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TACTICAL AND TECHNICAL TRENDS

No. 30
29 July 1943

Prepared for

ARMY GROUND, AIR, AND SERVICE FORCES

by

MILITARY INTELLIGENCE SERVICE,

WAR DEPARTMENT

[redacted]

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SECTION I

AIR

1. ITALIAN MACCHI 205

A report recently received of the first examination of the Macchi 205, a new Italian single-seat fighter, indicates that this plane is structurally identical with the 202 (see Tactical and Technical Trends, No. 22 p. 1) and not easily distinguishable from it. It is a single engine, low wing monoplane, with a moderately-tapered wing, and camber-changing flaps inter-connected with the ailerons. There is an adjustable stabilizer, and the landing gear retracts hydraulically inward.

As was anticipated, the basic Macchi 202 (see sketch) airframe has been retained, but a somewhat surprising development was the installation of a Daimler-Benz 605 engine similar to that in the Me-109G instead of a reported new Italian Isotta-Fraschini in-line engine, suggesting that the latter may not have been a success. The D.B. 605 A-1 engine fitted in the MC-205 examined was built by Fiat, under license.

Armor protection is the same as on the 202, with the pilot's shaped one-piece bucket seat of the same dimensions and thickness of 8 mm. Also the head piece of 8 mm, which fits the back of the head fairing, is the same. There is a 2 inch laminated, bullet-proof windshield. A semi-circular section of plate, 8-mm thick and 10 inches high by 22 inches wide, is attached to the top of the front end of the gasoline tank, behind the pilot's head, effectively covering and overlapping the 7-inch gap between the seat back and the head piece.

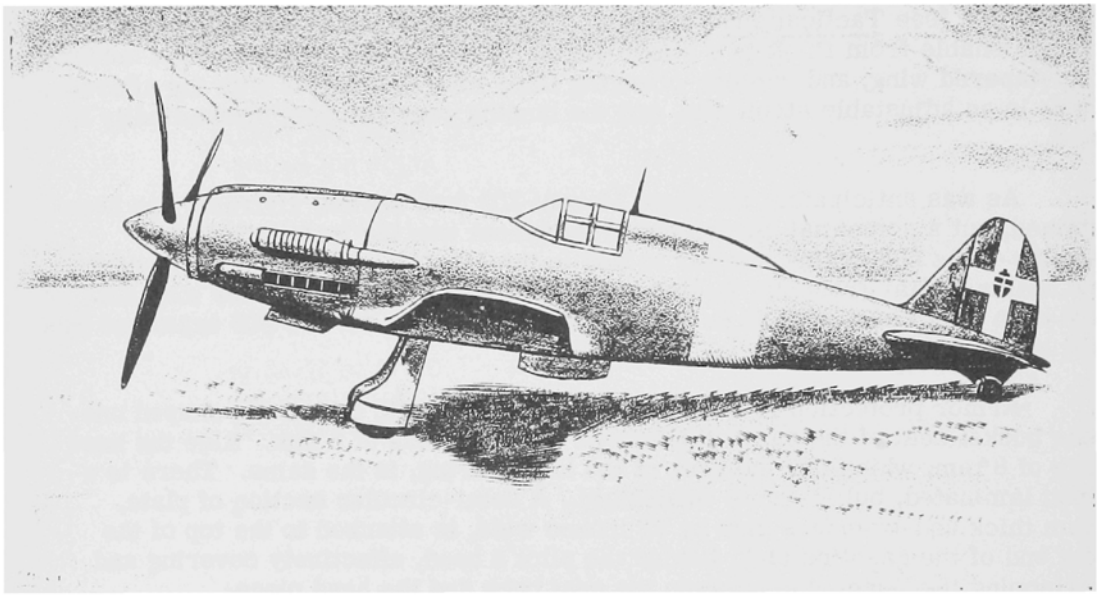
Fuel capacity of the 205 is the same as the 202, there being one tank immediately behind the pilot's head, one beneath his legs, and one small tank in each wing root.

