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CONTENTS

SECTION I	Page
Air	
1. Eleven Men Died--Why?	1
2. An Italian Air Force Assault Regiment	3
Antiaircraft	
3. The Organization of German Antiaircraft Defense . . .	4
Antitank	
4. A German Antitank Gun Emplacement	10
5. German 88's in Tunisia.	11
Armored Force	
6. German Rules for Tank Employment	12
7. German Tank Ruse	13
Artillery	
8. Notes on German Artillery Forward Observers	13
Engineers	
9. German Tellermines	15
10. Electric Igniter for German S-Mines.	22
11. Enemy Booby Trap.	25
Infantry	
12. The German Soldier in Defense	26
13. Russian Notes on Flank Security in a Breakthrough . .	29
Ordnance	
14. Types of 20-mm Weapons	30
15. Japanese Air Bombs.	32
General	
16. Notes on Japanese Tactics on Attu.	33
SECTION II	
Commando Raid on Varengeville France	35
(19 August 1942)	

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SECTION I

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AIR

1. ELEVEN MEN DIED -- WHY?

The following article is taken from the June 1943 issue of AFGIB (Air Forces General Information Bulletin). This was reprinted from the RAF publication Tee Emm and reconstructs the story of what happened to the crews of 3 Blenheim bombers lost in the Libyan desert.

* * *

Here is the tale of how eleven Air Force men died.

They did not die fighting against the enemy. Their deaths were not even remotely caused by enemy action. Yet they died one of the most horrible deaths known to human beings--slowly, by thirst.

Three Blenheim aircraft, each with a crew of four, took off from Kufra Oasis in the Libyan desert on a reconnaissance patrol. They carried out the patrol successfully and returned to base two and a half hours later. For some reason, however, they did not land, but flew away from Kufra again.

After half an hour one Blenheim force-landed with engine trouble and the other two followed.

Discussion of their position showed that they were lost, and one pilot took off and flew between south and west to look for base. He returned after half an hour having found nothing, and in the afternoon he took off again, this time flying south and east, but again unsuccessfully. During this time all three aircraft were transmitting by radio but got no answer.

According to the only survivor of the twelve, they had been so confident of being soon picked up that they did not ration their water. Thus as much as 20 gallons had been drunk by the following morning, when they started rationing. During the second day another pilot took off and flew north. Once more the flight was unsuccessful, as were all attempts to receive wireless messages.

On the third day another pilot tried flying west, this being the only direction unsearched. He did not return.

The water had given out that morning, and during the afternoon they broke open the compasses and drank the alcohol. They also used the fire extinguishers to keep themselves cool. As a result, they broke out in terrible blisters and sores.

Next morning the first man died. During the following 4 days, after suffering agonies of thirst and torment from having drunk the alcohol, which led one man to shoot himself, all the men had died but one, when at last the missing aircraft were located on the eighth day after they had been lost.

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The search had been hampered by two things. First of these was lack of accurate information. The transmission from the aircraft was very weak but the direction-finder procedure of the three radio operators was poor throughout, and they evidently were not properly aware of the direction-finder procedure at Kufra.

The second thing was the bad terrain, coupled with sandstorms which prevented accurate observation from the air. On the other hand, the searching aircraft did not start operating till the fourth day, and though they then flew 9 hours daily, they were not working on a properly coordinated plan. The first proper, navigationally planned search was successful within 5 hours.

Now what were the causes of this ghastly and unnecessary loss of life-- this loss, too, of all the time and money expended on the crews' training, and this wasted war-effort of six searching aircraft and crews which might have been operationally employed?

Primarily it was bad navigation. It was basically due, as was afterwards proved, to the inability or slackness of any of the three navigators to keep a proper log. As a result, they had completely lost themselves half an hour's flying time from base. How completely they were lost is shown by the fact that they searched towards all four points of the compass for the base they had left but 30 minutes before. Blame also attaches to the radio operators, who did not work correctly their direction finder and so keep in touch.

Then when on the ground the crews, knowing they were lost, failed utterly to take their plight seriously, as anyone should who is engaged on desert flying. They did not ration water till it was too late. They made foolish use of the compass alcohol and the fire extinguishers. They failed to lay out any strips or make smudge fires, which might have guided the searching aircraft.

Even so, they might have been saved if the searching aircraft had cooperated promptly and methodically. For various reasons no search was made on the second day, and on the third and fourth days weather made proper search impossible. And for 3 days after that only vague sweeps were made, instead of navigationally planned searches.

Finally, it would seem that the tragedy was in great part due to poor leadership. A good flight commander would almost certainly not have allowed much of what did happen to occur. One gets the impression that the stranded men did more or less as fancy dictated or as they thought best after general consultation, instead of being made to work under the strict orders of their leader. In fact, the whole sad business might easily have been avoided in the first place if the flight commander had obeyed a standing order that during desert reconnaissance by a flight, one aircraft at least should remain on the ground; and again if, after carrying out the reconnaissance, he had landed his aircraft safely and not taken them off for half an hour on a completely unauthorized flight. But orders were not obeyed.

If even one life is saved in the future from knowledge and understanding of what happened, and why, then those 11 unhappy men will not have died in vain.

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2. AN ITALIAN AIR FORCE ASSAULT REGIMENT

The formation of a so-called Assault Regiment in the Italian Air Force is announced in an article in the Popolo d'Italia of 2 May 1943.

* * *

The first Assault Regiment of the Italian Air Force, which bears the glorious name of Amedeo D'Aosta has been very recently established, and already one of its units has had its baptism of fire on the Tunisian front. Employed at a particularly critical moment, and for tasks which went beyond the limits of their specific training, the parachutists of the Italian Air Force have worked unstintingly, with great enthusiasm and a very high spirit of sacrifice.

This regiment is designed to operate in areas and sectors solely of air interest, and its tasks are essentially concerned with offensive and defensive actions in connection with installations, equipment, and services which are primarily for the air force. It also has organizing tasks, still for the air force, and generally concerned with the immediate reorganization of airfields abandoned by, or captured from, the enemy.

The Regiment consists of the regimental headquarters, the "Loreto" Battalion, a parachute battalion, and a depot company.

The regimental headquarters in addition to the normal duties and functions of similar units, such as administration, discipline, morale and general training, the employment of the personnel, and the care of material issued to units or of individual equipment, is responsible for directing the special training of the regiment with a view to the particular tasks which each of its units has to carry out; for ensuring the correct and complete application of the guiding principles issued by the higher authorities in order that the special methods of employment of the units may be applied in the best possible manner; for coordinating in the tactical sphere the employment of the several units in order that each may function smoothly, in particular when the operations of the various units have to be coordinated; and finally, for studying in the light of experience any matters which might improve the organization and efficiency of the units under its command, always from the standpoint of the tasks allotted to these units.

The "Loreto" Battalion is normally airborne and is responsible for garrisoning and defending airfields already occupied by Italian units or at any rate evacuated by the enemy; for organizing all the technical services of the airfield, making use of, and reconditioning, existing installations wherever possible in order to make the airfield operational; and for organizing all the supply and administrative services which are essential to the life and functioning of an airfield.

The parachute battalion, normally dropped from the air, restores to use the landing area at occupied enemy airfields; cooperates with units of the other

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services in the defense of the airfield, and organizes the necessary services with makeshift material pending the arrival of elements for manning and equipping the base.

The personnel of the "Loreto" Battalion may be obtained from volunteers or may be drafted to the unit. The standard of physical fitness is that normally required for conscript service with the colors. Only volunteers, on the other hand, may join the parachute battalion.

ANTIAIRCRAFT

3. THE ORGANIZATION OF GERMAN ANTIAIRCRAFT DEFENSE

a. General

Probably no (Allied) activity is causing Germany more acute military discomfort than the never-ending air attack on her factories, supply lines, and cities. These aerial attacks have forced the Germans to erect, in Berlin and elsewhere, sturdy concrete towers, 200 feet high, so that their heavy antiaircraft guns may be sited above the surrounding buildings; to build decoy streets, railroad stations, and even whole towns; to erect fake houses and streets over lakes; and, reportedly, to move whole industries into Czechoslovakia and other areas in the interior of Central Europe.

However, the basic air defense is "Flak." Below, from authoritative sources, is an outline of the whole German antiaircraft organization. For further information on this subject, see Military Intelligence Service Special Series, No. 10, "German Antiaircraft Artillery." For an account of the air-raid warning system, see Tactical and Technical Trends, No. 21, p. 3. We now deal with the actual antiaircraft artillery and searchlight organization--the "counterbattery artillery," used against the United Nations' air assault.

German antiaircraft artillery (Flakartillerie) forms part of the German Air Force and is under the control of the Air Ministry, with the exception of:

Heeresflak (army antiaircraft) which, in addition to units organized on similar lines to German Air Force Flak, includes "Fla" (Fliegerabwehr, antiaircraft) units organized as motorized antiaircraft battalions and comprising light guns only.

Marineflak (naval antiaircraft) which mans a proportion of the defenses in certain ports and coastal areas.

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b. Organization

(1) General Organization

The German Air Force antiaircraft artillery is organized into the following units: Korps (corps), Division (division), Brigade (brigade), Regiment (regiment), Abteilung (battalion), Batterie (battery), and Zug (platoon).

The units are denoted alternately by Roman and Arabic numerals. Thus corps have Roman numerals, divisions Arabic, brigades Roman, regiments Arabic, and so on. Independent Abteilungen (i.e., not belonging to specific regiments) have Arabic numerals and constitute the only exception. Units are sometimes designated by name, usually that of the commander.

Organizations thus far identified include 2 corps (first heard of in the Battle of France), about 20 divisions, and a similar number of brigades. The main series of numbering, approximately 1-1,000, covers regiments and Abteilungen under the following groups:

Numbers in the series 1-70 are regiments, consisting usually of a regimental staff, Ersatzabteilung (replacement unit), and three combat battalions (I and II being mixed gun battalions and III a heavy searchlight battalion).

Numbers in the series 71-99 are in most cases independent light battalions. In some cases there are regimental staffs of the same number, without subordinate battalions.

The regiments in the series 1-70 and the light battalions in the series 71-99 formed the peacetime organization.

Numbers in the series from 100 upward are units formed on or after mobilization. In the case of heavy, mixed, light, or searchlight units, they may be regiments, regimental staffs, or independent battalions. Other types of antiaircraft artillery units, numbered in parallel series, include transport, railway, and balloon barrage units.

(2) Organization of Higher Units

Higher units have no fixed organization. They consist of staffs which command a number of subordinate units varying according to tactical requirements.

(a) Corps

The corps staff, which is motorized, operates entirely in the field. It originally commanded a number of brigades, usually two or three. It now normally commands two to four divisions, with subordinate regiments.

(b) Division

The divisional staff has been established since the outbreak of the war.

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There are two types, static and motorized. The former commands one or more brigades in static defense, the latter a number of regiments, usually two to four, in field operations.

(c) Brigade*

The brigade staff commands a number of regiments, usually two to four. It is now confined mainly to fixed defense.

(d) Regiment

The regimental staff normally commands four to six battalions in fixed defense positions, or, in the field, an average of four battalions. Parent regimental staffs seldom actually command any of their own battalions. The battalions are usually allotted to combat units or to defense areas.

Note: Searchlight divisions, brigades, and regiments are also known, but little information is available as to their composition or method of allotment.

(3) Organization of Lower Units

(a) Abteilung (battalion)

Heavy--four heavy batteries

Mixed--three heavy and two light batteries

Light --three or four light batteries**

Searchlight--three or four (heavy) searchlight batteries.**

(b) Battery

Heavy--equipped with four or six heavy guns (usually 88-mm (3.46-in)) and two light guns (20-mm (.79-in)) for close protection.

Light-- usually equipped with twelve to sixteen 20-mm (or nine to twelve 37-mm (1.45-in)) guns. (It may be that only twelve 20-mm or nine 37-mm guns are the usual or normal equipment).

Searchlight--usually equipped with nine or twelve 1,500-mm (59-in) searchlights and an appropriate number of sound locators. (It may be that only nine searchlights are the usual or normal equipment)

Note: Light searchlights (600-mm (23.6-in)) are provided for co-operation with light guns and are normally allotted on the scale of one per platoon.

*One American Army authority doubts the existence of the AA Brigade. The British source of this article is quite definite as to its existence.

**There is evidence indicating that normally there are only three batteries in the light and searchlight battalions.

(c) Platoon

This is the smallest operational unit; it consists of either two heavy or three light guns.

c. Strength

The identifications made up to the outbreak of war show that the Germans were organizing for an establishment of 100 regular units (70 regiments and 30 independent battalions). In addition there were two independent regimental staffs (101 and 102) and Regiment General Göring (103) which was developed from Göring's personal boydguard, and eventually came to be regarded as the "crack" antiaircraft artillery regiment. There was also a training regiment (Lehrregiment), offshoots of which have since been employed in an operational capacity.

Since the outbreak of war the need for protecting Germany and, subsequently, the occupied territories from the growing strength of the United Nations power, together with the necessity of providing for active theaters of war, has resulted in an enormous expansion in the antiaircraft artillery organization.

Although the highest numbered unit identified is 999, this does not presuppose the existence of 999 units. Units are formed in series, possibly on a regional basis, and many series are undoubtedly either completely or partially unused. Up to the present some 550 Abteilungen have been identified, apart from miscellaneous units. The total antiaircraft artillery strength, including staffs and administrative personnel, is believed to be well over 1,000,000, and equipment employed to be in the neighborhood of 9,000 heavy guns, 30,000 light guns, and 15,000 heavy searchlights. A proportion of the equipment used in Germany and in some of the occupied countries is manned by Heimatflak ("Home Guard" antiaircraft artillery), a new branch believed to have been introduced early in 1942 (see Tactical and Technical Trends, No. 20, p. 4).

d. Employment for Home Defense

Antiaircraft artillery employed for fixed defense in Germany and occupied territories is administered and supplied through the Luftgau (Air Force Administrative Area), subdivision of the Luftflottenkommando (Air Corps Area).

Originally, the Luftgau was also an operational command, exercising its function through antiaircraft artillery regimental staffs, of the antiaircraft artillery units in its area. Since the introduction, some time after the French Campaign, of antiaircraft artillery divisions and brigades employed for static defense, it is believed that the Air Corps Area has exercised its operational control through these units instead of through the Air Force Administrative Area, though in relatively unimportant areas the old system has probably remained in force. An Air Force Administrative Area is divided into Flakgruppen (antiaircraft artillery groups), commanded by regimental staffs, and Flakuntergruppen (sub-groups), commanded by Abteilung staffs. Gun and searchlight sub-groups are allocated for the defense of ports, towns, factories, etc. according to their importance.

e. Gun Layouts

Heavy guns are usually sited in fours (in the form of a square), or in sixes. The command post, comprising director, heightfinder, and radar equipment, is located to one side, and there is often an additional or alternative subsidiary instrument pit for emergency fire-control equipment in the center of the gun layout.

Light guns are usually sited in threes, though sometimes singly.

f. Methods of Fire Control

(1) Heavy Antiaircraft Artillery

Whenever possible, heavy gun positions engage visually, either by day, or with searchlight cooperation by night. The next most popular method of engagement is "deterrent fire," which involves firing at the visual or imaginary intersection of searchlight "cones" and for which broken cloud conditions are the most appropriate. "Unseen" fire (fire at invisible targets) with the aid of radar data is frequently employed both by night and in cloudy weather by day; less common methods of "unseen" fire control are instrument-directed concentrations or salvos. Barrage fire, which may be in almost any shape (box, cylindrical, layer, etc.), is occasionally resorted to against particularly heavy and concentrated attacks. Barrage fire is used mostly at night or under conditions of bad visibility; the development of modern instruments has made its use secondary.

