artillery fire alone. To rest on the defensive is death.

When the hostile forces come, you must smash their offensive organization with a brisk, vigorous attack, and instill fear in them. Then they will keep their distance. On such occasions you must withhold reserves for counterattacks, and at the proper time these must be directed against the rear flanks of the hostile forces.

When hostile reconnaissance units encounter our positions, they will first start a searching fire with automatic weapons. You must not return this searching fire, because such action would give away additional positions.

In the jungle the enemy [United Nations] attack usually begins with automatic rifle fire. Since the effective range of these weapons is about 50 yards, we can control their fire by cutting 50-yard-long fire lanes in front of our positions.

Even when we fire at night, the hostile forces return the fire with trench mortars. Therefore, it is a good idea to change the positions of heavy weapons immediately after they are fired. For this purpose, always have alternate positions ready.

It will be advantageous if we can draw hostile fire with dummy positions, false defensive structures, and dummy soldiers.

Since it is easy for the enemy [United Nations] to outflank us in the jungle, it is well for us to break up their movement, or to frustrate their plans by changing our positions.

Section V. MORALE, CHARACTERISTICS OF JAPANESE SOLDIER

1. INTRODUCTION

One of the primary aims of the *Intelligence Bulletin* is to provide enlisted men and junior officers with all the useful information possible about the individual enemy soldier they expect to face in battle. A considerable amount of this type of information has appeared in previous issues of the bulletin, and reference should be made to it because very little repetition is published in this periodical. Vol. I, No. 12 of the *Intelligence Bulletin* contains an index which should prove helpful in making such references.

2. GENERAL

In both oral and written instructions, the Japanese have placed great emphasis on such subjects as "military discipline," "improving morale," "reforms in the service," "improvement of fighting power," "dying for the Emperor," and "brotherly teamwork" between individuals, units, and the various arms and services.

However, the state of morale and combat qualities desired by Japanese leaders are frequently missing. This is borne out by our observers in the field, by documentary evidence, and by prisoners of war.

The good characteristics of the individual Japanese soldier are summed up as follows:

a. Physically, he is hardy and strong.

b. In prepared defenses, he usually is tenacious unto death (this was not true in some instances in the fighting on Attu).

c. He is bold and courageous, particularly when his comrades are around and when he has terrain and firepower advantages.

d. Because of good training, he is generally "at home" in the jungle.

e. His discipline (especially fire discipline) is usually good.

The poor characteristics may be summed up as follows:

a. He is usually subject to panic when confronted by the unexpected.

b. He is not always steadfast in battle.

c. Usually his marksmanship is poor.

d. Under certain conditions, he is unimaginative; he is a poor thinker when thrown "on his own."

Observers agree that there is nothing "super" about the Japanese soldier, and that he has the usual human frailties.

3. ENEMY INSTRUCTIONS

Various Japanese instructions on morale and aggressiveness in combat are given below. They were obtained from enemy sources.

Form an unshakable group unity through harmonious relations. "The advantages of heaven and earth are of no avail against the

unity of men" is an ancient but true maxim. Always maintain a calm spirit in battle, and forgive others generously. By forming around our commanding officers a unity like that of a blood brotherhood, we can overcome all difficulties.

Manifest your morality on the battlefield. Morality is might in battle. Deal with your neighboring unit in a spirit of friendship and respect. Respond immediately to the needs of others in an emergency. When another unit lacks some items, share what you have with them—even the most precious rations and ammunition are not for your use alone. You should know that kindness to others will always be repaid.

Read the training manual thoroughly, observe strictly the battle regulations, and never do things your own way. The training manual is a guide which must be strictly followed regardless of the enemy or terrain; there is no need to change the manual.

On the battlefield there are some who are prone to neglect the regulations, or thoughtlessly fail to keep them in mind.

When assigned a duty, first of all consult the manual and familiarize yourself with the instructions regarding your specific assignment. Then, after the battle, go over your instructions step by step and determine what mistakes you made. You must realize that the training manual is the guide and mainstay of the unit.