The original armament of the 202, consisting of two 12.7-mm Breda machine guns on fixed mountings above the motor, with centers 14 inches apart, has been increased in the 205 by the installation of two 7.7-mm Breda light machine guns, one in each wing at a point 11 feet 7 inches from the wing tip, the muzzle being recessed 2 inches behind the leading edge. Ammunition capacity for the 12.7-mm machine guns is the same as for the MC-202, 350 rounds per gun. Each 7.7-mm gun is fed from a container, housed below the skin of the upper surface of each wing, outward towards the wing tips. The container is 2 feet 3 inches long by 8 inches deep by 3 inches wide. Further unconfirmed reports suggest that later models may be equipped with a 20-mm shell-gun.

No bomb carrier or bombing equipment were fitted, but it is reported that two 220 pound bombs can be carried.

All radio equipment had been removed from the aircraft examined, and most of the other instruments, but the cockpit layout appeared identical to that of the MC-202. The control column was marked "202". A control box found, indicated the use of B .30 type radio, but without the direction finder, the relative switch being locked at "off". Racks in the fuselage showed that the transmitter and receiver had been fitted.

Although the MC-205 has not yet been identified in any substantial numbers, it appears likely that this is due to its resemblance to the 202 and that in fact they are operational in the Mediterranian at the present time. As it is one of the latest



Italian fighters, it may well be that the Italians have finally abandoned their concept of a 2-gun fighter, and are making the addition of wing-guns a standard modification.

ANTIAIRCRAFT

2. GERMAN 105-MM ANTIAIRCRAFT GUN

The 105-mm gun, of which two models (10.5-cm Flak 38 and 39) are in service, is a standard German heavy antiaircraft gun. The gun is produced in both fixed and mobile versions, and is also mounted on railway mounts.

In the antiaircraft role the gun is controlled from a command post equipped with a director. A telescopic sight is provided for fire against ground targets. The gun, though reliable and well made, has the following disadvantages:

Excessive weight--about 14 tons in traveling position
15 to 20 minutes necessary to bring the gun in and out of action

a. General Data

Muzzle velocity	2,890 f/s
Maximum horizontal range	19,100 yds
Maximum vertical range	36,700 ft
Maximum effective vertical range	31,000 ft
Rate of fire	10 - 15 rpm
Length of piece	21.8 ft (61 cals)
Length of bore	18.2 ft (52.7 cals)
Twist of rifling - increasing	Angle not known
No. of grooves	36
Width of grooves	.217 in
Depth of grooves	.051 in
Width of lands	.142 in
Elevation	-3° to +85°
Traverse	360°
Recoil	30.71 to 35.43 in
Weight in action	11 tons (approx)
Weight in traveling position	14 tons (approx)

b. Ammunition

Three types are fired:

(1) H.E. shell with time fuze; this shell is used for antiaircraft and is fitted with the same clockwork fuze as that used with 88-mm antiaircraft ammunition.

Weight of complete round	58.3 lbs
Weight of projectile (fuzed)	33.2 lbs
Weight of bursting charge (trotyl)	3.3 lbs
Weight of propellant (diglycol)	10.9 lbs