(2) Light Antiaircraft Artillery

By day or by night, light guns engage visible targets by means of their antiaircraft artillery sights (Flakvisiere) or by observation of tracer. By night, they often fire up the searchlight beams or at the apex of searchlight "cones" in the hope that an aircraft is in or near the beam*. Barrage fire, which has a purely deterrent value, is infrequently employed.

g. Searchlights

Great reliance is placed on searchlights, which are deployed in very large numbers in gun-defended areas. Spacing of lights varies considerably, but averages about 1,500 yards in heavily protected areas. Control is maintained in general by means of sound locators, with which a high degree of efficiency has been achieved. A certain measure of radar control is being introduced, but this is not believed at present to be very widespread.

In addition to searchlights in gun-defended areas, a large number of searchlights used to be deployed in belts to assist in night-fighter interception. This policy has recently been modified, possibly as a result of improved methods

*In view of the limited range of these light weapons it is probable that this is done only in conjunction with light (600-mm) searchlights or against low-flying aircraft.

of radar interception; the main belts have been dissolved. Searchlight cooperation with night fighters is, however, still in evidence in some areas.

h. Balloons

Balloon barrages are found at many of the most important target areas in Germany and occupied territories, as well as around relatively isolated, vulnerable points, such as a single factory. The average heights at which they are flown is about 6,000 to 8,000 feet, although reports of balloons operating at 11,000 to 12,000 feet are occasionally received. Operation at higher levels, however, involves weaker cables and consequently a reduction in defensive value. A new balloon, smaller than the normal type, is believed to have been introduced recently. It is designed specially as a counter to low-level attack and probably cannot be flown higher than about 4,500 feet.

i. Employment with the Field Army

In the field, antiaircraft artillery is operationally subordinate to the commander of the army to which it is attached, while remaining subordinate to the German Air Force for administration. Its use in cooperation with the army is extremely flexible, the scale and method of employment being varied, frequently at very short notice, according to the tactical situation. In general an antiaircraft artillery corps works with an Army Group, the chain of command being exercised through antiaircraft artillery divisional and regimental staffs down to the battalions. Although no hard-and-fast rule can be laid down, an antiaircraft artillery division generally works with an army, and a regiment with an army corps; individual battalions are allotted to army divisions, preference usually being given to armored and motorized units. All antiaircraft guns, up to and including the 88-mm, are dual-purpose and, when attached to the field army, units carry AP and percussion as well as time-fuze ammunition. In all campaigns of the present war, antiaircraft artillery units have been found in the forefront of the battle, where the heavy guns in particular have been used more and more in a ground role, successfully engaging Allied armored units, artillery positions, and fortifications.

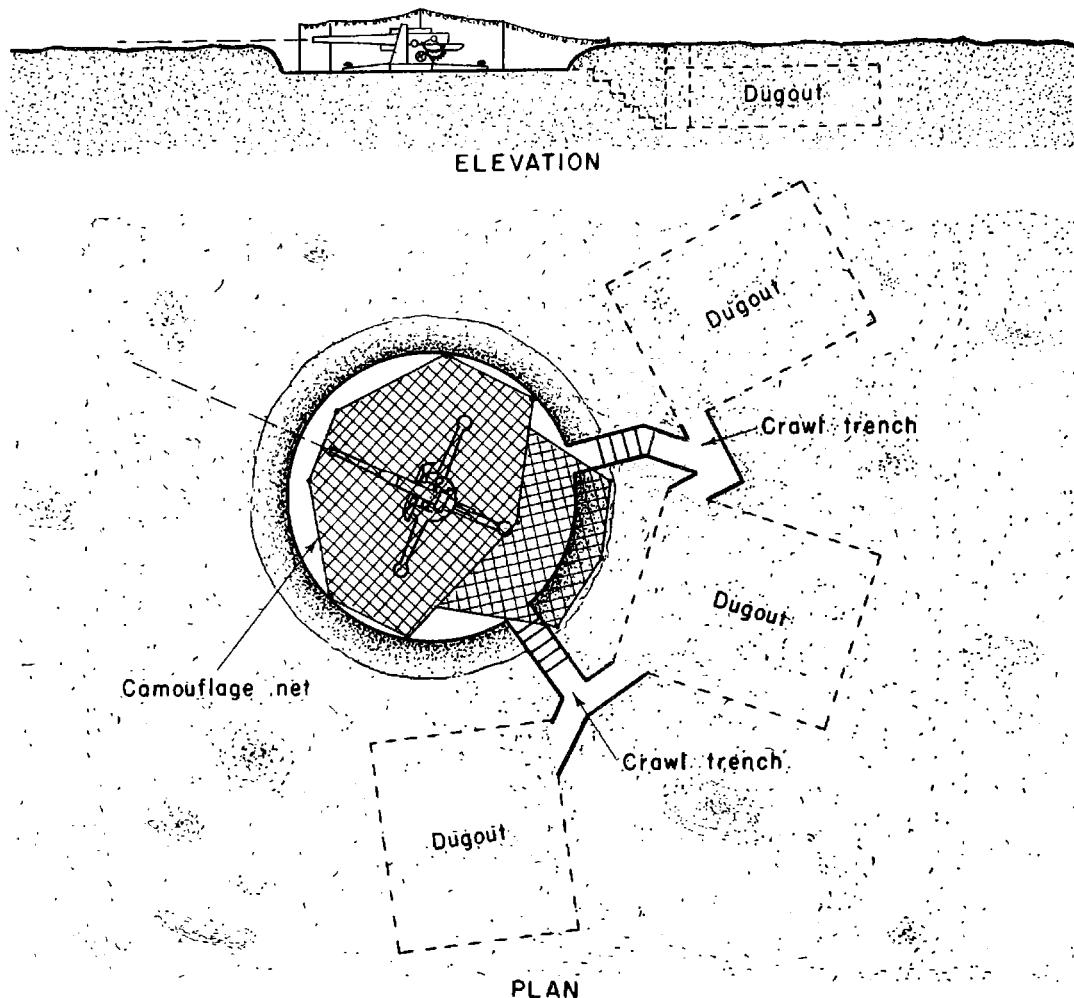
j. Primary Role

In spite of the increasing use of antiaircraft artillery with the field army, its chief function remains that of defending Germany and occupied territories from air attack, and it is lavishly employed for this purpose. However, to ease the strain on manpower imposed by Germany's war effort, large numbers of trained antiaircraft personnel have been transferred to ground combat units to serve as infantrymen, field artillerymen, etc. This transfer has been made possible without appreciably weakening the antiaircraft defenses of Germany and occupied territories by the use of railway antiaircraft artillery, which can be transferred rapidly from place to place for the temporary reinforcement of threatened areas, and by the introduction of Heimatflak (home defense units) involving the partial replacement of regular antiaircraft artillery personnel by factory and office workers and more recently by 16- and 17-year-old boys.

ANTITANK

4. A GERMAN ANTITANK GUN EMPLACEMENT

A sketch of a German diagram of an emplacement for an antitank gun shows some interesting details. The diagram is stated to have been prepared for a defense system based on defense areas. The German document in explanation thereof follows.



ANTITANK GUN EMPLACEMENT

"The positions will be arranged in accordance with the following plan:

- (a) Field of fire in all directions;
- (b) The crew as near as possible to the gun;
- (c) Two to three men in one dugout with the dugouts mutually interconnected;

- (d) Crawl trenches to the position. This will allow firing in any direction; enable the crew to be ready for action at all times; and permit the men to move about unobserved even during the day."

5. GERMAN 88'S IN TUNISIA

A battalion commander of a U.S. tank regiment which saw a lot of action in Tunisia is the source of the following observations on the tactical use of German 88-mm AA/AT guns against tanks and other vehicles.

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German antitank gunnery has made our reconnaissance a particularly tough job. They drag their big 88-mm guns (maybe 75's as well--I know they bring 88's) up behind their tanks and drop them in position. Usually the crew digs the gun in a hole 12 by 12 by 6 feet deep, practically covering up the shield and exposing only the barrel of the gun. They are the most wonderful things to camouflage I have ever seen. They are very low to the ground. You can watch the fire coming in; little dust balls on the ground give them away and show how low they are. The gun looks like a pencil or black spot. The shield is level with the piece and all you can effectively see is the tube. Apparently they use mats to hide the muzzle blast. When the Germans go into position they'll hide their guns and tanks in anything, including Arab huts. They dress their personnel in Arab garb while going to and from their positions. We've found these guns particularly hard to locate, and they can break up your entire show if you don't pick them up in time. Once we hunted a gun within a thousand yards for 3 days, and then only found it by spotting the personnel approaching the gun position.

Generally the Germans try to suck you into an antitank gun trap. Their light tanks will bait you in by playing around just outside effective range. When you start after them, they turn tail and draw you in within range of their 88's. First they open up on you with their guns in depth. Then when you try to flank them you find yourself under fire of carefully concealed guns at a shorter range. Don't always bite at the first 88's which shoot at you. There will be several up much closer. The first 88 that barks and the first tank are generally bait. If they stage a night attack or late evening attack, and neither side stays on the battlefield, they will come out and put their 88's in no-man's-land away ahead of their tank positions. In one instance their tanks were within 1,000 yards of a pass, but their guns were 4,000 yards on the other side. Usually the Germans will try to suck you inside of a 1,200-yard range. Over 1,200 yards there is no use in worrying about their antitank fire because it will bounce off the medium tank at that range. Under 1,200 yards, watch out. Their gunnery stinks at long ranges. I feel that our men are better. The Germans frequently use machine guns to range themselves in, and you can duck their shells by watching that machine-gun fire. When they're moving they'll shoot at anything that looks suspicious and they'll generally knock

down every Arab house in sight. Sometimes they'll get the range with high-burst smoke shells; three of these in a line is the high sign for the Stukas.

ARMORED FORCE

6. GERMAN RULES FOR TANK EMPLOYMENT

A translated German document issued in the form of a general order by the Panzer Army High Command lists the following 10 rules on the function and employment of tanks.

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Panzer Army High Command 5

HQ. 10 March 1943

COMMANDER-IN-CHIEF

GENERAL ORDER NO. 14

Ten Rules of Tank Employment

1. The tank is a deciding weapon in battle. Therefore, employment should be limited to the "main effort" in suitable terrain.

2. The tank is not an individual fighting weapon. The smallest unit is the tank platoon; for larger missions, the tank company.

3. The tank is not an infantry support weapon. It breaks into and through the enemy line, for the closely following infantry.

4. The tank can take a piece of terrain and clear it, but it cannot hold it. This is an infantry mission, supported by infantry heavy weapons, antitank guns, and artillery.

5. The tank is not to be employed as artillery, which fights the enemy for an extended period from one position. The tank fights while moving with short halts for firing.

6. The mission of the infantry is to pin down enemy defensive weapons, and to follow the tank attack closely in order to exploit completely the force and morale effect of that attack.

7. The mission of the artillery is to support the tank attack by fire, to destroy enemy artillery, and to follow closely the rapidly advancing tank attack. The main

task of the artillery support is continuous flank protection.

8. The mission of the tank destroyers is to follow the tank attack closely and to get into the battle immediately when tank fights tank.

9. The mission of the combat engineers is to clear minefields and to open gaps under tank, infantry, and artillery protection, in order to enable the continuation of the tank attack.

10. The tank is blind and deaf at night. It is then the mission of the infantry to protect the tanks.

7. GERMAN TANK RUSE

In commenting on German tank tactics, a junior officer of a U.S. tank unit which fought throughout the North African campaign observed that, "when you fire on the German tanks, they play a bag of tricks. First they stop, causing you to think you knocked them out. When you turn around on something else--wham, they open up on you."

ARTILLERY

8. NOTES ON GERMAN ARTILLERY FORWARD OBSERVERS

In the observation of fire, the greatest reliance by the Germans is placed on forward observers. Often the battery commander himself goes ahead in this role. The part that the observer plays in German field operations is brought out in the following translation from a recent issue of Artilleristische Rundschau.

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The artillery forward observer (Vorgeschoebene Beobachter) plays a decisive part in the success of infantry. In the attack he goes along with the infantry, accompanied by a radio operator. If the attack is stopped, this observer calls for fire on enemy points of resistance and carries the infantry on to the next assault. In static warfare, the observer orders destructive fire against the enemy and covering fire to aid his own troops. He also directs destructive fire against enemy infantry who are about to attack or actually attacking. The results of this are shown not only in the effective cooperation between the two arms, but in the existence of a spirit of brotherhood in combat--the artillery forward observer becomes the best friend of the infantry.

A few examples from the Eastern Front will illustrate the role of the forward observer.

In one instance, a German battalion was attacking a Russian objective at a place where there was a churchyard in close proximity to the Russian rear; the attack was gaining ground very slowly, impeded by stubborn defense and by poor observation for the German artillery. Finally, a forward observer succeeded in the face of Russian fire in reaching an observation position located at the flank, whence he could observe the churchyard. The signal troops, working fast, established communication in a very short time with the battery, which was then able to deliver well-placed fire. The opponent was so pinned down that the attack regained its impetus. In a short time the village and churchyard were captured.

In August 1941, a German division had been defending for some time a stream south of C--. A battalion received the mission to make a limited-objective attack in order to secure prisoners; the attack was to be made with a reinforced company, supported by heavy infantry weapons and artillery. After assembly in combat outposts, the company began the attack in several groups. The forward observer of a light battery and heavy battery went forward with the company, while at the same time another forward observer was stationed in the advance combat positions of the sector to the right of the attack in order to watch for any threat to the flank. Given excellent support by the artillery, and working skillfully through the terrain, the assault troops succeeded in penetrating deeply into the Soviet positions, without loss, and in capturing prisoners and weapons. At the same time, on his own initiative, the company commander in the sector to the right sent a weaker assault group to capture a Russian scout squad. The forward artillery observer in this sector supported the effort so well that nearly all the personnel of the scout unit were disabled or captured. The result of these two operations was a total of 42 prisoners and 12 captured machine guns and mortars, while on the German side the only casualty was one soldier slightly wounded. The skillful and rapid fire-support given by the artillery as a result of the work of the forward observer played a major role in this success.

A forward observer showed up well in another local assault by a neighboring regiment. The night before the operation, he went into no-mans-land with a scout squad. Three kilometers in front of the German lines he found a hide-out, and for 9 hours observed the Russian position from so short a distance that no detail could be missed. He could look into each pit dug for protection against tanks and could almost count the number of occupants in each. The next morning the assault group attacked at the appointed time. The radio of the forward observer had scarcely given the first order of command when the answers roared from 3 batteries. The Russian position was thoroughly raked. After a momentary pause, a powerful concentration of fire was placed on the left-hand sector of the enemy positions, only to move in another instant 100 yards to the right on a zigzag trench net. On the left, where the dust clouds from the bursts were slowly settling, the hand grenades of the assault troops were already exploding. With incredible speed, the trenches were mopped up, and always, throughout the action, the concentrated fire of 12 guns moved just before the assault group from right to left. About 500 meters of the Russian position was overrun in this way. With the mission accom-

plished, the assault group withdrew from the Russian positions, while the forward artillery observer placed his fire to cover the withdrawal. Numerous prisoners and weapons were brought in, without any losses suffered by the Germans. In this case too, the service of the forward artillery observer was no minor factor.