It is the enemy's [United Nations] nature to be weak to the strong and strong to the weak; therefore, if we show any passiveness, hesitancy, or weakness, they will increasingly take advantage of it. Each unit and each individual, realizing this fact, must boldly and resolutely attack and crush the enemy's morale and put them in a shrinking, retreating frame of mind.

4. ARMY-NAVY RELATIONS

The following translation of a Japanese document indicates that in at least some areas there is an outmoded, shortsighted relationship between the Army and Navy.

For the sake of future relations, the Army units will give proper respect to the fact that the Navy has shown power in every area. In addition to recognizing and respecting the hardships the Navy has experienced, the Army units must try to keep trivial problems—such as those involving billeting or supplies—from causing any feeling of estrangement between the two services. Indeed, the fundamental basis of ultimate victory in the coming operation is dependent upon the close spiritual unity of both the Army and the Navy.

Also, the mutual exchange of salutes between Army and Navy personnel must be strictly enforced.

Section I. SOME HEALTH RULES FOR FAR EAST AREAS

1. INTRODUCTION

The information in this section was prepared under the direction of the Surgeon General of the U. S. Army, in a War Department pamphlet titled "Health Precautions for the Far East." Extracts from the pamphlet are reproduced below in order to insure a wide dissemination of this information among enlisted men and junior officers.

In connection with this section, reference should be made to a similar article, "Some Health Rules for North Africa and the Middle East," which appeared in *Intelligence Bulletin,* Vol. I, No. 9, pages 65 to 78. That article dealt mainly with the health aspects of water supply, foods, clothing, and housing in the North African and Middle East areas. Since this information is also applicable to the Far East areas, it will not be repeated here.

2. INSECT CARRIERS OF DISEASES

The most important insect carriers of disease are listed below, together with brief discussions of the dis-

eases that they may carry and applicable precautionary measures.

a. Mosquitoes

(1) *Malaria*

Malaria, which is spread only by the bite of the female anopheles mosquito, is a serious disease, and its danger cannot be overestimated. Anopheles mosquitoes feed during dusk or night periods, and possibly during the day when the light is greatly reduced, as in deep, shaded jungles or inside of dwellings. With the exception of a few of the mountainous areas, great numbers of mosquitoes, many of which may act as carriers of malaria, are found throughout the Far East.

Man is the reservoir of malaria. Eighty to 90 percent or more of the native inhabitants of some regions are infected with this disease. Anopheles mosquitoes become infected when they feed on (bite) a human being who has malaria. After an incubation period of from 14 to 40 days, these mosquitoes are capable of transmitting the disease. While most anopheles mosquitoes breed in slow-moving streams, lagoons, and swamps, several varieties of malaria-carrying mosquitoes breed in small collections of water about houses. Unless care is taken, they may enter buildings through carelessly opened screen doors, torn screens, cracks at the junction of tiled or corrugated roofs with walls, and so forth. During the day these mosquitoes hide in corners and other parts of the house where there is little light but come out to feed after dark.

Preventive measures include the following:

(a) Sleep in screened rooms or under mosquito nets. Inspect screens, doors, and mosquito nets at regular intervals, and search for live mosquitoes in those parts of the house where there is little light.

(b) After dark, stay indoors in properly screened buildings as much as possible.

(c) When it is necessary to be out of doors after dark, move about continually.

(d) If possible, select camp sites on wind-swept ground away from areas infested with mosquitoes and far removed (at least 1½ miles) from native villages (the inhabitants of which are usually infected and act as a reservoir of malaria).

Additional measures that may be applicable include:

(a) The use of head nets, gloves, and mosquito boots, along with other mosquito-proof clothing covering the entire body. Mosquitoes are able to bite through the material ordinarily used in shirts and other lightweight clothing.

(b) Mosquito repellents applied to all exposed parts of the body at regular intervals.

(c) Insecticide sprays used inside airplanes and in living quarters in the early morning and late afternoon, and at other times when necessary.