(2) H.E. shell with percussion fuze

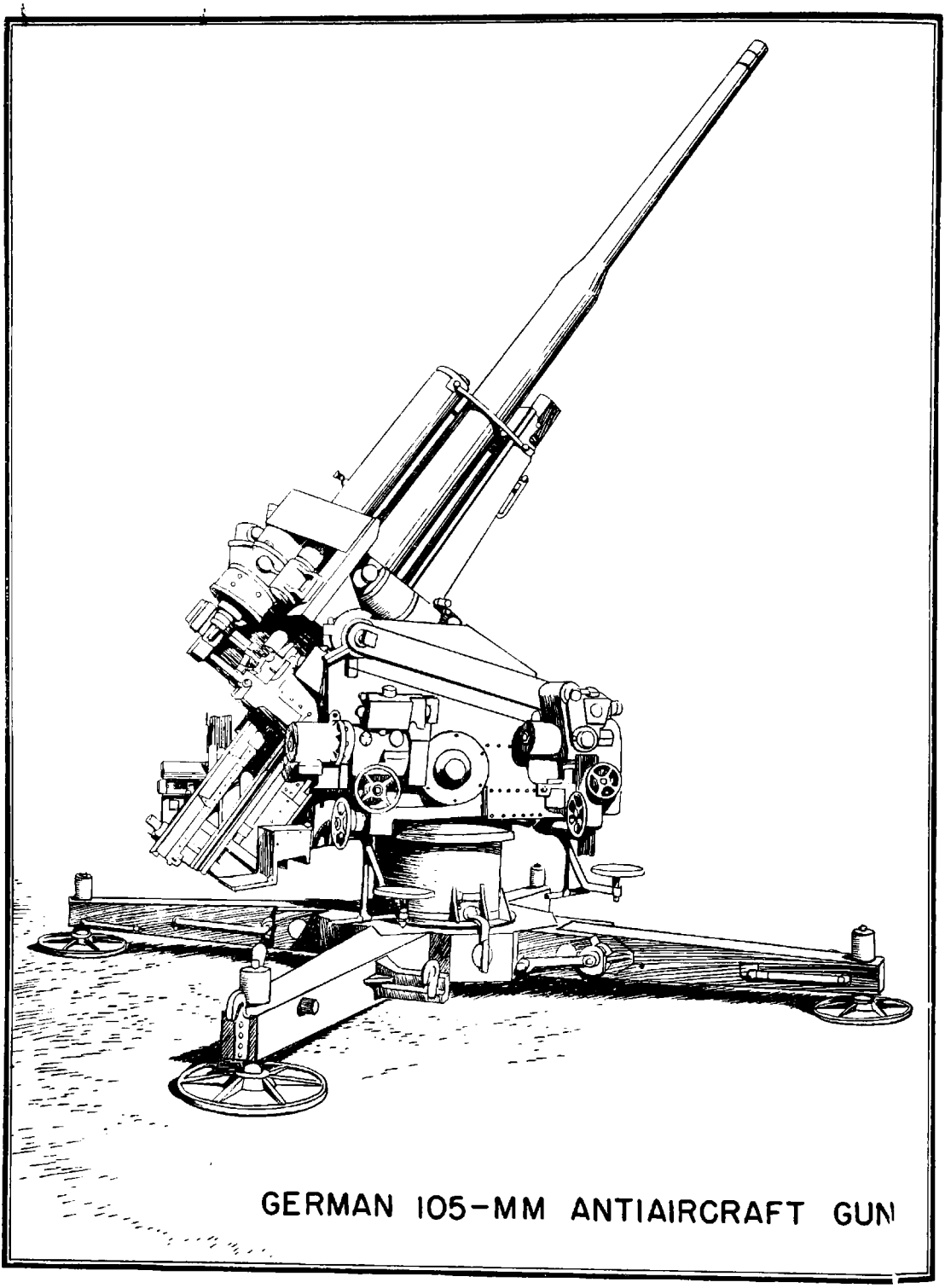
(3) APCBC* shell

c. Penetration Performance

The following are estimated penetration figures for the weapon firing APCBC shell against homogeneous armor:

Range (yards)	Thickness of Armor 30°	Normal
1,000	5.53 in	6.54 in
1,500	5.16 in	6.06 in
2,000	4.78 in	5.65 in

*Armor-piercing capped, with ballistic cap



GERMAN 105-MM ANTIAIRCRAFT GUN

d. The Piece

Information regarding the piece is at present fragmentary. The breech is horizontally sliding and semi-automatic. The breech mechanism is automatically cocked as the gun moves back into battery, and the electrical firing circuit is completed by the closing of the breech.

e. The Carriage

The carriage has two side arms which are folded up for transport. A boss joins the main body of the carriage to the upper mount, which rotates on the boss by means of a traversing plate and a shaft which is connected to the traversing mechanism. The traversing and elevating gears have two speeds for manual operation; provision is also made for power operation.

f. Automatic Fuze Setter and Loading Mechanism

Both the fuze setter, which is fixed to the gun, and the loading mechanism are power operated.