Every member of the First Battalion still remembers the day at 0-- in September 1941. This position was taken by storm without any difficulty. However, before the battalion had organized itself for defense, the Russians made a counter-attack in heavy force, supported by 18 tanks and designed to recover the locality. Fortunately, the second battery which had been attached to the battalion had moved its position and was ready for action, having established communications with the forward observer. Gun after gun fired its destructive barrage into the massed ranks of the Russian infantry following the tanks. Even the tanks hesitated, and then gave up the attack. The Russian attack was repeated several times in very strong force, and every time was stopped by the barrage ordered and directed by the forward observer. Bodies of Russians and ruined tanks covered the field at evening, and the battalion officers thanked the battery commander, assuring him that the village would have fallen had it not been for the artillery support and the courageous conduct of the forward observer, who had fallen in the combat.

ENGINEERS

9. GERMAN TELLERMINES

Land mines are not a new development, but their use in astronomical numbers, as in recent campaigns, is new to this war. The mine is normally associated with war at sea. But the pre-eminence of the tank, or "land battleship," in battles on land has emphasized the importance of the land mine and made its use mandatory around any well-defended position. Among the most widely used anti-tank mines is the German Tellermine. The four known models of this mine are described below.

a. Tellermine No. 1

The 1935 model or Tellermine No. 1 is circular in plan with a diameter of 12 3/4 inches. It has a convex top, a flat bottom, and a maximum height of 3 1/4 inches. The total weight of the mine is 19 1/4 pounds. In a fully armed condition the mine is equipped with a main pressure igniter in the center of the top cover, and one or two standard pull igniters in its base as secondary firing devices. The principal features of this mine are shown in the accompanying sketches (figure 1). The body of the mine is a circular metal box (1) with a dome-shaped top surface containing 11 pounds of high-grade pressed TNT. A "floating" cover (2) is held down by a heavy metal ring (3) attached to the body and is supported in the center by a heavy spring (4). The spring fits into and bears on a metal fitting (5) which fits into the top of the body. The fitting also acts as a receiver for the detonator (6). Directly above the detonator are the two metal

collars (7) and (8) (which screw into a recess in the fitting), a compressible rubber ring (9), and the igniter (10). The lower collar (7) is a retaining collar for the detonator; the upper collar (8) is an adjusting or positioning collar for the igniter. The compressible rubber ring serves as a cushioned seat for the bottom of the igniter. The upper collar is screwed into the proper position in the

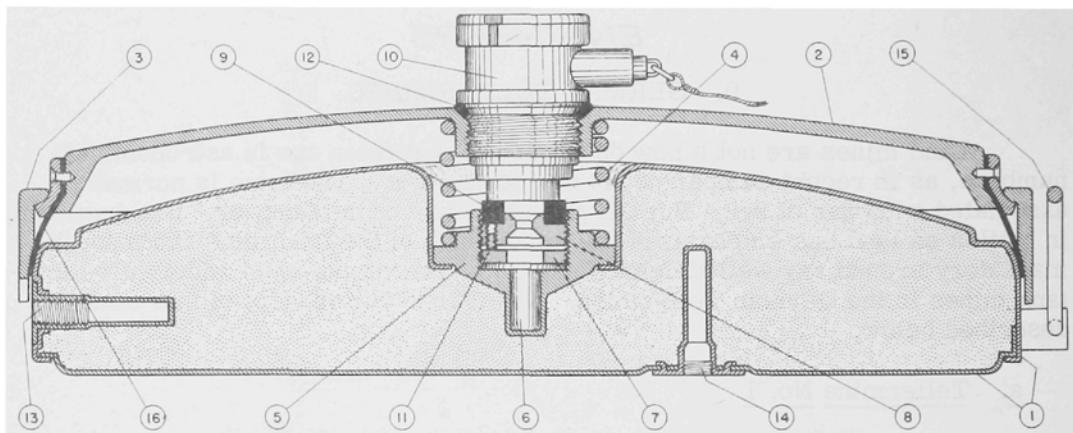
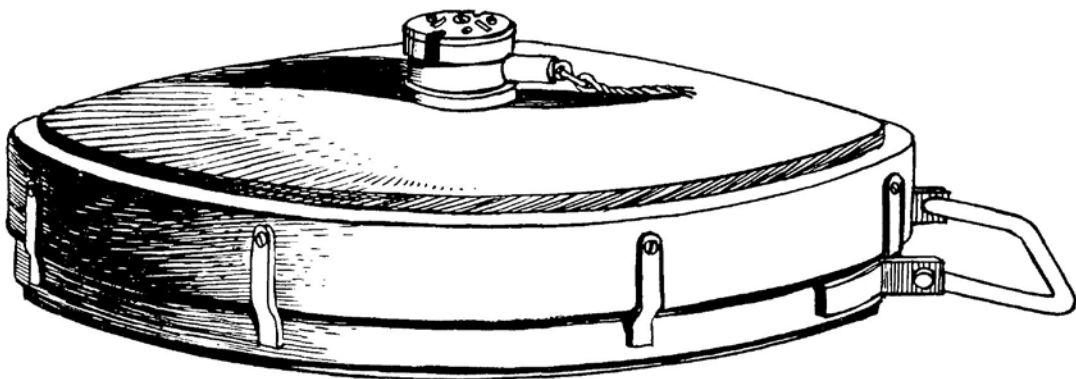


FIG. 1

fitting by means of a special tool. The small, headless set-screw (11) holds the collar (8) in position. The igniter is screwed into the mine cover (2) until it bears firmly on the rubber washer (12) and the rubber ring (9). The body of the mine has two receptacles (13) and (14), threaded to receive secondary firing devices. One receptacle is usually located in the side of the body opposite the handle, and the other in the bottom between the handle and the center of the mine. The mine has a metal carrying handle (15). A rubber strip (16) seals the junction between the cover and the body of the mine against the entry of water and dirt. The washer (12) seals the joint between the igniter and the cover.

b. Tellermine No. 2

This mine, thought to be the 1942 model, is similar in size to the 1935 model or Tellermine No. 1. Its main dimensions are:

Maximum diameter (at base)-----	12.75 in
Maximum height-----	4.1 in
Diameter of pressure plate -----	5.7 in
Total weight of mine (filled) -----	19.3 lb
Weight of filling (TNT plus three pen- thrite detonating charges)-----	12.0 lb

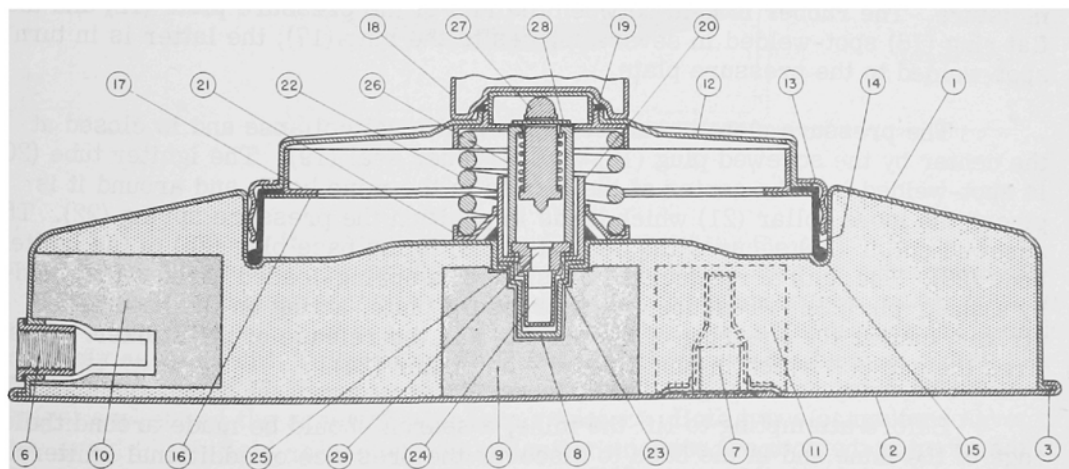
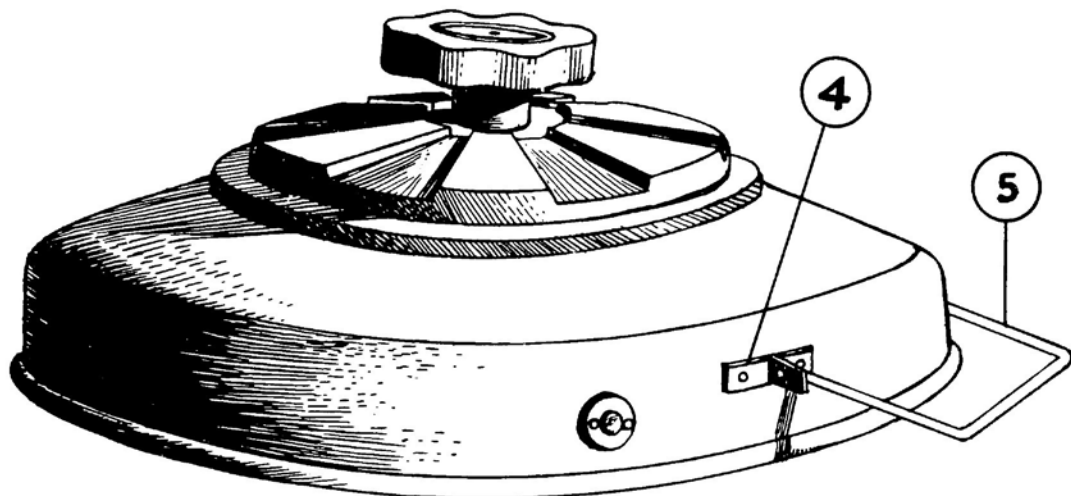


FIG. 2

The mine consists of a body (1) (see figure 2) fitted to a circular base plate (2). The base plate is turned over along its edge to make a press fit over the flange of the body as indicated at (3). A carrying handle (5) is attached by

means of a T-strip (4) which is welded to the body.

The mine is fitted to take two additional igniters. One is located in the side of the mine 4 inches from the handle at (6), and the other is in the base of the mine at (7). The pocket or receptacle (8) for the main detonator protrudes into the mine filling, and is surrounded by a cylindrical penthrite detonating charge (9). Cylindrical penthrite detonating charges (10) and (11) also surround the screwed-in pockets for the additional igniters. The details of these detonating charges are as follows:

<u>Detonating Charge at</u>	<u>Length</u>	<u>Diameter</u>	<u>Weight</u>
(9)	1.6 in	2.38 in	0.36 lbs
(10)	2.3 in	1.6 in	0.25 lbs
(11)	1.6 in	1.6 in	0.11 lbs

The pocket or receptacle for the base igniter (7) is fastened to the circular base plate (2), its center being 2 1/4 inches from the center of the base plate. The base plate is pressed on and crimped to the circular body (1) without regard to maintaining a fixed position for the base igniter relative to the main igniter-detonator assembly. As a result, the base igniter may lie with its center at any point on the perimeter of a circle with a radius of 2 1/4 inches from the center of the base plate (i.e., also from the center of the main igniter-detonator assembly). This should always be borne in mind in searching for the position of the base igniter. The pressure plate (12) is held in the body by means of the collar (13), which is a spring fitted into the recess. The pressure plate has a rubber skirt (14) which fits into the depression (15), so that when assembled the operating mechanism under the pressure plate is protected from the entrance of dust and moisture. The rubber is held between the rim of the pressure plate (12) and the flat ring (16) spot-welded in several places to the ring (17); the latter is in turn spot-welded to the pressure plate.

The pressure plate is shaped to prevent local collapse and is closed at the center by the screwed plug (18) with a rubber seal (19). The igniter tube (20) is spot-welded into the center of the recess in the mine body, and around it is placed the loose collar (21) which holds in position the pressure spring (22). The screwed collar (23) secures the detonator (24) to the base plug (25) of the igniter body (26). The igniter mechanism consists of a spring-loaded striker (27) held by a shear pin (28). Pressure on the pressure plate, acting on the head of the striker, causes the shearing of the pin (28) and the release of the striker. This fires the cap (29) which in turn fires the detonator (24).

c. Tellermine No. 3

A third type of German Tellermine has been reported (see figure 3). This mine is 12 1/2 inches in diameter, with a maximum height of 3 3/8 inches. It has a total weight of 21 pounds and is painted a mat gray. It has the following markings:

On the top, in white paint----- T. Mi S31 Twii. 2.42
On the top, in black paint----- S 88 12 42A.
Stamped on the top----- WO 42

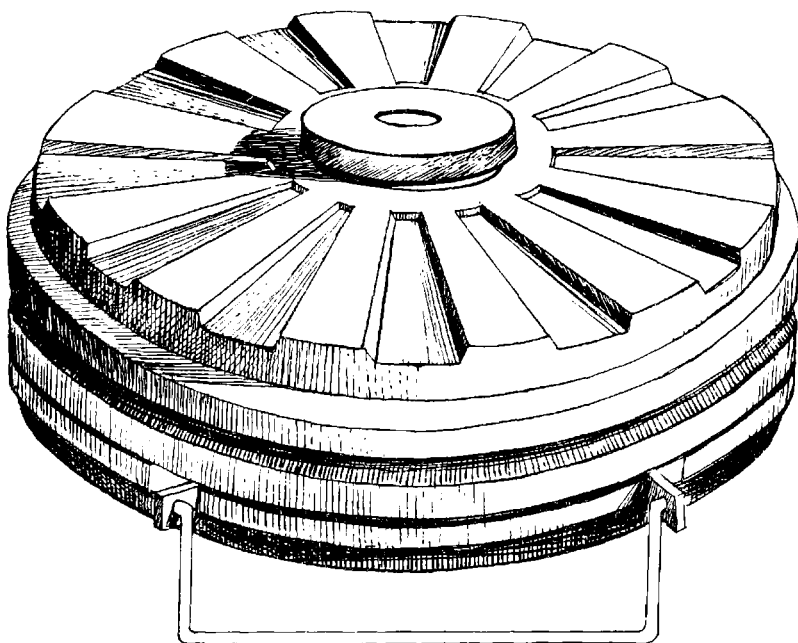


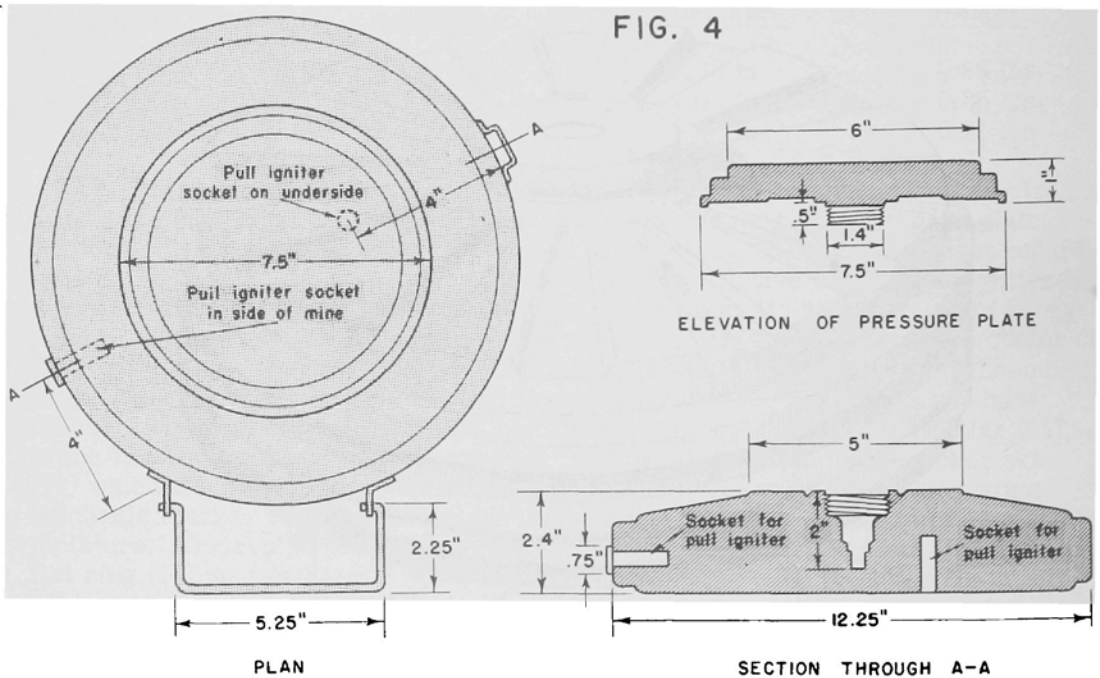
FIG. 3

In this model, the pressure plate extends over the entire top of the mine, and is fluted or grooved, probably to prevent sand being blown off when the mine is buried. In the center of the pressure plate is a threaded socket, closed by a screwed plug with a milled head. This socket will take the standard brass igniter assembly as used with Tellermine No. 1 but the mine can also be used with igniter assembly of Tellermine No. 2, the igniter being inserted through the central socket and the screwed plug then replaced. Both types of igniters have been found in the field. The subsidiary igniter sockets are located on the bottom and side of the mine in the same places as in Tellermine No. 1.