(d) Quinine and atabrine do not prevent malaria. However, these drugs are of definite military value in that they do prevent clinical symptoms of malaria as long as they are taken, and thus afford a means of keeping troops fit during periods of emergency

in the field. Such drugs should be used only under special conditions and when advised by medical officers, flight surgeons, or local health authorities. The present War Department policy advocates 0.1 gram of atabrine (1½ grains or one tablet) once daily at the evening meal for six days each week (total, 0.6 gram or six tablets per week). An alternative method of administration which has been found satisfactory in some areas is to give 0.05 grain of atabrine (one-half tablet) once daily at the evening meal for six days each week, and a dose of 0.1 gram (one tablet) at the evening meal on the seventh day (total, 0.4 grain or 4 tablets per week). If atabrine is not available, take quinine sulfate 0.6 gram (10 grains or two tablets) after the evening meal each day. (Circular Letter No. 153, Surgeon General's Office, dated 19 August 1943.)

(e) The estive-autumnal type of malaria may give rise to strange symptoms, entirely different from the usual chills and fever. It is therefore advisable, when residing in or traveling from malarial areas, to suspect malaria when the cause of an illness is unknown, regardless of whether or not there is fever. A medical officer should be consulted and advised of the recent possibility of exposure.

(2) *Dengue Fever*

Dengue fever, or breakbone fever, is apt to occur in any part of southern Asia and is common in eastern India, the Netherlands East Indies, and along the coast and on the islands of the China Sea and the Sea of

Japan. The "yellow fever mosquito," *Aedes aegypti,* is the carrier in southern Asia, whereas *Aedes albopictus* most commonly carries dengue fever in China and Japan. These mosquitoes feed (bite) during the day but usually not in bright sunlight. Although this disease is rarely fatal, it may be the cause of much disability among troops. The precautionary measures outlined in (1) (a) and (d) and (a), (b), and (c) above, under preventive measures for malaria, are also applicable for protection against dengue fever.

(3) *Filariasis (elephantiasis)*

This disease, often called elephantiasis, is caused by several different types of small worms that can be injected into man by the bite of mosquitoes. These worms travel through the lymphatic channels, frequently blocking them. While the disease ordinarily does not cause any serious incapacity, chronic swelling of the legs and scrotum may develop, and it seems certain that sooner or later all individuals affected will suffer some ill effects.

Since the disease is prevalent throughout the Far East and chances for exposure are great, it is likely that considerable numbers of soldiers will be affected by it. Methods for protection against malaria as outlined in (1) (a), (b), (c), and (d), (a), (b), and (c) above, also will prove valuable in preventing filariasis.

(4) *Yellow Fever*

Yellow fever has never been reported from Asia. However, the *Aedes aegypti* mosquito (the carrier of yellow fever) is found throughout the East. The trans-

portation of infected individuals or of infected mosquitoes by airplane or ship from an area where yellow fever is present is a serious hazard, for by either of these means the disease could be introduced into the Far East. If it were introduced, its spread undoubtedly would be rapid.

b. Lice

Body lice are small, gray, flat, six-legged, wingless insects. In the Far East they are the carriers of the epidemic form of typhus fever (not to be confused with typhoid fever) and louse-borne relapsing fever. Typhus fever is prevalent in the hill country of India and throughout all of China. It occurs sporadically in other parts of the Far East.

To keep from getting lice, the following measures are advised:

(1) Frequent bathing (when a satisfactory water supply is available);

(2) Frequent changes into freshly laundered and pressed clothing;

(3) Careful selection of sleeping quarters so that clean bed clothing is used;

(4) Avoidance of native habitations and close contact with louse-infested individuals (sleep and eat only in the best accommodations available);

(5) Use of Army-issue insecticide powder on the seams of clothing and on bedding as indicated; and

(6) In the presence of mass louse infestation, group delousing methods as outlined in paragraphs 57 to 66, inclusive, FM 21–10, and additional instructions on de-

lousing that are issued from time to time, may be employed.

c. Fleas

Fleas are small, wingless, brown or black insects with a flat body, small head, and large legs. In addition to being annoying, rat fleas are the carriers of bubonic plague and endemic or flea-borne typhus fever. Rats and other wild rodents suffering from these diseases infect the fleas. At death the fleas leave the rat in search of a new host and infect man. The finding of dead rats or other dead rodents may indicate that these diseases, especially plague, are prevalent.