The loading mechanism consists essentially of two trays. The loader places the round in tray 1, which is automatically gripped by the fuze setter. The loader then operates a handle on tray 1 which causes the fuze setter to release the round and transfers it to tray 2. Tray 2 moves automatically into position behind the breech and the round is loaded. As the round goes forward the rim of the cartridge case strikes a cam on tray 2, thus returning it to its original position.

g. Power Supply

Each gun battery is provided with an 8-cylinder gasoline engine which drives a DC generator producing:

Voltage	220
Amperage	200
Power	24 kw.

From the generator the current is led to a central distributing box whence it is supplied to the guns. Each gun has four electric motors as follows:

	Voltage	Power (kw)	Rpm
Elevation	220	1.5	1,200
Traversing	220	1.1	1,050
Loading	220	1.0	1,420
Fuze setting	220	0.1	1,400

3. GERMAN GUN-FIRE DEFENSE AGAINST LOW-FLYING HOSTILE AIRCRAFT

In Tactical and Technical Trends, No. 14, p. 8, the question of putting up a defense against attacking enemy aircraft indicated how the use of every weapon capable of pointing skywards was found to be the best means of meeting such attacks.

According to a translated German document, reprinted below, emphasis is placed on the heavy losses occasioned in men and materiel by fire on low-flying aircraft by infantry weapons, including the rifle. The translated document reads as follows:

* * *

Attacks by low-flying hostile aircraft have repeatedly caused serious losses. Despite this, units often fail to take advantage of the opportunity to destroy hostile aircraft. Lack of a defense of any kind often facilitates the enemy's accomplishing his mission.

Yet it has been proved that heavy losses in men and material are caused by fire from infantry weapons. Aircraft are very fragile and are grounded for a considerable time by hits in the motor, fuel tank, magazine, wiring etc. A considerable defensive effect is already accomplished when the pilot is impeded in directing his fire, or when his aircraft is damaged.

Hostile pursuit bombers frequently approach in low flight and start to gain altitude only shortly before their attack. Therefore, they cannot be picked up by our air raid warning sentries early enough to permit our own fighters to arrive on time. The fire of all available weapons, including the rifle, is at that time and in these cases, the most effective antiaircraft defense.

How is the attack by low-flying aircraft repulsed?

The coordinated fire of all weapons not being employed in the ground fight offers the greatest possibility of defense.

Officers of all grades are responsible for the immediate and energetic defense against attack by low-flying aircraft. They are the first to open fire on the flying target. Antiaircraft fire is best opened with a salvo. The defense is continued with rapid rifle fire. The attacking aircraft is thus met by a hail of steel. No aircraft is invulnerable! Therefore, here, also, attack is the best defense.

Rifle fire directed at aircraft flying above 2,000 feet is not effective and only serves to reveal your own position to the enemy.

Every soldier - no matter what arm of the service - must be indoctrinated with the firm will to shoot the attacker out of the sky.

4. ATTACK AGAINST GERMAN HEAVY TANK--PZKW 6

Construction details about some of the features of the new German heavy tank have already been described in Tactical and Technical Trends (see No. 24, p. 6 and No. 20, p. 7).

The following report by an observer on the Tunisian front furnishes some comments as a guide to training in antitank action against this tank.

It appears that the first of these tanks to be destroyed in this theater were accounted for by British 6-pounders (57-mm). An account of this action, as reported by a British Army Officer, follows:

"The emplaced 6-pounders opened fire at an initial range of 680 yards. The first rounds hit the upper side of the tank at very acute angles and merely nicked the armor. As the tank moved nearer, it turned in such a manner that the third and fourth shots gouged out scallops of armor, the fifth shot went almost through and the next three rounds penetrated completely and stopped the tank. The first complete penetration was at a range of 600 yards, at an angle of impact of 30 degrees from normal, through homogeneous armor 82-mm (approximately 3 1/3 inches) thick. Ammunition used was the 57-mm semi-AP solid shot.