d. Tellermine No. 4

The details of a fourth type of German Tellermine have recently become available. Tellermine No. 4 is circular in plan (see figure 4) with a diameter of 12.25 inches and over-all height of 3.4 inches. The base is flat and the cover slightly dome-shaped. The total weight of the mine is approximately 18 pounds. The mine is painted field gray, and the pressure plate black. Stencilled on the top of the mine in white is:

"T. -Mi. - Pilz 43/T. -Mi. -Z42 13A"



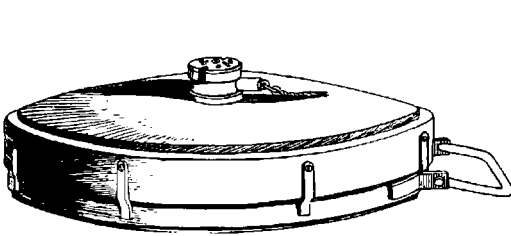
There are two screwed holes for additional igniters, one in the side of the mine 4 inches from the carrying handle, and the other in the base, offset from the center--as in Tellermine No. 2. It has been reported that this mine has also been found with the holes for additional igniters located in the side of the mine opposite the handle and in the base between the handle and the center--as in Tellermine Nos. 1 and 3.

The pressure plate is a flat metal plate 7 1/2 inches in diameter, which screws complete into the central socket over the normal Tellermine No. 2 igniter. Neither the pressure plate nor the body of the mine is fluted.

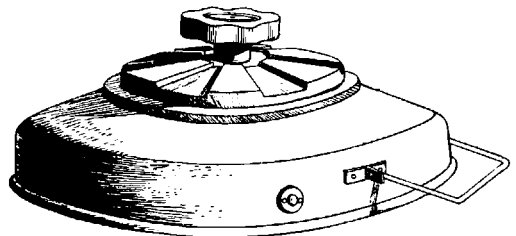
The mine functions when pressure on the pressure plate causes the latter to descend and shear the igniter shear pin, thus releasing the springloaded striker.

e. Comparison

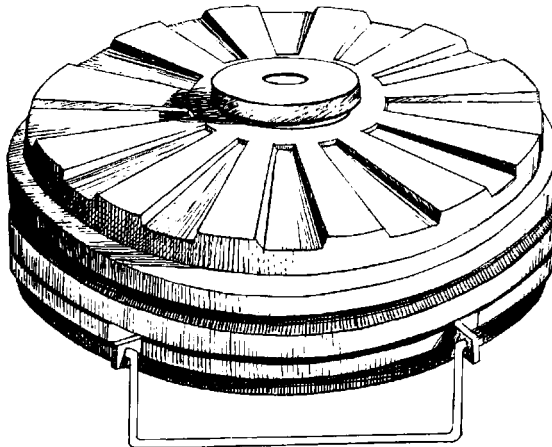
The pressure plates on Tellermines No. 1 and No. 3 extend over the entire top of the mines, but the pressure plates on Tellermines No. 2 and No. 4 cover only the center portion of the mine. Accordingly a tank might pass over the edge or rim of Tellermines No. 2 and No. 4 without detonating the mines, whereas the same load passing over the edge or rim of Tellermines No. 1 and No. 3 would



Tellermine No. 1



Tellermine No. 2



Tellermine
No. 3

detonate the mine. It is possible for a spread-out load of fairly low intensity covering the whole top of Tellermines No. 1 and No. 3 to detonate them, while a more heavy, concentrated load is necessary to detonate Tellermines No. 2 and No. 4.

The pressure plates on Tellermines No. 2 and No. 3 are fluted or grooved, but the pressure plates on Tellermines No. 1 and No. 4 are smooth.

In Teller mine No. 4, by adopting a simpler form of pressure plate and utilizing the simple igniter found in Teller mines No. 2 and No. 3, the considerable production difficulties, which were entailed in the manufacture of Teller mine No. 1, particularly its T. Mi. Z35 igniter, have now been largely overcome.

10. ELECTRIC IGNITER FOR GERMAN S-MINES

The existence of a new electric igniter has been reported from North Africa. The name of this igniter is the E.S. MiZ 40 (elektrische S-Minenzunder 40). It is designed for use with the German antipersonnel bounding mine ("Silent Soldier") also known as the "S" Mine (Schutzmine--protective mine). It consists of two "chains" of nine initiating igniters apiece, connected in parallel to a firing bridge attached to the mine. Each initiating igniter is a pressure igniter which uses a chemical action to heat a resistance wire in the firing bridge.

a. Description

(1) Initiating Igniter (Figure 1)

Each igniter consists of an ebonite body (1) which encloses a mechanical firing assembly, and an ebonite spike (2). The firing assembly is a ball release device and consists of a two-part housing (3) screwed into the body (1), a plunger tube (4), and a striker (5). The plunger tube (4) is held up by a spring (6), and the striker (5) is held in the cocked position by a compression spring (7) and two balls (8) engaging a groove in the head of the striker (5). An ampoule (9) takes the place of a percussion cap and is held in a recess formed in a porcelain fitting (10) which is fastened by studs to the body (1). The ampoule (9) contains an orange-colored liquid, which, when the ampoule is broken, forms an electrolyte creating a small cell, of which the electrodes (11) and (12) are provided by the lining of the recess in the fitting (10). Electrode (11) is connected to the positive terminal (13), and electrode (12) to the negative terminal (14). To the terminals (13) and (14) are connected two electrical leads (15) and (16) which are held to the igniter by means of the studs (17). A three-pronged pressure head (18) with a sleeve fit is pressed into the top of the plunger tube (4). In the unarmed condition, a safety rod (19) is fitted through the top of the plunger tube (4) and positioned by a spring-actuated ball catch. The ring of the safety rod is folded over the plunger tube (4), and an ebonite safety transit cap or plug (20) is screwed onto the plunger tube (4). When the igniter is located in very soft earth, a circular plate (21) (see figure 2) is provided through which the spike (2) is driven.

(2) Firing Bridge (Figure 2)

The device consists of a bridge (22) with a resistance wire housed in an aluminum tube (23) which is protected in transit by a cap (24). The bridge (22) is provided with terminal sockets (25) into which plugs (26) are inserted. One socket is colored red and receives the red-colored plug, and the other socket is colored black and receives the black-colored plug. The plugs (26) are pro-

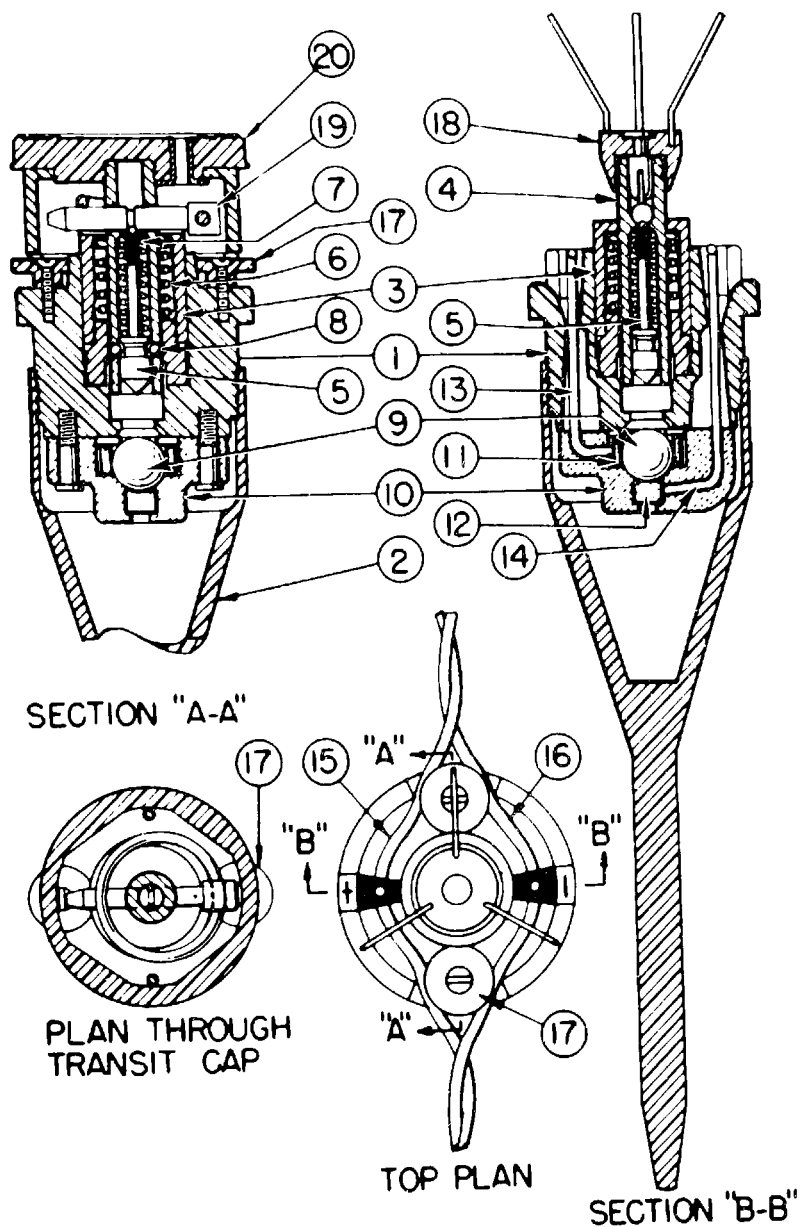


FIG. 1
IGNITER E.S. Mi. Z. 40 (ELECTRICAL)
INITIATING IGNITER

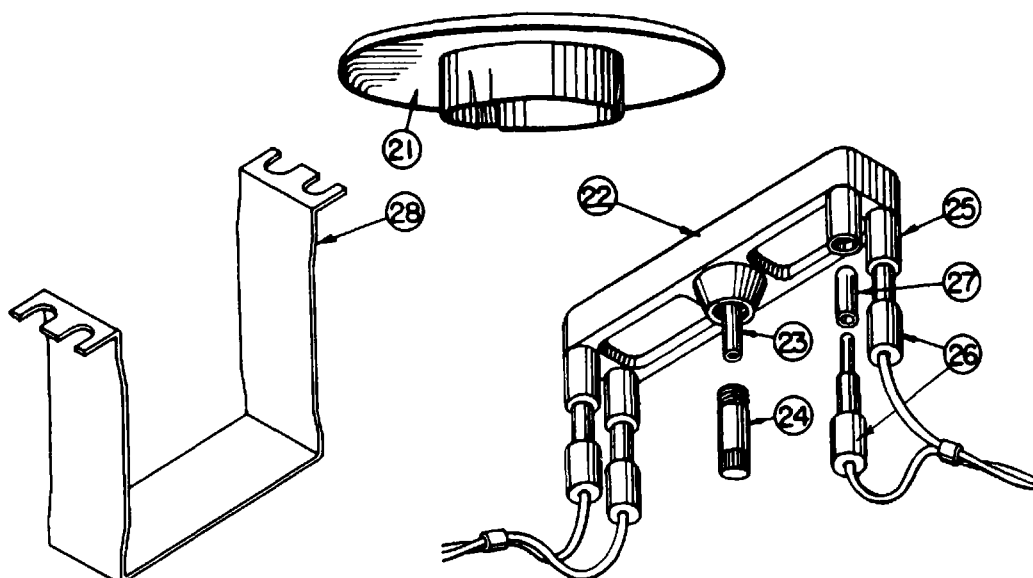


FIG. 2

IGNITER E.S. Mi. Z. 40 (ELECTRICAL) FIRING BRIDGE

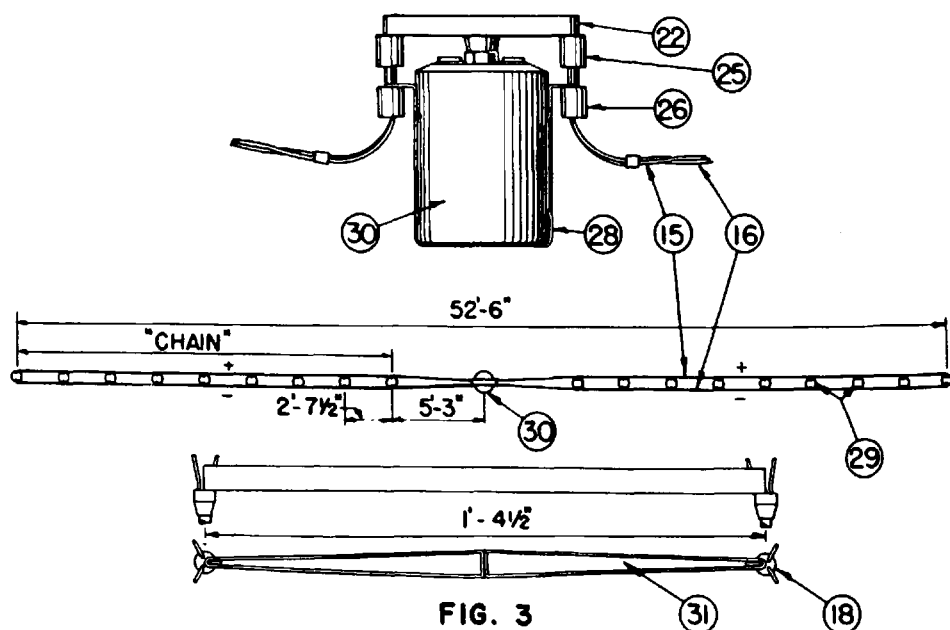


FIG. 3

LAYING IGNITER E.S. Mi. Z. 40 (ELECTRICAL)

tected in transit by caps (27). The bridge (22) is screwed onto the detonator tube of the antipersonnel bounding mine, which is then set into a "U"-shaped clamp (28) which also grips the plugs (26).

b. Employment and Installation

This igniter is used with the standard German antipersonnel bounding mine (Silent Soldier) in the following manner: two chains of nine igniters each (29), see figure 3, are wired up in parallel with 2 ft. 7 1/2 in. of wire between each igniter and 5 ft. 3 in. of wire between the end igniter in each chain and the plug (26) attached to the mine (30). Two furrows are made in the ground on either side of the mine (30) to receive the electrical leads (15) and (16). The igniters (29) are then driven into the ground until the top of the safety transit cap or plug (20) (see Fig.1) is level with the ground. If the ground is soft, use the circular plate (21) (see Fig.2) with the spike (2). Test the leads with a lead tester by plugging the plugs (26) into the tester and short-circuiting the most distant igniter. Unscrew the safety transit cap (20) and release the safety-pin rings from engagement with the plunger tubes and clip the withdrawal cords onto the rings. Screw the bridge (22) onto the mine and place the mine in the holder (28). Insert the plugs (26) in the sockets (25), red to red and black to black, and push them home. If required, a pressure bar (31), 1 ft. 4 1/2 in. long, can be placed on one prong each of adjacent igniters (29), which are also spaced at 1 ft. 4 1/2 in. so as to correspond with the length of the pressure bar (31).

c. Operation

When one of the initiating igniters (29) or the pressure bar (31) is stepped on, the plunger (4) is depressed until the balls (8) are released into a groove formed in the housing (3). The striker (5) is thus released and the compression spring (7) drives it onto the ampoule (9) which is broken. The liquid then creates an electric current which heats up the resistance wire in the tube (23) which fires the mine.

d. To Neutralize

11. ENEMY BOOBY TRAP

Recently, some British engineers came upon a new type of booby trap during the clearing of a landing runway. When a bush was dug up after the area had been swept with mine detectors, an explosion occurred which led to the discovery that the enemy had deeply buried two German antipersonnel "S" mines which were probably connected to a trip wire carefully concealed in the lower branches of the bush.