Plague in man (human plague or bubonic plague) was reported throughout most of 1942 from the Dutch East Indies, Java, Madura, West Java, New Caledonia, parts of China, India, French Indo-China, and Burma. Although not reported recently, the disease is known to be present in many of the towns and villages of central China and the seaports of Japan.

Plague in wild rodents is known to be present constantly in several large areas in central Asia, in northeastern China, and in Manchuria.

Endemic or flea-borne typhus fever is found in the Malay Peninsula, the Dutch East Indies (where it is called shop typhus), the lowlands of India, and ports of the China Sea.

Neither the plague nor the endemic form of typhus fever is likely to be of importance to individuals if the precautionary measures outlined under "Lice" (b

above) are followed, and rats and rat-infested buildings are avoided.

d. Ticks

Ticks can be identified by their flat, oval body, small head, and comparatively large abdomen. In the Far East ticks are carriers of tick-borne relapsing fever, a disease which is found in Western and Central Asia and in China. In Northern India they transmit Indian tick typhus.

Precautionary measures include:

(1) Measures outlined under "Lice" (b above).

(2) Avoid native homes, especially at night, when the ticks come out of the walls.

(3) Avoid sleeping on the ground, particularly in long grass, or resting near the trunks of trees (ticks hide in grass and under the bark of trees during the day).

(4) Always examine your bed for ticks before turning in.

(5) Examine skin and clothing for ticks at least twice daily. Remove all ticks and kill them. Never squash a tick on the skin or attempt to pull it out. Cover the tick with a good coating of oil, vaseline, gasoline, paraffin, or even spit. After a few moments the tick will let go and be easy to remove. The tick should then be killed by burning or by crushing between two stones.

(6) The site of the tick bite should be cleaned and treated with an antiseptic such as iodine or alcohol.

e. Mites

Mites are small insects resembling fleas. In different parts of the Orient they are the carriers of various forms of mite typhus. These diseases are common in Java, New Guinea, Malaya, Japan, India, and Burma. In Southern China their bite causes a skin disease known as "coolie's itch."

Mites are usually found in association with rodents (particularly rats), with birds, and possibly in the flowers of certain palm trees. They are most commonly found in areas that are subject to flood and in recently cut-over jungle lands; they are most numerous in the late spring and early summer.

Precautions include:

(1) When possible, avoid mite-infested areas.

(2) Wear clothing that protects the skin, such as long trousers tucked into boots, long sleeves, and so forth.

(3) Use Army-issue insecticide powder and insect repellents on skin and clothing.

f. Flies

Certain fly-borne diseases are of importance in Asia.

(1) *Common House Fly*

By mechanical means, flies are capable of carrying intestinal disease germs from filth and fecal matter to the food of man. Infectious material from the ulcers of yaws and Oriental sore may be carried by flies in the same manner, and eye diseases may be transmitted mechanically by these insects.

General precautionary measures (see par. 35, FM 21–10; also AR 40–205):

(a) Destruction of flies by swatting, trapping, poisoning, and so forth;

(b) Elimination of fly breeding places by careful and complete disposal of wastes and refuse (human excreta, manure, garbage, rotten fallen fruit, and other organic matter);

(c) Use of insect repellents (sprays);

(d) Use of nettings and/or screens; and

(e) Protection of foods.

(2) *Myiasis (fly boils)*

The bites of certain types of flies (especially botflies and gadflies) may cause deep-seated abscesses or boils that heal with difficulty in the absence of medical attention. In the process of biting or alighting, the flies deposit their eggs or larvae (maggots, grubs) in or on the skin, open wounds, nostrils, or ear canals. The eggs of some of these flies may be carried by other insects, mosquitoes, for example. The development of the maggots in these locations is accompanied by bacterial infection and subsequent boil formation. Surgical removal of the growing fly larvae is necessary for cure.