"One element of this action contains an important lesson that should be brought to the attention of all AT elements and particularly tank destroyer units.

(a) "The British gunners did not open until the enemy tank was well within effective range.

(b) "In addition to opening fire with their primary weapon--the 57-mm--the AT unit also opened with intense light machine-gun fire which forced the tank to button up and in effect blinded him. His vision apparently became confused and he was actually traversing his gun away from the AT guns when he was knocked out for good.

(c) "Once they opened fire, the British gunners really poured it on and knocked out one more heavy tank and six PzKw 3s. Also, for good measure, one armored car."

The conclusions to be drawn from this action, according to the British officer quoted, are:

(a) "The unobstructed vision of the gunner in a tank destroyer gives him a very real advantage over his opponent squinting through the periscope or narrow vision slits of a tank.

(b) "The tank destroyer unit must force the enemy tank to 'button up' by intense fire from every weapon he has, including machine-guns, tommy guns, and rifles."

The size and weight of a tank such as the PzKw 6 present many problems. It has been indicated from unofficial enemy sources that extensive reconnaissance of terrain, bridges, etc., was necessary before operations with this tank could be undertaken. Bridges have to be reinforced in many cases, and soil conditions must be good for its effective operation. It can therefore be assumed that its field of operation is limited.

Reports so far indicate that the use of this tank is chiefly to support other armored units, including employment as mobile artillery. As a support tank it is always in rear of lighter units. In one reported skirmish in Tunisia, the lighter units formed the spear-head; as soon as enemy tanks were decoyed into range the lighter tanks fanned out, leaving the heavier tanks in the rear to engage the enemy units.

The PzKw 6 is now considered a standard German tank. Present production figures are believed to be at a maximum of 800 per month.

ARMORED

5. GERMAN SUBMERSIBLE TANKS

The delays and difficulties involved in the transport of tanks across the rivers of Eastern Europe have no doubt forced the Germans to consider very seriously all possible devices for enabling their standard tanks to cross such water obstacles under their own power.

a. The PzKw 3

By the summer of 1941, the weight of the PzKw 3 had already been increased by the fitting of additional armor, and it must have been clear that future developments in armor and armament would necessarily involve still further increases in the weight of this tank. While the trend towards increased weight was in many ways disadvantageous, it was definitely helpful in overcoming one of the major difficulties hitherto encountered in adapting standard tanks for submersion, namely the difficulty of obtaining sufficient track adhesion.

It is therefore not surprising that the Germans, in the early stages of their campaign in Russia, were actively experimenting with standard PzKw 3's modified for submersion. These experiments met with a certain degree of success, and under-water river crossings are reported to have been made with these modified tanks under service conditions. The measures employed, according to a Russian source, included the sealing of all joints and openings in the tank with india rubber, and the fitting of a flexible air pipe, the free end of which was attached to a float. The supply of air for the crew as well as for the engine was provided for by this flexible pipe. The maximum depth of submersion was 16 feet and the time taken by trained crews to prepare the tanks was about 24 hours.

In April 1943, a PzKw 3 Model M examined in North Africa was found to be permanently modified for immersion, if not submersion. There was no mention in the report on this tank of a flexible pipe with float, but this may have been destroyed, since the tank, when examined, had been completely burnt out.