INFANTRY

12. THE GERMAN SOLDIER IN DEFENSE

The following is a translation of an unsigned article which appeared in the semi-official German Army journal Militaer Wochenblatt. The fact that it appears in this normally authoritative and apparently widely read Army journal, and the critical tone in which it is written, show that the conclusions drawn are regarded in army circles as of some importance.

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The attack, and only the attack, will make for victory. For this reason our Field Service Regulations rightly state that only offensive conclusion of defensive operations can bring off a decisive victory. But, on the other hand, in the course of any long war, no army is likely to escape defensive operations; no army is strong enough to be attacking everywhere and all the time. Moreover, there are times when it is better to allow the enemy to attack and only go over to the attack yourself when the enemy has thoroughly tied himself up. If the campaigns of 1939, 1940, and early 1941 found the German Army on the defensive only in a very few areas and only for a very short space of time, this was because of the extraordinarily fast tempo of events up to the complete conclusion of the fighting. The importance of defense and its significance in the education and training of troops is not diminished by these facts. In fact, no body of troops knows during its training what tasks it may be called upon to perform. During a war the tactical situations change so quickly, suddenly, and unpredictably that all troops must be educated and trained for defensive as well as for offensive action.

It was quite correct for our military education to lay the chief stress on the attack, as it still does. Moreover, in the past, there was very little time to teach defensive action. But this must not make us fail to recognize, with even more reason, that in concentrated wartime training some subjects are more neglected than others, and in our opinion this applies especially to defense. This article, therefore, will attempt to outline a few points, the teaching of which might well increase the defensive capabilities of the German infantryman, and, moreover, save lives.

The first essential is a sure and ready sense for ground. As is well known, the Higher Command lays down the main battle zone on the map, taking into consideration only major factors, e.g., the siting of artillery, observation posts, and antitank defense, while subordinate commanders subsequently reconnoiter the main defensive line on the ground, taking into consideration, above all, the siting of the infantry support weapons. If junior commanders have time for ground reconnaissance, they will normally find the right position. But if defense is taken up hastily, as is very often the case, then there is a noticeable lack of good judgment. Officers and men, in our opinion, have much too great a tendency to stick to the ground they have first settled on. Judgment of ground in the long run only means, in essentials, getting all the advantages for yourself and giving the enemy all the difficult ground. Naturally, that's easier said than done. But even if, as is usually the case, unfavorable ground has also to be occupied, it is important to recognize this fact and to take the proper tactical measures to make up for it, e.g.,

siting reserves behind the probable danger area, thickening up antitank defense where the danger from tanks is greatest, etc. Training of this kind can only be carried out on the ground, both with troops and without, by means of a series of very small-scale exercises calling for ground evaluation. In these exercises all units down to the very smallest must be considered in detail. Any high-and-mighty treatment of this subject is out of place. There seems to be by no means the universal recognition that there ought to be, for example, that edges of woods and landmarks, lone trees, etc., are not really suitable for machine-gun positions or observation posts.

The second point where improvement is necessary is camouflage. One has very often the impression that people just haven't grasped the meaning of the word. Camouflage means fitting troops, weapons, equipment, and positions into the landscape. Camouflage that suits one type of ground and one season is nonsense in another type of ground and at another time of year--think of wearing a white snowcoat in the summer. Camouflage is also a matter of time. Positions must be camouflaged before you begin to dig them; observation posts must be camouflaged before you man them; approach roads must be camouflaged or masked before you use them. The basic principle is therefore: camouflage first and dig after, but not vice-versa. People often say: "The enemy isn't firing." Certainly, but he is looking. And as we note down everything we see and plot it on maps giving time and place, and take it to heart, it is clear that the enemy does it just as much. Hence the loss of the most important observation posts at the most critical moment, and the snapping up of runners or reserves on routes which have become known to the enemy. Our troops must have this hammered into them day by day and hour after hour, because such mistakes, though they may not have immediate repercussions, come home to roost sooner or later. In this connection senior officers must set a good example. Well may a brass hat, visiting a front line, expose himself to a little danger to cheer up the troops; in point of fact such conduct seldom draws enemy fire. But if senior officers give away an observation post by their visits, by even so much as one incautious visit, enemy fire is likely to come down later on that observation post and knock it out just when it is needed, which was certainly not the original intention. Don't say that this precaution is exaggerated and unworthy of senior officers. In our opinion everything is wrong which hands it to the enemy on a plate, and everything right which increases defensive capabilities. Our people often lack a sense for little finesses, e.g., use of light and shadow, wariness as regards background. Some time ago we were shown a so-called camouflage suit in use by our enemies, extremely well-made, although to use it ourselves would load our infantry overmuch; but this type of camouflage suit might well be used for training in our reserve battalions. Our people are extremely inventive when they once have something to go on and, having been trained in this way, they might well start making themselves similar suits.

The third essential is a clear recognition of the value of digging. The German soldier does not like to dig; that is a fact we have to recognize and take measures against in our theoretical and practical training. The Russians are extremely clever in their field fortifications. This dislike of digging comes from the German soldier's innate desire to attack. "We're going forward again soon, what's the point of digging?" Nevertheless our regulations, based on the experience of the last war, emphasize at a number of points the necessity for digging,

including during the attack. The regulations say that the troops must so "settle themselves in" in the ground during breathing spaces in the attack that they are exposed as little as possible to enemy fire. In other words: dig in. To say that digging blunts the "edge" of the attack is wrong, because those troops who save their skins in a hole can and will carry forward the attack when the time comes; whereas those who have been killed or wounded in the open are out of it. Hence the prime necessity for convincing junior commanders and troops of the value of digging. But no amount of sticking spades into the ground to "show where the trench should be" will get you there. We must have more, much more, digging. It may cost time and sweat, but it will save lives later. There is no necessity to insist on a regular trench-system in all its ramifications. What is necessary is to teach a man during his training to dig in sufficiently to disappear as soon as possible from the surface in a hole or hollow. We do find in fact that our people recognize this, but unfortunately often only late, after they have had personal experience of men dying because they hadn't dug while men in shallow holes remained alive. A thousand unnecessary fox-holes do less harm than one hole dug too late. Only a cat has more than one life.

The construction of obstacles of all kinds and the laying of wire, etc., should also be very much emphasized. Preparing a village for defense is an art; but we have now learned the proper obstacles to use, and our troops in training should be given the chance to practice with these in a practical manner.

The fourth essential is the recognition of correct behavior, even in quiet periods. We pointed out above what happens to an observation post which is given away, but there are many other instances of this kind. Machine-gun positions are built which stand out like haystacks. They get beautifully camouflaged, but then someone forgets to shut the back, so that the enemy looks straight through them. A CP is set up and becomes the center of footpaths coming in from all sides--which, of course, immediately gives it away. Or you see signs "Look out! Ground covered by enemy!" Now you would think that people would take some notice of this and use the little detour which perhaps takes a quarter of an hour longer.--Nothing of the sort! "The enemy isn't firing and, if he does fire, he won't hit me." This is wrong, of course. Why the sign in the first place, if it isn't? Under this heading also falls the mobile conduct of defense, by which we mean the system of defense in depth introduced after 1916. This means that the main battle zone is a belt in depth. But we have many people who say that the German soldier stays where he has dug himself in. This is naturally correct in so far as it implies that the way through the zone only goes over his dead body. But does this mean that the man has to remain in one spot once the enemy has seen him? Certainly not. In other words, firing positions intended for defense must remain as far as possible unrecognized, which they will only be if no one uses them. We also speak generally of "silent"* machine guns. What happens in practice? Our people are too tired to take their machine gun to an alternative position, saying, "They won't spot us--not at once anyway." This is sheer wishful thinking, and leads sooner or later to a catastrophe. The same

*"Silent" machine guns are set up in the main defensive position out of sight of the enemy and do not participate initially in the combat; they overwhelm the enemy at close range with surprise fire just before he penetrates the position, or after he has already broken into it.

may be said of observation posts, many artillery positions, CPs, and other military localities. Variety in the siting of outposts, in the routing of patrols and supply convoys is also very much neglected through laziness.

The last point is a purely tactical question. Field Service Regulations speak of a main battle zone whose forward edge is the main line of resistance, i.e., a line which is to be marked out on the ground. But we do hear talk today that the main line of resistance does not suit modern conditions and that positions must be manned by "strongpoints." Apart from the fact that we have not yet seen any official amendment to Field Service Regulations to this effect, we cannot approve this view. Field Service Regulations talk about positions to be sited irregularly and in great depth; it goes on: "At particularly important points, strongpoints containing a number of different types of weapons may be made; neighboring positions must be able to give each other mutual support; eventually, covered communications between all defensive positions must be provided." A difference is obviously made between "positions" and "strongpoints," but only insofar as a "strongpoint" is a "larger position containing a number of different types of weapons." Now if you say that defense is to be "by strongpoints" inasmuch as a number of strongpoints are set up and sited for all-around defense ("hedgehogged off," as the pedants say) and that by reason of this there is no necessity for mutual communication or support, that is a false conclusion. No enemy is going to be so foolish as to attack these so-called strongpoints from the front; he will infiltrate in between them and eventually break in and finally through; these islands of defense, cut off from one another and from any supply from the rear, can and have held for some time, but are sooner or later bound to capitulate unless relieved by a really strong immediate or planned counterattack. But if such strong reserves as those counterattacking were there from the first, one is led to ask why they weren't used from the first in the forward positions. No sensible person lets a burglar inside his house for the purpose of throwing him out again; you make sure from the start that he doesn't get in. In the tactical sense you do that by manning the main battle zone in breadth without any gaps, i.e., by keeping contact to the flanks and also in depth so far as the forces are available, and by giving units regulation frontages.

13. RUSSIAN NOTES ON FLANK SECURITY IN A BREAKTHROUGH

The following is extracted from an article written by two Russian Colonels and published in the Soviet Army newspaper, Red Star.

* * *

a. General

In a modern military operation the flanks play a decisive role because of their vulnerability. In any type of battle, success will in a large measure depend on the action on the flanks. In the attack, the principal stress in much of present-day fighting is laid on widening of the flanks and consolidating the corridor created

by the breakthrough of enemy positions. In the defense every effort is bent toward holding the positions on the flanks of the hostile breakthrough and cutting the enemy wedge by counterattacking.

b. Consolidation of Flanks

In choosing the direction for a breakthrough, it is unwise to leave enemy strongpoints on the flanks. It is necessary, however, to consolidate the flanks and widen them with all means available simultaneously with the advance. Experience has proven that the Germans launch their counterattacks primarily against the flanks. Rapid maneuver of reserves is the basis of German defensive tactics. Therefore, maximum flank security must be the prime consideration. Units must be designated to consolidate the flank terrain and widen the sector of breakthrough immediately after spearheads have been driven into the enemy lines.

It is not sufficient for flank security to use large numbers of troops only. These flank troops must have a maximum of equipment and be able to throw up strong field fortifications in case of change-over to defense under heavy enemy pressure. It is most important to hold the flanks until breakthrough units wipe out the whole system of the enemy defense. Wide use must be made of all types of obstacles, including minefields, on the flanks.

c. Ratio of Width of Breakthrough to Depth

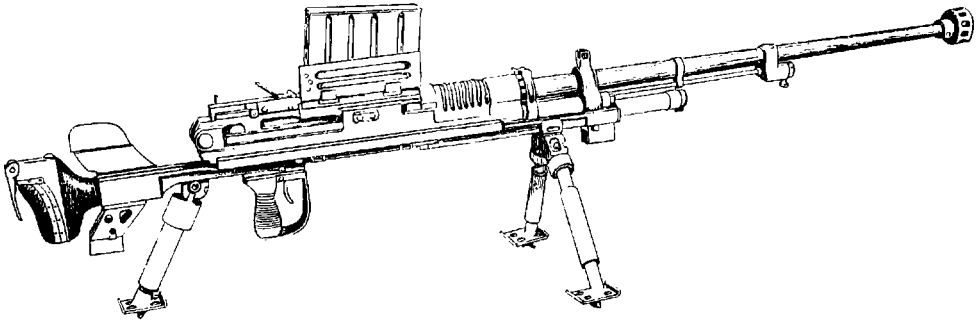
It has been established that the desirable ratio between the width and depth of the sector of breakthrough is approximately 1 to 2. For instance, if the width of the breakthrough is 4 miles, the depth should not exceed from 8 to 9 miles. If the units brought into the breach encounter fresh, strong reserves in the depth of the enemy positions, it is necessary to throw in new forces, an operation possible only when the gap is sufficiently wide.

ORDNANCE

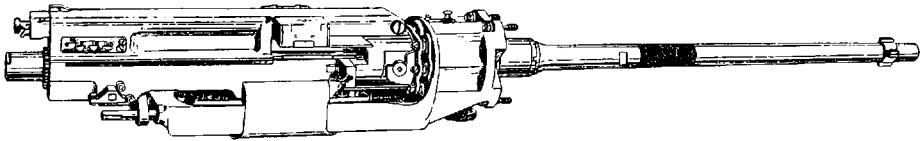
14. TYPES OF 20-MM WEAPONS

The 20-mm-type automatic gun can be traced back to the German Becker 20-mm gun of 1918. After World War I the patents were sold to a Swiss concern because of treaty limitations on German armament, but in 1928 the Oerlikon Company of Zurich, Switzerland, a German-controlled concern, took over all these patents and turned out the Oerlikon 20-mm gun. The German-controlled Waffenfabrik Solothurn Company of Switzerland shortly thereafter produced the "Solothurn"-type gun. In 1916 the French developed a 37-mm semi-automatic gun for aircraft use. This gun was redesigned during the period from 1920 to 1930 and appeared in the 20-mm series now known as the Hispano-Suiza type.