(3) *Sandflies*

Sandflies transmit a virus disease known as pappataci fever or sandfly fever. This disease is of a mild nature but is prevalent over practically all the Far East, where it may cause considerable disability. Evidence indicates that sandflies also are capable of trans-

mitting the organisms causing Oriental sore, and may be responsible for the spread of kala-azar or Dumdum fever, a serious disease affecting many people in the Orient.

3. ANIMALS; DISEASES ACQUIRED FROM THEM

Animals are not only the hosts of insect carriers of disease (par. 2: rat fleas, lice, dog ticks, and so forth), but also may be directly responsible for the spread to man of diseases which these animals themselves contract. The following animal-borne diseases are likely to be encountered in this part of the world:

a. Rabies (mad-dog bite, hydrophobia)

This can be acquired from both wild and domestic animals. This disease is of great importance throughout southern Asia, especially in India, and also in parts of the Dutch East Indies, where great packs of dogs are kept as food. In the case of a bite by an animal thought to be rabid, the wound should be cleansed as thoroughly as possible, any available antiseptic applied, and a physician consulted as soon as possible. If practicable, save the animal for observation and examination.

b. Snake Bite

Poisonous snakes are found throughout tropical and temperate Asia. The majority of them do not attack man unless disturbed. Cobra venom contains a powerful poison which affects the nervous system, while the venom of the vipers affects the red blood cells. In case

of snake bite, identification of the offending snake is less important in the Far East than in other areas, since the antivenom usually available is effective against both types (polyvalent). The presence of an undigested or partially digested "ball" of food in the snake's stomach may indicate the amount of venom injected into the victim. When a venomous snake kills, a part of its venom is used up; thus the presence of a visible food ball in its stomach may mean that its poison sacs were relatively empty and therefore that probably only a small amount of venom was injected at the time of biting the person.

Take the following precautions:

(1) Wear boots when required to walk in snake-infested areas.

(2) Avoid the careless touching of shrubs, brush, trees, tree branches, and so forth, or walking near ledges where snakes may be hiding.

(3) Examine clothing and shoes before getting dressed, and always look in cupboards, drawers, and other dark places before reaching into them.

(4) Have a flashlight or other source of light available at the bedside so that the floor may be examined before getting out of bed in the night.

(5) If bitten by a snake, the following procedures are recommended:

(a) Immediately apply pressure or a tourniquet (rubber tubing, belt, piece of shirt, string, vine, or weed) above the bite, no tighter than a snug garter. This will stop the venous-blood return toward the heart and keep

the poison from getting into the general circulation. The tourniquet should be released for a few seconds every 10 or 15 minutes to permit some circulation.

(b) Under field conditions, and in the absence of medical care, do not make an incision, but instead place a 3- or 4-inch square sheet of thin rubber (rubber from a condom or similar material) over the site of the fang punctures, and, by vigorously sucking and kneading with the teeth, remove as much venom as possible during a period of 5 minutes. The rubber sheeting will prevent sucking the venom into the mouth. Wash the wound and the rubber sheeting and repeat the sucking and kneading at frequent intervals while removing the patient to the nearest medical officer or other physician. If no rubber sheet is available, blood from the fang punctures may be sucked into the mouth directly. In this case, the person sucking should rinse out his mouth with water at frequent intervals to lessen any danger of his becoming poisoned from the venom.

(c) If practicable, kill the snake and take it to the physician for inspection.

(d) Whisky or other alcoholic drinks must not be given.

(e) Keep the patient from exerting himself, for this will increase blood flow and thus cause more venom to be absorbed.

c. Leeches

Leeches look like thick, short worms. They are troublesome in India, the Malay Peninsula, and the

Dutch East Indies. They are of two types, the large "horse" leech found in fresh water, and a small jungle leech found on shrubs and in tall grass in the vicinity of streams and rivers. They attach themselves to man for the purpose of sucking blood, and, although they are not dangerous in themselves, the site of their bite frequently becomes infected.