The engine air louvres were provided with cover plates having rubber sealing strips around their edges. These cover plates, which were normally held open by strong springs, could be locked in the closed position before submersion. After submersion, the springs could be released by controls from inside the tank. When submerged, air for the carburettor and for the cooling fans was apparently drawn from the fighting compartment. If, therefore, a flexible pipe were used with this tank, no doubt its purpose would be to supply air to the fighting compartment to replace that withdrawn for the carburettor and cooling fans. The two exhaust pipes led to a single silencer mounted high on the tail plate with its outlet at the top. This outlet was fitted with a spring-loaded non-return valve, which during normal running could be secured in a fully open position.

b. The PzKw 6

More recently still, documents and reports from Russia have shown that the standard PzKw 6 is equipped for submersion to depths of up to 16 feet. In this tank there is provision for hermetically sealing all joints and openings, the doors and covers being provided with suitable rubber seals. The radiators are separated from the engine by a water-tight partition so that, when the tank is submerged, they can take in water from outside the tank, with the cooling fans switched off. Carburettor air in this case is drawn through a flexible pipe, the free end of which is supported by a float, but there appears to be no additional supply of air for the crew. A small bilge pump is also fitted to dispose of any water which may leak into the hull through the various seals, packings and stuffing boxes.

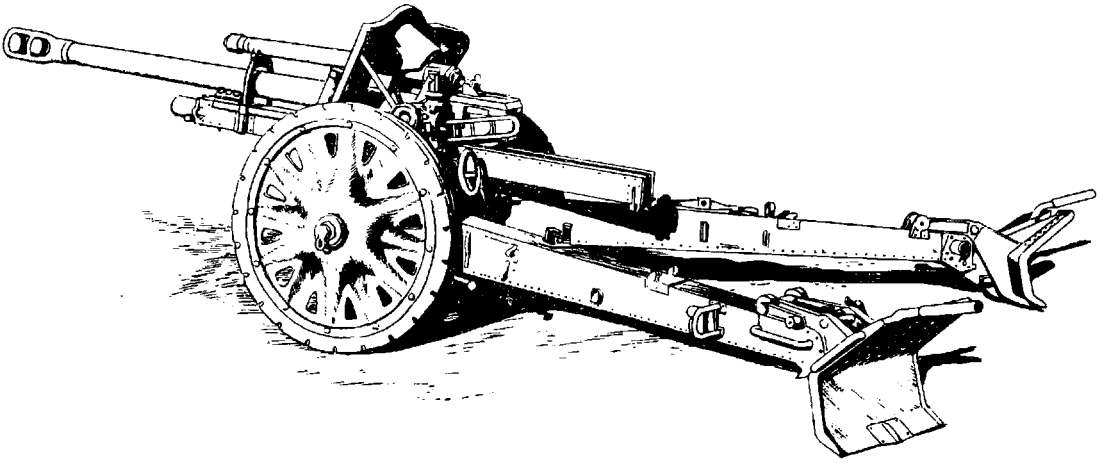
It is clear that the PzKw 6 requires only the minimum amount of preparation by the crew before submersion and that its design must have been influenced from the beginning by the requirement that it should be readily submersible. It is quite possible that the PzKw 6 could be submerged to greater depths than 16 feet if it were fitted with a longer air pipe, since, although this tank is little larger than the PzKw 3, it is nearly three times as heavy, and track adhesion is unlikely therefor to be a serious problem.

ARTILLERY

6. NEW GERMAN 105-MM GUN-HOWITZER

The standard German light field artillery piece is the 105-mm gun-howitzer, generally similar in appearance to the U.S. 105. It weighs about 5 1/2 tons, fires a projectile weighing about 32 pounds, and has a maximum range of about 11,000

yards. The German designation for this gun is "10.5-cm L. F.H."* 18." A few months ago, however, what appears to be a modification of this weapon was captured in Africa; it is believed to be the "10.5-cm L. F.H. 42." The "42" may also exist as a self-propelled gun; if so it is the first German field artillery piece so mounted.



NEW GERMAN 105-MM GUN-HOWITZER (18M)

In external appearance the most apparent difference in the two guns is the muzzle brake on the "42", a feature not known to be included in the "18", though it has been reported that there is an "18" with a muzzle brake which may possibly be designated "10.5-cm L. F.H. 18 M."** The muzzle brake is of the standard double-baffle type, quite similar to the muzzle brake on the 50-mm antitank gun.