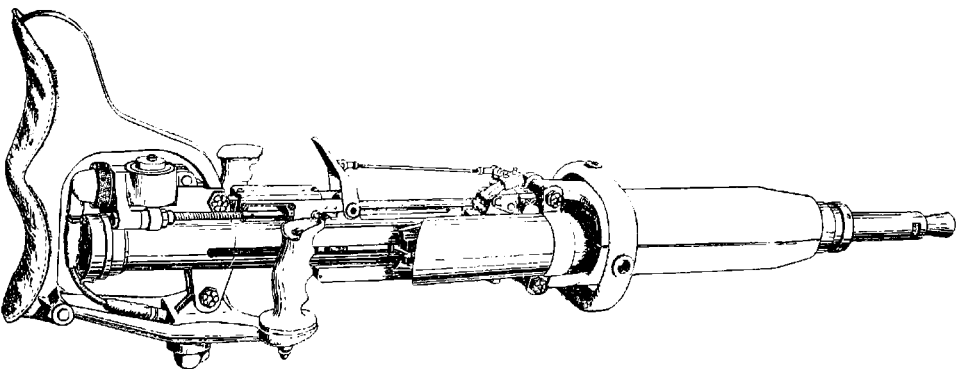
At the present time, the following 20-mm weapons or their prototypes exist:



JAPANESE 20-MM AT GUN



GERMAN 20-MM AIRCRAFT GUN TYPE 151 (MAUSER)



GERMAN 20-MM AIRCRAFT GUN (OERLIKON)

<u>Name</u>	<u>Countries Used By</u>	<u>Type of Action and Feed</u>	<u>Use</u>
Solothurn	Germany	Recoil, magazine	AA/AT
Oerlikon	United States, England, Germany, Japan, and others	Blowback, magazine	Aircraft & AA/AT
Mauser	Germany	Recoil, magazine or belt	Aircraft
Hispano-Suiza	United States, England, France, and Germany	Gas release, blow-back drum or belt	Aircraft & AA/AT
Madsen	Denmark and other countries	Recoil, belt	Aircraft & AA/AT
Breda	Italy and other countries	Gas-operated, magazine	AA/AT
Isotta-Fraschini	Italy	Gas-operated, strip feed	AA/AT

Three types of 20-mm weapons now in use are illustrated in the accompanying sketches.

15. JAPANESE AIR BOMBS

Presented herewith are some general notes on Japanese bombs and a listing of the types most commonly used.

a. Construction Details

Japanese bombs, in general, are made of steel and are not usually streamlined. Except for the armor-piercing and semiarmor-piercing bombs, they are of three-piece construction. The nose and tail units are either screwed in, welded, spot-welded, riveted, or attached by means of screws to the body of the bomb.

The tail cones of some general-purpose bombs are filled with explosive. In these bombs, the body and tail unit are filled in separate operations and are later screwed together.

Japanese bombs use either nose and/or tail fuzes. The nose fuzes are screwed into the nose. The tail fuzes are either screwed into the base plate, or into the apex of the tail cone if the tail unit is filled with explosive.

b. Fillers Used in Japanese Bombs

The several types of fillers for Japanese bombs are listed below. As a rule, they are very toxic and should not be permitted to come in direct contact with the skin.

Trinitroanisol
TNT
Symtrinitroanisol*

Hexanite and anisol
Lyddite (cast picric acid)
Picric powder

c. Types of Bombs

Antipersonnel

1 kg (2.2 lbs)
15 kg (33 lbs)
30 kg (66 lbs)

Incendiary

1 kg (2.2 lbs)
60 kg (132 lbs)
70 kg (154 lbs)

Gas Bomb

50 kg (110 lbs)

Illuminating Flare

33 kg (73 lbs)

High Explosive

50 kg (110 lbs)
60 kg (132 lbs)
63 kg (139 lbs)
250 kg (550 lbs)

250 kg (550 lbs)--
semiararmor piercing
800 kg (1,760 lbs)--
armor piercing

GENERAL

16. NOTES ON JAPANESE TACTICS ON ATTU

It took the American forces just about 3 weeks to finish off the Japanese on Attu. A brief report by an American observer on some Japanese tactics used during this operation is contained in the following summary. For further information concerning the Japanese on Attu, see Tactical and Technical Trends, p. 38, No. 27.

* * *

In general, nothing new was learned at Attu about Japanese tactics other than what has already been reported from other contacts with this enemy. The Japanese are good soldiers, are courageous, but they can be whipped. Although they show signs of fanaticism, particularly in local counterattacks, they can be

*36 percent hexanitrodiphenylamine and 64 percent trinitroanisol.

forced to withdraw when they are outmaneuvered. As has been previously reported, they do not like artillery fire, and on Attu they would not fight when dominant terrain had been secured above them. They do not allow themselves to be captured alive.

As has been reported from other theaters, the Japanese make extensive use of snipers, attempting to infiltrate these men in the rear and on the flanks of American units. The initial fire from these snipers is harassing but it is not dangerous. This point must be emphasized to green troops. To the best of my knowledge, during the period from May 11 to May 19 inclusive no casualties were caused to the Northern Force by enemy snipers. It is necessary, however, when advancing over terrain which offers concealment to snipers, to thoroughly comb every square foot of area to the rear and flanks in which snipers can hide. These men are trained to fight like animals, in that they can lie motionless for hours at a time and thereby avoid detection. Their weapons (both rifles and machine guns) gave little flash and no smoke, with a result that it is difficult, if not impossible, to place long-range fire on them and they must be routed out by thorough patrol action.

The Japanese on Attu made highly effective use of their AA artillery as field artillery, placing fire both as air bursts and impact bursts.

As has been previously reported from other theaters, the Japanese are prone to counterattack "at the drop of a hat." At Attu, contrary to what had been expected, the Japanese did not counterattack under cover of darkness, all counterattacks being made during daylight hours. The Japanese on Attu, however, did attempt to infiltrate snipers into our positions during the hours of darkness.

They preferred to do their fighting on ridge lines rather than in valleys and, as has been reported from other theaters, they do a great deal of their fighting from the reverse slope of ridges and hills. On numerous occasions, when the ridge line had been taken, the Japanese would drop down the reverse slope to just below the military crest; from these positions they would wait for the American troops to come over the top, whereupon they fired not only with rifles and machine guns, but with 50-mm grenade launchers. The taking of a ridge line therefore required the taking not only of the crest of the hill, but of the reverse slope as far as, and including, the military crest. Many Jap counterattacks were launched up the reverse slope of a ridge from just below the military crest, on terrain so difficult that it was necessary for the enemy to crawl on all fours in order to advance. In doing this, however, they presented excellent targets for American troops armed with both the M1 rifle and hand grenades, and none of their counterattacks against the Northern Force were successful.

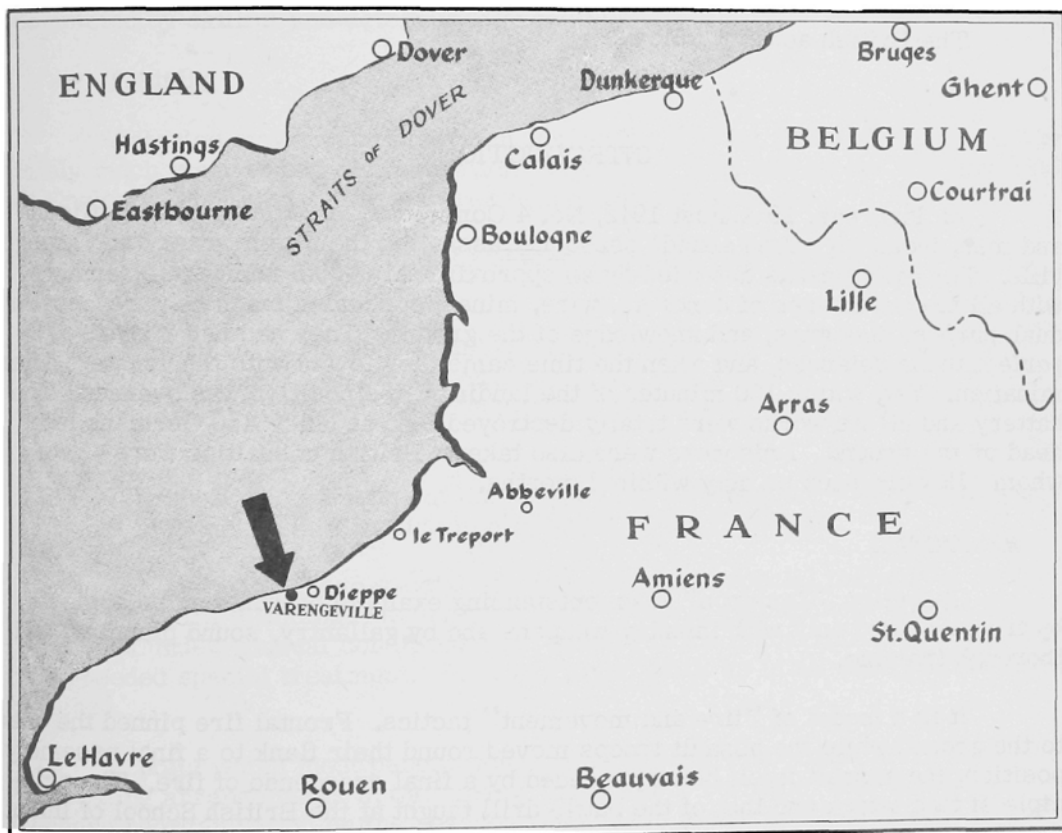
American troops with the Northern Force on Attu were in agreement that the most effective weapon that the Japanese infantry had was the 50-mm grenade launcher. On Attu the Japanese used no booby traps and no barbed wire. All enemy dead were carrying gas masks.

SECTION II

COMMANDO RAID ON VARENCEVILLE, FRANCE
(19 August 1942)

COMMANDO RAID ON VARENGEVILLE, FRANCE (19 August 1942)

The following is an account of a British commando raid on Varengueville, which is about 3 1/2 miles west of Dieppe on the northern coast of France. This raid occurred on 19 August 1942, and was a subsidiary operation in the large-scale raid on Dieppe. It was designed to, and in fact did, destroy a German coastal battery which covered the approaches to Dieppe. The account of this action is here reprinted, with some minor editing for U.S. readers, from a British pamphlet.



In order that this account may be more understandable, a brief summary of commando organization is given below. In this connection it should be noted, that while a "commando" generally consists of six "troops," only four "troops" were used in this particular operation.

The commandos adhere closely to the guerrilla system, in which small bands join together to form larger but easily manageable units. The basic organization is a "troop" of 62 enlisted men, commanded by a captain and divided into two sections under lieutenants, a section being the usual complement for one

landing craft. Sections are composed of subsections (squads) commanded by sergeants. The commando proper consists of six troops. The commando proper is led by a lieutenant colonel, who makes a point of knowing every man in his organization and tries to develop among them a feeling of personal attachment and mutual confidence. In addition to the six troops, there is in each commando a headquarters of 7 officers and 77 enlisted men organized in Administrative, Intelligence, Signal, and Transport sections; also, there are attached 1 surgeon and 7 men from the Royal Army Medical Corps and 2 armorers from the Royal Army Ordnance Corps.

The British account follows.

* * *

INTRODUCTION

At daybreak, 19 August 1942, No. 4 Commando, consisting of 252 officers and men, including seven allied* personnel, assaulted the 6-gun battery at Varengeville. The position was defended by an approximately equal number of Germans, with all the advantages of concrete, wire, mines, concealed machine guns, mortars, dual-purpose flak guns, and knowledge of the ground. They had had 2 years to perfect these defenses, and when the time came they fought with the greatest determination. Yet, within 100 minutes of the landings, the position was overrun. The battery and all its works were totally destroyed, and at least 150 Germans left dead on the ground. Prisoners were also taken. British casualties were 45, of whom 12 were back on duty within 2 months.

a. General

Operation "Cauldron" is an outstanding example of what can be achieved by troops armed only with infantry weapons and by gallantry, sound planning, and thorough training.

It is a model of "fire and movement" tactics. Frontal fire pinned the enemy to the ground while the assault troops moved round their flank to a final assembly position, the assault itself being preceded by a final crescendo of fire. The principle of this attack and that of the battle drill taught at the British School of Infantry are the same.

This account is published in order that all may benefit from the story of a stimulating achievement. To obtain full value from it, officers and NCO's should first study it as an indoor exercise and then be told what actually happened on the day.

It should be borne in mind that this is merely an episode in a major operation in which the main brunt of the fighting was borne by the Canadian forces.

*i.e., personnel from other than British units.

b. Planning

The soundness of the plan is a major factor in any success. This observation is true of operation "Cauldron." The plan was simple, flexible, and understood by all ranks. Its thoroughness was based on a detailed study of the information obtained from German dispositions. It was animated by the will to gain surprise.

However, good plans are not enough to command success; they must be completed by skillful and determined execution.

c. Training

Waterloo may or not have been won on the playing fields of Eton; it is certainly much truer to say that operation "Cauldron" was won on the training fields of England. The outstanding features of the training were the:

- (1) Accuracy with which the nature of the various actions was foreseen.
- (2) Soundness of the training program, which resulted in the soldier's meeting the sudden events of the day with the confidence of a highly trained athlete hearing the expected starting pistol for his race.
- (3) Implicit confidence of the troops in their weapons--the culmination of months of practice in all phases of the fire fight.

All operations have special features for which special training is needed. In this one, cliff climbing, the use of scaling ladders, employment of bangalore torpedoes under unusual conditions, and measures for embarkation and reembarkation needed special treatment. This was given until, as in all else, perfection was reached.

A point which most people would miss was the elaborate care with which the seating arrangements in the landing craft had to be made; this was necessary because reorganization on the beaches would have meant death to many. It was not until after a heart-breaking number of trials that the right solution was arrived at.

Details of training are noted in the Appendix.

d. Execution of the Plan

It should be borne in mind that this Commando attack was purely an infantry operation, unassisted by other arms.

The operation brings out, yet again, how much the inflicting of heavy enemy casualties at comparatively light cost to ourselves is due to a sound appreciation of infantry fire power and to the team work, efficiency, and discipline of the troops.

It is interesting to note the high number of Germans killed by infantry weapons while the enemy was behind cover. This success was due to the special training of the troops in "accuracy shooting."

The application of successful mortar fire throughout the operation--the 3-inch from an OP 800 yards in front of the piece, using both wire and radio, the 2-inch boldly used in its correct role--is a lesson to all.

The high number of casualties inflicted by rifles and Bren guns [a light machine gun] fired from the hip at short range during the actual assault was a just reward of the previous careful training.

e. Lessons

Lessons, that should be looked for in the account of the action, are:

(1) Weapons

(a) Rifle

The large number of Germans who fell to our rifles had had their death sentences signed many months before, when the commando struggled to perfection in judging distance and shooting straight.

(b) Sniper

A special mention must be made of the snipers. It was made very clear to the Germans that a stalker with a quick and sure eye, cunning, field craft, and the sniper's rifle with its telescopic sight, can do much to swing the battle against them.