Precautions:

(1) Wear long trousers tucked into high shoes. The leech is capable of slipping through the eye-holes in shoes, or through coarse stockings; therefore the tongues of shoes should be sewn to the sides.

(2) Do not pull off the leech, for if the mouth parts are left in the wound, an infection may take place. Remove the leech by touching it with the lighted end of a cigarette, by prodding it with a knife, or by applying common table salt, wet tobacco, or other chemical irritant harmless to the skin.

(3) To prevent infection, immediately apply a suitable antiseptic to the bite.

4. VENEREAL DISEASES

Venereal diseases are prevalent throughout Asia. In some areas, up to 100 percent of the native population may be infected with one or more of these diseases, which include the following: Syphilis, gonorrhea, chancroid (or soft chancre), lymphogranuloma venereum (tropical bubo), and granuloma inguinale.

Briefly, it may be said that in the vast majority of cases venereal diseases are contracted through sexual contact, although syphilis may be acquired by kissing.

5. SUNBURN, SUNSTROKE, AND HEAT EXHAUSTION

Personnel accustomed to climatic conditions in the United States fail to evaluate the intensity of the sun's rays nearer the equator. As a consequence, serious skin burns and sunstroke may occur after relatively short exposure. It also must be remembered that severe sunburn may be acquired from the reflection of the sun, although protected overhead, when in small boats on tropical waters. Exertion in hot and/or humid climates, with resulting loss of fluid and salt by sweating may cause heat exhaustion even in physically fit individuals. Glare from water or sand in intense sunlight often results in severe eye irritation, and mechanical irritation may be produced by wind and blowing sand and dust.

Precautions: The following precautions are suggested:[1]

(a) Wear suitable headgear (sun helmet) when exposed to the sun.

(b) Do not expose large areas of the body surface to direct rays of the sun for more than a few minutes at a time unless a thorough tan has been acquired and then only during the early morning or the late afternoon.

(c) The use of a superior grade of dark sun glasses is advisable. The Calabar lenses now widely used by Army Air Forces personnel are satisfactory.

(d) Early recognition of the warning signs of heat stroke and heat exhaustion (dizziness, headache, blur-

[1] Reference should be made to the list of precautions given on pages 71 and 72 of *Intelligence Bulletin*, Vol. I, No. 9.

ring of vision, nausea and/or vomiting) and early first-aid treatment of these conditions. Medical attention should be obtained as soon as possible.

(e) Avoid or reduce to a minimum the consumption of alcohol.

6. MINOR WOUNDS

Wounds do not heal rapidly in tropical climates and infection is likely to take place. Minor wounds (cuts, scratches, abrasions, insect bites, and so forth) should be treated by application of iodine or other antiseptics. Burns should be covered with boric-acid ointment or sulfanilimide powder and a dry dressing applied. All wounds should receive medical attention as soon as practicable. See FM 21–11.

Section II. HOW TO PROTECT YOUR FEET

1. INTRODUCTION

This section is based on a pamphlet titled "Watch Your Step," which was published by the British Army. The pamphlet is prefaced with the following statements:

"Your feet are among your principal weapons."

"They need just as careful attention as your rifle."

"If you fail to look after them, you are a hindrance, and not a help, to the Army."

"Therefore, constantly read this pamphlet until you know it by heart, and above all, carry out the simple instructions it contains."

These statements and the information which follows are as important to U. S. troops as to the British. It will pay you to read this section more than once.

2. REGARDING CARE OF FEET

To avoid sore feet:

a. Remove shoes as soon as convenient after a march;
b. Wash your feet as often as possible;
c. Dry thoroughly, especially between the toes; and
d. Wash your socks at every opportunity.

To harden your feet:

a. Wash in cold water, using soap freely;

b. Rub the bottom of your feet with soap or grease; and
c. Soak the feet in a solution of salt.