While the wheels of the "18" are made of a light alloy (current models may be of wood) the "42" has wheels at least partially constructed of wood; both types are rimmed with solid rubber tires as is usual in German artillery guns.

The main differences between the "18" and "42" are as follows:

	10.5-cm L. F.H. 18	10.5-cm L. F.H. 42
Length of gun (including breech ring)	106.8 in	117.75 in
Length of gun (including breech ring and muzzle brake)		130.87 in
Length of barrel	97.1 in	108.5 in
Length of bore	94.2 in	95.62 in
Length of chamber	8.35 in	12.87 in
Twist of rifling	Increasing 6^{o} to 12^{o}	Not Available

*Leichte Feldhaubitze--light field howitzer
**Abbreviation for Mundungbremse meaning "muzzle brake"

The "42" with its longer bore and chamber would appear to have a higher muzzle velocity than the "18." This seems to be borne out by the fact that captured "42's" are provided with a muzzle brake and have range table corrections painted on the shield of the gun. These tables, giving corrections for various charges, vary from minus 2 mils for an elevation of 100 mils to minus 70 mils for an elevation of 750 mils; presumably no range tables for the "42" exist or were available and it was necessary to use the "18" range tables with the above noted corrections to compensate for the greater muzzle velocity of the "42" gun. In addition to these necessary corrections it is also of interest to note that a special table for charge 6 (hollow-charge ammunition) was also painted on the shield as follows:

Range (meters)	Elevation (Strich--mils)
400	7
600	11
700	14
800	16
900	19
1,000	22
1,100	24
1,200	27
1,300	30
1,400	33
1,500	36

ENGINEERS

7. CLEARANCE OF GERMAN MINEFIELDS IN TUNISIA

The mine menace is a formidable problem and one of general application. It has been stated, and with considerable truth, that the land mine is considered to be more of a menace to inexperienced troops than was ever the dive bomber.

In the No. 43-34 issue of Informational Intelligence Summary, prepared in the Office of the Assistant Chief of Air Staff, Intelligence, a report of an interview with Brigadier General D.A. Davidson contains some interesting observations in connection with the story of landing fields in North Africa. In dealing with the difficulties incident to taking over former German fields, from the point of view of the mine hazards in the vicinity of Tunis and Bizerte, General Davidson submitted the following:

We had anticipated a great deal of difficulty with those Tunisian fields because we had learned the thoroughness with which the Germans mined those areas which they took time to mine. We had very little to worry about, however, because the break came so rapidly that the Germans did not have time to mine the Tunisian fields. However, in one runway of the group of fields between Bou Arada and Pont du Fahs, we took 1,788 antitank mines. That sounds as if it were a hazardous undertaking. We found that was not so. We used a technique for de-mining an area which the aviation engineers had developed in their school.

Discovery of mines in any locality was made possible by sending out men at intervals of fifty feet and moving forward. Each man was furnished with one of our excellent mine detectors. As soon as a man would detect a mine, we would close into that area and determine the pattern. Thanks to the German habit of thoroughness and orderliness, we found the patterns always regular. As soon as we would discover what it was, we could almost draw a map of the minefield without seeking out each individual mine. Having determined the pattern, and where the individual mines were, we would then send two men forward, one of whom went on his hands and knees and very gingerly scraped the earth away. There were usually eight to nine inches of earth over the mine. He uncovered the mine and neutralized it by unscrewing the main detonating cap in the center. That, however, did not make that mine safe because it might be booby trapped from the side or the bottom. There may be another exploder screwed in on the side or the bottom. If there, it is anchored into the ground. If one lifts, or tries to move a booby-trapped mine, he sets it off, even though he has taken out the main detonating cap fuze. So the task of the first two men was simply to uncover the mine and carefully feel around it to see that it was not booby-trapped from the side.