(c) Bayonet

There is something about a bayonet that defeats not only the armchair critic but, what is more important, the enemy. The German has always hated it.

(d) Grenades

AT rifle grenades were useful against enemy behind defenses, but the incendiary bullet was not a success. Its use invariably drew fire. HE hand grenades were useful, though it appears that the Germans can throw their stick grenades farther.

(e) Bren Gun

The Bren gun did what was expected of it. Thanks to concentration on judging of distance, accuracy of fire, and the use of cover, many Germans were killed by Bren fire. Considerable training in firing it from the hip during the assault pro-

duced striking results.

(f) Tracer

It was agreed that the psychological effect of tracer at night is very great. It is necessary that inoculation against this effect should be undertaken without delay. The demoralizing effect of tracer, which always appears to be going to hit you, is very great.

(g) Mortars, 2-inch and 3-inch

Extensive training and practice were undertaken to ensure a high degree of accuracy and speed in obtaining fire effect. During the operation, as the narrative shows, this training probably went far to ensure the successful end of the operation.

(h) Tommy Gun

Extensive training was carried out in the use of the tommy gun in assault and in-fighting. Results obtained were good, but the Bren proved a more effective weapon when used from the hip in similar circumstances.

(2) Minor Tactics

Training in fire and movement was carried out over country similar to that fought over, with special regard to close-country fighting. All personnel were thoroughly prepared for their various parts in all phases of the action. This careful study and preparation was the main reason why such a small infantry force was able to defeat approximately equal numbers of an enemy who was organized behind wire and occupied strong prepared defenses.

Training in the use of smoke at the right time and place, and in suitable quantity, resulted in the saving of many casualties at critical moments.

The success obtained in this operation bears out the principle of thorough and detailed training in the basic infantry tactics-- fire and movement.

PART I THE PROBLEM

a. Object

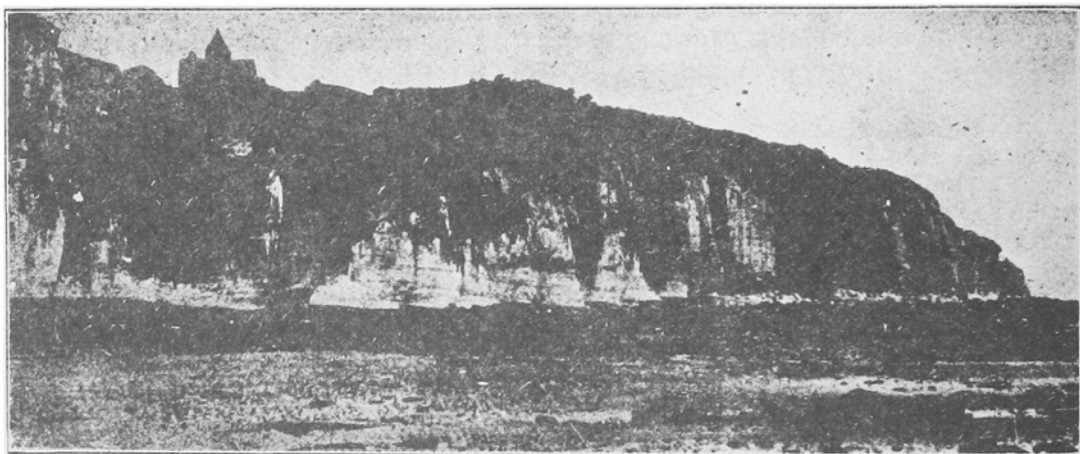
"Cauldron" Force's orders were to destroy the battery near Varengeville with all speed and at all cost. This preliminary operation was essential to the larger plan for the raid on Dieppe, since the battery covered the Dieppe approaches and it was not possible to send in the large landing craft until the battery had been silenced. "Cauldron" Force landings were not to begin before 0450.

b. Ground

The accompanying sketch-map shows all features of significance that could be detected from air photographs.

The battery position near Varengeville (three and a half miles west of Dieppe) is 1,100 yards from the sea. The cliffs are steep and unbroken except at Beach One and Beach Two. At Beach One, two precipitous gulleys led up to wooded country running within 300 yards of the battery. Beach Two, near the mouth of the river Saane, appeared the next possible landing place.

A photograph of the chimney on Beach One is shown below.



c. Defenses

Air photographs showed no indication of defenses along the cliffs or at Beach One.

(1) Beach One

In the battery area, wire could be seen on all sides except to the west. The gun positions (1) were seen to be concentrated. Two light AA guns were located at (2) and (3). Only one MG position (4) was definitely located, but it was expected that others were similarly placed to cover the re-entrant angles of the wire, and the road approaches. A telephone line (5) led from the battery position to the lighthouse. This was thought to be an OP. Last-minute reconnaissance reported two light AA guns (6) in the lighthouse area. The battery area was considerably built over and consequently difficult to interpret. Subsequent events, however, revealed that the intelligence, in general, was correct. Additional information is shown on the sketch map and will be described during the narrative.

Dieppe
3 1/2 miles

GROUP ONE

BEACH ONE

Varengeville-
Sur-Mer

LIGHTHOUSE

St. Marguerite

VARENGEVILLE

0 1/8 1/4 3/8 1/2 mi.

GROUP TWO

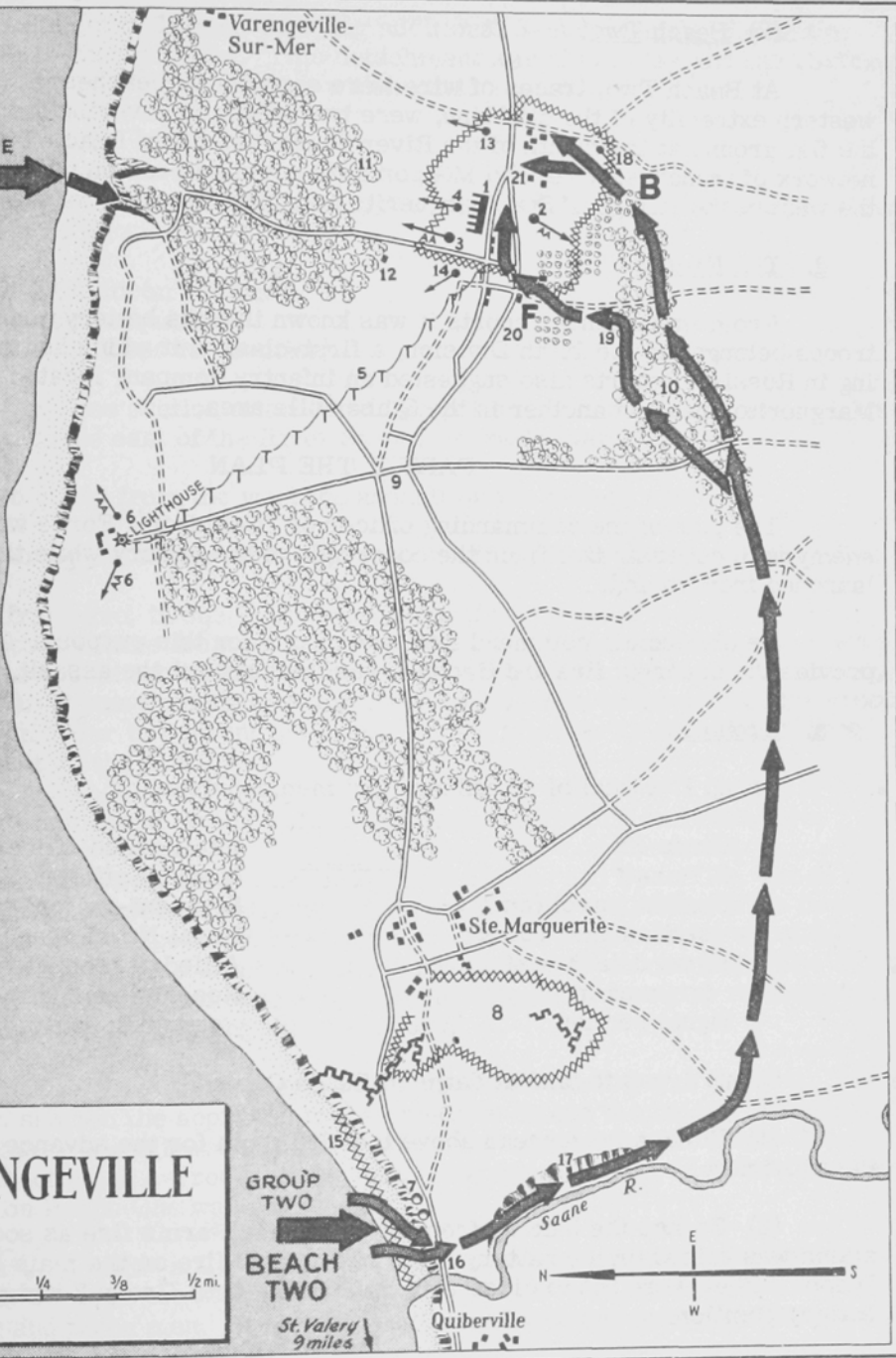
BEACH TWO

St. Valery
9 miles

Quiberville

Saane R.

N E
W S



(2) Beach Two

At Beach Two, traces of wire were seen on the beaches; at (7), at the western extremity of the cliff line, were two pillboxes covering the beaches and the flat ground at the mouth of the River Saane. Inland of Beach Two, a complicated network of trenches, wire, and MG posts (8) could be seen on the high ground to the west of the village of Ste. Marguerite covering the valley of the River Saane.

d. The Enemy

From intelligence reports it was known that the battery and its protective troops belonged to the 110th Division, a first-class unit which had seen hard fighting in Russia. Reports also suggested an infantry company located in the Ste. Marguerite area and another in the Quiberville area.

PART II THE PLAN

The plan of the commanding officer of "Cauldron" Force was to hold the enemy with covering fire from the coast side of the battery while the assault was launched from inland.

He divided his command into two groups for this purpose. Group 1 was to provide the covering fire and Group 2 was to carry out the assault.

a. Group 1

Group 1, a total of 88 officers and men, consisted of:

Group Hq	Intelligence officer
C Troop*	Medical officer
Combat patrol (one	Sergeant-major
section of A Troop)	Royal Naval beach master
Signal detachment	Allied personnel
for mortars	Reserve ammunition
Signal section	carrying party

Group 1 was to land at dawn on Beach One and:

(1) Form a bridgehead above the cliff, both for the advance and to cover the withdrawal.

(2) Engage the battery frontally with small-arms fire as soon as the alarm was raised or the battery itself had opened fire on the main landing at Dieppe. They were not to close with the battery until Group 2 had captured the battery position.

*Troop Hq plus two Sections for a total of three officers, 52 enlisted men.

A detachment of 10 men carrying additional 3-inch mortar ammunition was to be landed after daylight. This detachment was also to lay and light smoke generators on the beach to cover the withdrawal.

b. Group 2

Group 2, a total of 164 officers and men, was to land in two waves on Beach Two. It consisted of:

CO "Cauldron" Force	B Troop
Force headquarters	F Troop
A Troop (less one section)	Allied personnel

A Troop, less section attached to Group 1 as a combat patrol, was to land on Beach Two to the east of the River Saane. Its tasks were:

- (1) To cover from the west the assault on the battery position.
- (2) During the withdrawal, to protect the flank from attack from the west.

The first wave, in one LCA* consisting of a section of A Troop was to land under cover of fire from an LCS** at the east end of Beach Two and overcome any immediate opposition to the landing of the second wave, particularly from the 2 pillboxes (7). It was then to move by the shortest route to the area of the cross-roads at (9), in order to prevent the enemy in Ste. Marguerite from interfering with the assault on the battery.

The remainder of Group 2, in four LCAs, was to land on Beach Two.

The second wave, consisting of B and F Troops and Force Hq, was to follow after a 3-minute interval, slightly farther to the west on the beach. This force was then to move at all possible speed up the valley of the Saane for about 1,000 yards, and then turn east and move 1,900 yards farther to a wood (10). The LCS was to lie off Beach Two and oppose by fire any attempt to bring up reinforcements from the Quiberville area along the coast road.

Alternative plans were prepared for use if the landing was delayed. Their object was to shorten the approach to the objective should the landing take place in daylight. If there was slight delay, the main force was to take the same direct route as the section of A Troop. If the delay was considerable, the landing of the entire force on Beach One was envisaged.

*Landing craft, assault--a flat-bottomed boat approximately 35 ft. long by 9 ft. wide, drawing about 3 feet at the stern. Carries a maximum of 35 men. Crew of one naval officer and three men. Square bows, lowered to form ramp for disembarkation.

**Landing craft, support--a flat bottomed boat of the same size as LCA, not meant to carry troops. No disembarkation ramps. Armed with a 20-mm gun and/or a 3-inch mortar for smoke, and with twin, dual-purpose Lewis machine guns.

c. The Assault

The assault was to be delivered by B and F Troops from the wooded area inland from the battery position. Ninety minutes were allowed for the approach from the beach to the final assembly position. Covering fire was to be provided by C Troop from the front of the position, and A Troop. A squadron of four-cannon Hurricanes was to "shoot up" the battery position at H+90. The signal for the assault was three white Very lights supplemented by radio messages.

d. Points in Planning Worth Noting

(1) During the approach to the beach, the landing craft were to provide covering fire for the initial landing if required. This responsibility rested jointly on the military personnel with their automatic weapons and on naval crews with stripped Lewis machine guns.*

(2) All papers and means of identification, other than identity disks, were to be removed from personnel.

(3) Weapons and Equipment

(a) All personnel, except C Troop, carried their normal weapons. C Troop carried two extra light machine guns and an antitank rifle, together with four grenade launchers and four sniper's rifles with telescopic sights.

(b) Grenades were to be primed, magazines filled, and all arms and equipment checked in daylight the day before the operation.

(c) Ammunition and explosives to be taken were considerable, and therefore had to be widely distributed; no rations or canteens could be carried. One thousand rounds of .45 and 1,000 rounds of .303 reserve ammunition were to be landed on Beach One, and, in addition, 3,000 rounds of reserve .303 remained in LCAs. HE grenades were carried by all riflemen, and a useful number of smoke grenades were taken. Incendiary mortar bombs and bullets were also carried. Made-up explosive charges were to be carried for destroying the guns and installations.

(4) Communications

Radio communication was to be established between the two group Hqs and to all Troops. Portable radio sets were used. Communications worked excellently. In addition, nets manned by attached personnel were established from Beach One to the beach used by the Canadians on the left flank, and between Force Hq and the naval landing craft.

*Naval crews have their primary task in working the craft and, therefore, covering fire should normally be provided by the military personnel in the craft.

PART III THE NARRATIVE

a. Group 1

At 0430 hours Group 1 was approaching Beach One. The lighthouse was flashing, but a few minutes afterwards it suddenly cut off and a few seconds later some white star shells went up from the semaphore tower beside the lighthouse. The LCA commander was asked to increase speed if possible, since surprise had apparently been lost. It was not easy to see the beach, but the flare from the lighthouse had served as a useful navigational guide, and greater precision was obtained by recognition of two white houses on the cliff which had been memorized from air photographs.

The two LCAs went in according to plan, and, by the sound seamanship of the Navy, arrived within a yard of the correct place. Troops disembarked in successive waves, and because of the prearranged plan for seating in the LCAs, no reorganization was necessary on landing. Troops stepped ashore onto dry land. Previous experience had shown that automatic weapons and particularly tommy guns are likely to jam after a wetting. As it was, one Bren gun, which had been kept pointing over the bows of one of the LCAs, had been splashed by a wave and was very sluggish until the lubrication warmed up.