3. REGARDING FOOTWEAR

a. Fitting Shoes

The best time to fit shoes is on a hot day and after physical exercise. This is true because the foot expands in length and width ¼ to ½ inch when the soldier is on the march in hot weather.

Always fit shoes over army socks—never over the bare foot—and always stand up and walk a little while determining a fit. The sides of the shoe should feel comfortable and should show no signs of bulging.

b. Care of Shoes

After having been worn, shoes deteriorate fast if not used often thereafter.

Rub a light coating of some acceptable leather preserver on the inside of the shoes at least once per week, but:

(1) First remove all dust and dirt (if necessary, use a damp cloth).

(2) Put paper or some similar substance inside wet shoes so that they will keep their shape while drying. (Dry slowly.)

(3) Remember that it is better to apply leather preserver when your shoes are warm and slightly damp. (Apply the preserver until the leather is flexible.)

c. Care of Socks

Excessive rubbing, sweating, or boiling in water will cause wool to shrink.

Always mend your socks from the inside. If the edges curl, they must be trimmed.[1]

[1] FM 21–10, par. 108*c* (2) has the following to say about socks:

"Darned socks, or socks with holes in them, should not be worn on the march because they will cause abrasions and blisters. Wearing two pairs of socks will aid in preventing friction between the shoes and the feet."

If your socks are worn out and none are available for issue at the time, you can give good protection to your feet by wrapping them in a triangular piece of cotton cloth, or even paper, and then putting on your shoes. Your medical officer will show you how this is done.

4. REGARDING FOOT TROUBLES

a. Sweaty Feet

Symptoms of sweaty feet are tenderness, local areas of redness, and the tendency of the skin to peel off.

Treat sweaty feet as follows:

(1) Wash them with soap and water; and

(2) Dry them thoroughly and apply foot powder.

b. Blisters

Treat blisters as follows: [2]

(1) Remove the obstacle which caused the blister;

(2) Clean the blister gently with soap and water;

(3) Apply an antiseptic;

(4) Sterilize a needle by passing it slowly through a flame, and then run the needle through the blister—in at one side and out the other—to drain out the fluid;

(5) Do not remove the skin covering the blister; and

(6) Apply an antiseptic to the area, cover it with absorbent cotton, and cover the latter with a piece of adhesive tape.

NOTE: Often you can manage to march in comfort with a blister if you fit a piece of cloth or bandage under your foot, over the instep, and around the ankle. Buckle the cloth over the outer ankle bone, pulling it tight. This arrangement lessens the friction between the shoe and the foot.

Serious abrasions and ingrowing toenails should be shown to the medical officer at once.

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[2] FM 21–10, par. 108*c* (3) (b), has the following to say about treating blisters:

"If blisters have appeared on the feet, they should be painted with iodine and then emptied by pricking them at the lower edge with a pin which has been passed through a flame."

ANNEX

HOW TO IDENTIFY WAR GASES

The name, symbol, and other means of identifying the common war gases made for the armed forces of Germany, Japan, Italy, France, and the United States are given in the comparison chart shown on the following pages. For reasons of security, the other gases of the United States and the Axis countries are not listed.

The chart, compiled by the U. S. Chemical Warfare Service, is designed primarily to help in the identification of gases used by the enemy, and to afford a means for quick comparison with U. S. gases of the same nature. French and Italian gases are included because of the probability that the Germans possess gases manufactured by these countries.

In marking gas shells, the Germans may use a cross or a band to mean the same thing.