It was high tide, and in less than a minute the whole of Group 1 was under the cliffs. The leading sub-section of C Troop started up the east cleft, but returned very soon to report that it was impassable. It was partly filled up by rocks from the cliff and was also very heavily wired. The west cleft was then tried, and two bangalore torpedoes were blown in the wire which also choked this exit. It was realized that the use of explosives was likely to sacrifice surprise, but progress otherwise was impossible, and time was of paramount importance.

Fortunately the explosions coincided with heavy firing farther down the coast and were not apparently heard at the battery position. Successfully negotiating the cleft, the group pushed on as fast as possible with their first task. No. 1 Section, C Troop, went forward to the front edge of the wood facing the battery, after searching some houses on the way. From No. 2 Section, one sub-section searched all the remaining houses and ground in the immediate vicinity of Beach One, while the second sub-section guarded the bridgehead around the gulley.

A Troop's fighting patrol, after cutting the telephone line from the lighthouse OP, worked round to the right of the battery and, after C Troop went into action, engaged the gun sites from windows of adjoining houses with accurate small-arms fire at a range of about 250 yards. This patrol also silenced the flak gun at (3), killing three successive gun crews. One section of C Troop entered a small salient strip of scrub (11) facing the forward wire of the battery 250 yards in front of them. Some of the enemy, including what appeared to be a cook in a white suit, were standing about unconcernedly, thus suggesting that complete surprise had been achieved.

The mortar OP was established, and the linesman went back uncoiling the wire; the time was now 0530 hours. Owing to an error of judgment on the part of the corporal in command of the mortar, who moved his weapon further forward than necessary, time was lost, and it was able to open fire only just before the final assault. Wire communication failed, and communication from the mortar OP was from the group commander's radio to C Troop radio, an arrangement which had already been anticipated and practiced.

By 0540 hours No. 2 Section of C Troop was in position between (11) and (12), and the battery was being heavily engaged by small-arms fire. The three Bren guns fired in short bursts on a prearranged plan, only one gun firing at a time; it was necessary to weigh the conflicting claims of making the maximum display possible from this direction and at the same time conserving ammunition. Each gun had 16 magazines [1 magazine holds 30 rounds] of which about 12 were fired. One was continually in action in a position in long grass only 150 yards from the battery and was not observed. Three men with sniper's rifles did excellent work. One of them, wearing suitable camouflage and with his face and hands painted green, crawled forward to a fire position 120 yards from the gun emplacement. These snipers had been supplied with incendiary bullets, as well as ball ammunition, to fire at the wooden battery buildings. This arrangement was probably a mistake, since the chances of setting a house on fire with an incendiary bullet are small, and their use seldom failed to draw fire. All three enemy MG positions at (4), (13), and (14) were successively silenced by the accurate shooting of these Bren gunners and snipers. The antitank rifle was used against all buildings from which fire appeared to be coming, but it was hard to judge its effectiveness; 60 rounds were fired by the gunner, mostly rapid at the flak tower (2) in rear of the gun sites. The gun emplacements were out of range, but an AT grenade was fired through the window of a house to silence a sniper. A short time after the enemy had been engaged with small-arms fire, the 2-inch mortar arrived. The first bomb fell short, but the second hit one of the powder dumps behind the guns and a blinding flash resulted. The time was now 0607 hours and the battery never fired again. All efforts to extinguish the fire were prevented by accurate small-arms fire.

The fire travelled and other powder dumps exploded, severely burning the German gun crews. The 2-inch mortar continued to give accurate fire behind the gun emplacements. Small-arms fire and mortar fire (with smoke just before zero hour for the assault) continued until the assault signal went up about 0630 hours. A few minutes later a German 81-mm mortar, firing from east of the battery position, got the range just as the mortar crew was beginning to withdraw, and the first three casualties occurred. Hitherto, enemy fire (mortar, heavy MG, and horizontal flak) had been consistent but inaccurate, being mostly too high. It is thought that when the 2-inch mortar position started to fire smoke, it was given away by the trails that these bombs leave while passing through the air.

Meanwhile, the remainder of C Troop had searched all the houses above the beach and the surrounding cover, killing enemy snipers. The telephone line from the lighthouse OP to the battery had been destroyed. The five or six salvos fired by the battery at the shipping off Dieppe all fell short; their failure was probably due to the cutting of this line.

Attention must now be turned from this success to the flank attack of Group 2.

b. Group 2

The five LCAs and one LCS containing Group 2 also increased speed when the white star shells went up from the lighthouse at 0430 hours. As A Troop (less one section) disembarked and began to cross the heavy beach wire (15), they came under mortar and machine-gun fire and had four casualties. The remainder of the group at once began to go ashore 150 yards farther up the beach, using chicken wire to get across the wire. They also came under fire and received eight casualties. The enemy used a concentration of tracer ammunition which, in the half light, had a most unpleasant effect on men not accustomed to it. There seems to be some doubt whether this fire was coming from high ground west of Ste. Marguerite or from the Quiberville direction, or from both. Most of the casualties were from the mortar--which, fortunately, soon lifted and continued firing at the retreating landing craft. Two medical orderlies remained with the wounded. One was taken prisoner with them; the other escorted three walking wounded along the cliff top to Beach One. One officer, leaving his boat, was hit by mortar fragments, his right hand becoming useless. Nevertheless he went on, and led a charge in the final assault on the battery, using his revolver and grenades with his left hand and accounting for a number of the enemy. He subsequently was decorated. A radio lance-corporal [private first class] was stunned by the same bomb. He recovered consciousness 10 minutes later, and, knowing the plan and that he was of major importance as being the only radioman in his section, he pulled himself together and rejoined his section, by this time in the wood. He arrived in time to give Force Hq the necessary situation report before the assault signal. A private, under heavy fire, climbed a telegraph pole and with his wire-cutters cut lateral communications along the coast; he was awarded a decoration.

As the troops were getting over the wire, three Boston [A-20s] aircraft passed overhead and drew enemy fire from the commando, who rushed to (16) and, crossing the Quiberville-Ste. Marguerite road, proceeded at the double along the east bank of the River Saane, in accordance with the plan. B Troop was in the lead, followed closely by Force Hq, then F Troop. Arrangements had been made to cover this advance with smoke if they were fired at from high ground near Quiberville. It was easy to keep direction, below a steep bank (17) that defiladed them from Ste. Marguerite and with the river on their right. The going, mostly through long grass, was heavy, since the river had overflowed its banks. The bend in the river where the force was to swing east was also easily identified. By this time it was 0515 hours and broad daylight.

The ground from the river to the southwest corner of the wood (10) was more exposed, though not devoid of cover. The more open spaces were crossed in open formation by bounds. By this time Group 2 could hear the heavy volume of small-arms fire with which C Troop were engaging the battery, and soon afterward the roar of the powder explosion, and the sheets of flames clearly visible above the trees, increased their confidence that all was going well.

On reaching the wood (10), B and F Troops divided according to plan and made their way toward their assembly areas.

B Troop moved forward inside the southern edge of the wood and then filtered through the orchard by sub-sections. Using cover, they approached the perimeter wire, where they came under inaccurate fire from a machine-gun position (18), the AA gun at (2), and from various buildings. From there on, they advanced by fire and movement with covering smoke. One machine gun was stalked and silenced with a grenade. They reached their assembly positions, just short of the main battery buildings, and reported at H+95 that they were ready for the assault.

F Troop went through the wood to (19), where they advanced under cover of smoke due north, on either side of the road, to the corner of the perimeter. Here a sergeant records that a number of Germans were surprised in a farmyard, while organizing a counterattack on C Troop. They were killed with tommy guns. Vigorous opposition was encountered from the buildings and enclosures just inside the perimeter wire, and several casualties were sustained. The troop commander was killed by a stick grenade, and one of the section officers was mortally wounded. The sergeant took over but was also killed. The third officer took over command of the troop, and, though shot through the thigh in the final assault on the battery, led his men in bayonet charges from one gun site to another. He was subsequently awarded the Victoria Cross. The troop first-sergeant was also badly wounded in the foot, but continued to engage the enemy in a sitting position; he received a decoration. Fighting their way forward and overcoming resistance, F Troop reached their line of departure for the final assault under cover in a ditch along the road immediately behind the gun emplacements.

Force Hq consisting of the commander, adjutant, two runners, three radio-men with 3 radios, and a protective section of four tommy gunners from the commando orderly room had moved forward to the northwest corner of the wood, where a heartening situation report was received from the commander of Group 1. From the same area, the section of A Troop attached to Group 1 also reported that they were in a position west of the battery position at about (20) and had inflicted heavy casualties. Force Hq now moved behind and between B and F Troops near the road junction (21), where the commander contacted officers commanding B and F Troops. The time was now H+95. During this move forward, being mistaken for the enemy, the Force Hq came under heavy fire from a section of F Troop. Radio was used to stop the fire.

At H+90, exactly on time, a low-level cannon attack on the gun sites and battery position was made by a Hurricane squadron. This attack was only partly successful, as the squadron came in mixed up with Focke-Wulfs.

The assault signal was given at about H+100. B Troop rushed the buildings to the right of the gun sites, and F Troop the gun sites themselves. The charge of F Troop went in across open ground under fire, overrunning strongpoints, and finally ended on the gun sites themselves, where all the crews were grenaded, shot, or bayoneted. B Troop had a somewhat easier task in the assault. Odd enemy

groups were overcome in underground tunnels, in the battery Hq, in the cookhouse, and in outbuildings. Two German officers were killed after a rousing chase from one house to another. The guns (both barrels and breech blocks), instruments, and most of the subterranean supplies and ammunition dumps, were blown up by F Troop. B Troop was responsible for mopping-up and for all-around defense. The gun emplacements afterwards were a remarkable sight. Dead Germans were piled high up behind the sandbag breastworks which surrounded the guns. Many of them had been badly burned when the powder had been set afire in the early stages of the operation. Bodies of men who had been sniped by C and A Troops lay all around the area, in and out of bunkers, slit trenches, or buildings.

Isolated resistance from pillboxes caused a further half-dozen casualties, since all strongpoints were enfiladed from one section of the wire to another (the perimeter covered some 50 acres); when one position was stormed and the crews killed, the commando personnel engaged came under heavy fire from the next position. Isolated snipers continued to resist from cover outside the gun emplacements. It was noted that they picked off single men moving by themselves, but appeared unwilling to unmask their position during mopping-up operations if two or more men exposed themselves simultaneously. Good use of smoke generators was made at this stage, and the smoke grenades, which explode on impact, proved particularly successful. Union Jacks for captured positions proved useful as recognition signals. The last survivors, like all the enemy encountered, fought well.

It may not be out of place to note that "Cauldron" Force Commander considers that the success of the operation was chiefly due to the excellent leadership of junior officers and to superior weapon training.

PART IV THE WITHDRAWAL

While the guns were being blown up, the force commander ordered the medical officer and stretcher bearers by radio to come up from the beachhead to the battery position. F Troop, Force Hq, and B Troop, when the demolitions and mopping-up were finished, moved successively down to Beach One, carrying their wounded and guided by elements of C Troop who were covering the withdrawal.

Meanwhile A Troop, acting as left flank guard, ambushed and shot up an enemy patrol coming from Ste. Marguerite. As an example of bad training, it is worthy of note that the enemy advanced points were too close together, and that the shot that sprang the ambush passed through the bodies of the two leading Germans.

It took some time to get the wounded through the wire, and time might have been saved had the gaps through it been widened while the operation was in progress. During the evacuation an enemy mortar began to shell the beach, but the 3-inch mortar, which had already been put in position on the beach to cover such an eventuality, returned fire, judging the position of the enemy weapon by the line of flight of the approaching bombs. This enemy mortar did not fire again. C Troop, forming the rear guard, was the last to withdraw, and did so in accordance with a frequently rehearsed drill whereby the light machine guns in pairs leap-frogged

one another, while the rear elements put up a smoke screen. Haversacks containing smoke generators had been dumped for this purpose by the troop at the top of the gulley on their way up. The withdrawal across the rocks to the LCAs was made through a lane of smoke some 200 yards wide, produced by the smoke generators placed in position during the operation. The lane was extended for about 50 yards into the sea by naval smoke floats put out by the LCS and LCAs. When the LCAs were a few hundred yards out, and no longer under the lee of the cliffs, they came under inaccurate machine-gun fire from the vicinity of the lighthouse, and further use was made of smoke until out of range.

The total casualties of the operation were 45:

Officers killed	2	Enlisted men wounded	17
Officers wounded	3	Enlisted men wounded	
Enlisted men killed	10	and missing	9
Enlisted men missing	4		

No casualties were suffered during the withdrawal. Of the 20 evacuated wounded, several had carried on right through the action; 12 of the 20 wounded were back on duty within two months.

APPENDIX

TRAINING

The success of this operation was due to thorough training in all subjects. the last 3 weeks before the operation were spent in an intensive refresher course, each troop specializing for the part it was going to undertake.

The following training was carried out:

a. Individual Training

(1) A Troop

Cliff climbing with scaling ladders. Fire and movement in close country. Practice fire against full-scale model of the enemy battery. Combat patrols. Street fighting.

(2) B Troop

Fire and movement in close country. Use of ground. Full-scale practice against model of enemy battery. House-to-house fighting and assault tactics; in-fighting with tommy guns, grenades, and bayonets. Mopping-up and consolidation. Rear-guard action.

(3) C Troop

Forming a bridgehead. Snipers' training. Stalk and crawl. Taking up position in front of full-scale perimeter. Firing AT rifle grenades from grenade

launchers. Mortar practice, 3-inch and 2-inch (3-inch mortars were also fired from a beach). It is of interest to note that the standard of training reached by these mortar men was such that they had scored 18 hits out of 20 rounds into a space 10 yards square, at 250 yards' range. Radio in conjunction with 3-inch mortar. A fighting withdrawal and final reembarkation (1) with smoke, (2) under fire.

(4) F Troop

Assault of a model of the battery's position. Visits to local coast defenses by Troop NCO's and sappers. Component parts of guns and other equipment. Laying of charges. Assault tactics and combat firing.

b. Collective Training (All Troops and Force Hq)

Hardening exercises, physical training with weapons. Swimming. One-mile runs every morning before breakfast. Doubling fully loaded over specified distance in wet clothes. Assaulting over set distance on full-scale model. Crossing beach wire with chicken wire. Use of bangalore torpedoes. Fire and movement on the range; battle drill with live ammunition, bayonet fighting, and unarmed combat. Detailing of "smoke men" with 100 percent reserves and training in laying smoke. Practice in withdrawal, first as a drill, then with smoke, opposition, and casualties. Evacuation of casualties at all stages, e.g., from objective to beach, from the beach into LCAs, from LCAs into parent ship. Accommodation on parent ship and in LCAs by day and by night. Landing from LCAs first as a drill, then with full supplies and equipment. Loading of LCAs with ammunition, explosives, scaling ladders, etc. Firing of light machine guns from LCAs. Use of radios (all officers, NCOs, and runners). Practice of each troop's own role on full-scale model daily. Training in special equipment, i.e., canvas containers and bags to keep weapons and radio sets dry, special bangalore torpedoes, demolition charges, smoke grenade, and Everest carriers.* Personal camouflage, and security. French and German lessons.

* [A type of individual pack.]