Common name	Physiological classification	Odor	Tactical class
Adamsite	Sternutator	Faint aromatic	Harassing
Arsine	Systemic poison	Faint phosphorus	Casualty
Bromacetone	Lacrimator	Old leaves—bitter	Harassing
Brombenzylcyanide	Lacrimator	Sour or bitter sweet	Harassing
Benzyl bromide	Lacrimator	Aromatic—watercress	Harassing
Cyanogen bromide	Lacrimator	Piquant—bitter	Casualty
Chloracetophenone	Lacrimator	Apple blossoms	Harassing
Chlorine	Lung irritant	Bleaching powder	Casualty
Chlorpicrin	Lung irritant	Flypaper	Casualty
Diphenylchlorarsine	Sternutator	Shoe polish	Harassing
Diphenylcyanarsine	Sternutator	Bitter almonds	Harassing
Diphosgene	Lung irritant	Musty hay	Casualty
Ethyliodoacetate	Lacrimator	Pear juice	Harassing
Ethyldichlorarsine	Vesicant and lung irritant	Biting—fruity	Casualty
Hydrocyanic acid	Systemic poison (paralyzant)	Bitter almonds	Casualty
Lewisite	Vesicant	Geraniums	Casualty
Lewisite and mustard	Vesicant		Casualty
Methyldichlorarsine	Vesicant and lung irritant		Casualty
Mustard	Vesicant	Garlic—onion	Casualty
Nitrogen mustards	Vesicant	Faint fish—soft soap	Casualty
Phenyldichlorarsine	Vesicant and lung irritant	Bitter almonds	Casualty
Phosgene	Lung irritant	Musty hay	Casualty
Xylyl bromide	Lacrimator	Pungent—lilacs	Harassing

INFORMATION CHART

Symbols, names, and shell markings of—				
German	French	Italian	Japanese	United States
Adamsit	1 white band	Yellow body, red nose.	Adamusaito: 1 red band.	DM: 1 red band.
1 green band		Yellow body, red nose.	Arushin: 1 blue band.	SA.
B-Stoff	Martonite *or* No. 9.			BA.
T-Stoff: 1 white band.	Camite *or* No. 21.		Buromushian-benjiru: 1 green band.	BBO.
T-Stoff	Cyclite *or* No. 14.		Buromuben-jiru	
Ce-Stoff			Buromushian	
T-Stoff: 1 white band.		Cloroccetafenone: Yellow body, 1 white band.	Kuroruasetofuenon: 1 green band.	CN.
Chlor: 1 green band.	Bertholite		Enso	Cl: 1 green band.
Klop: 1 green band.	Aquinite	Cloropicrina	Kurorupikurin: 1 yellow band (?).	PS: 2 green bands.
Clark I: 1 blue band.	Rationite *or No.* 16: 1 white band.	Difenilclorarsina: Yellow body, red nose.	Jifuenirukuroruarushin: 1 red band.	DA: 1 red band.
Clark II *or* Cyan Clark: 2 blue bands.	1 white band	Red nose	Jifuenirushianarushin: 1 red band.	DC: 1 red band.
Perstoff *or* K-Stoff: 2 green bands.	Surpalite	Difosgene	Jihosugen: 1 yellow band (?).	DP: 2 green bands.
Jodessigester				
Dick: 3 green bands.		1 green band		ED: 2 green bands.
Blausäure: 1 green band.	Vincennite *or* Manganite.	1 red band	Seisan: 1 brown band.	AC:
		Lewisite	Ruisaito: 1 white and 2 yellow bands.	L: 2 green bands.
Winterlost			1 white and 2 yellow bands.	HL: 2 green bands.
Methly Dick: 1 yellow band.				MD.
Lost *or* Senf: 2 yellow bands.	Yperite *or No.* 20	Iprite: Yellow body, 1 green band.	Masutado *or* Iperito: 1 white and 2 yellow bands.	H: 2 green bands.
Stickstofflost: 1 yellow band.				HN.
Pfiffikus: 1 white band.	Sternite *or No.* 22.	Fenildiclorarsina		PD.
D-Stoff: 1 green band	Collongite *or No.* 5.	Fosgene: Yellow body, 1 white band.	Hosugen: 1 yellow band.	CG: 1 green band.
T-Stoff: 1 green band.				

SECURITY

"Remember that your loved ones at home are far more interested in your safe return than in where you are now and what you are doing."

"A golden rule to observe when talking about military matters where you may be overheard: 'Think twice before you say anything; then keep your mouth shut'."

"It is certainly not more blessed to give military information than to receive it."

—From a Canadian Army Training Memorandum.

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