Next, two more men came up--one of them with a light rop lasso, which they put over the mine. They then fell back about fifty feet and shouted, "mine." Everybody lied flat on his belly, and then the mine was jerked out. If it was booby-trapped, it exploded fifty feet away from anyone. With everyone lying down there was very little chance of a person being hit. We never had a casualty from de-mining a field. If the mine wasn't booby-trapped, it came tumbling out and there was no harm done. It took us about eight hours to take up these 1,788 mines, so it wasn't a particularly hazardous or long drawn-out task.

If we had had to apply that technique to each one of the field in Tunisia, we figured out long ago that it would save us time to make new fields. We had selected the sites and were prepared to construct new fields. The fact that we didn't, meant that the air forces could move into their rest areas much more quickly than would otherwise have been the case.

MEDICAL

8. GERMAN HEALTH PAMPHLET FOR NORTH AFRICA

The German pamphlet translated below contains information on general health precautions, which are not only of interest and value in themselves, but

also because of their close similarity to official U.S. Army medical instruction and principles of sanitation. While the pamphlet has reference to the North African area, much of it is applicable to all areas and is therefore of general interest.

The pamphlet was issued by the office of the German Army Surgeon General and is dated 1942. As is apparent from the context, it is intended for the individual soldier. Instructions accompanying the pamphlet state that it is to be carried in the inside flap of the paybook.*

The translation of the pamphlet follows:

* * *

The climate of the country is quite different from that of your homeland. The days in summer are hot and sunny, in winter, warm; the nights, on the other hand, are cool in summer, in winter, very cold. Throughout the entire country, water is very scarce. The German soldier must, first of all, accustom himself to the climatic peculiarities. The population of the country has different customs, ways of living, and practices, than our people. They have a different religion. Do not disregard all this in association with the people of the country. You will get on much easier. There are illnesses there which we do not have in Germany. You must, therefore, know the dangers which threaten you in this particular country.

Observe the following:

(1) Water

The virus of many different kinds of diseases can come from the water of this country. Therefore, never drink unboiled water, also do not rinse out your mouth with it, as long as your superior officers do not designate the water pure! Boil your water! It is best to drink tea or coffee and use the portable filter apparatus. It makes all fresh water potable!** Drink no mineral water and no lemonade as long as it has not been expressly designated as harmless by your superior. Ice in restaurants and ice-cooled drinks, which are offered for sale on the streets, are not prepared under sanitary conditions and, therefore, are harmful to your health; avoid them, even if you are extremely thirsty. Do not wash yourself in dirty water, do not bathe in streams, lakes, ponds, pools. Bathing in the sea is permitted. Do not bathe when in an overheated condition.

*The paybook is carried by all German soldiers and is often found on German prisoners; aside from containing the pay record of the individual, the paybook also includes the soldier's unit, although it may not be up-to-date in this respect, and such miscellaneous personal data as gas mask size, blood type, etc.
**If this statement is correct, the filter probably includes an element to chlorinate the filtered water.

(2) Nutrition

You will receive the best food from your unit. Do not eat raw meat. Never drink unboiled milk, especially not goatmilk! Wash all fruit in purified water or peel it before eating. Do not buy quarters or halves of melons when they are offered by street merchants. Buy only whole, uncut melons. Do not pick up any food from the ground, especially meat, fish, and sausage; in the heat, foodstuffs perish quickly and contaminate! Protect your rations from flies. They carry disease.

(3) Dress

Always wear a stomach band.* You protect yourself against catching cold. Always wear your sun helmet out of doors during the heat of the day. Otherwise, wear your field cap. It serves no purpose and is harmful to the health to run about in warm countries with the upper part of the body naked. It is a mistake to believe that one is cooled off in that manner. When the air-temperature is greater than 38 degrees Centigrade [100 degrees Fahrenheit] the wind has a heating effect on the skin.

(4) Bivouac

Avoid particularly the dwellings of natives. Before you take up quarters in houses or barracks, clean the area thoroughly. Excrement and refuse are the breeding places of flies, and these carry to food-stuffs or direct to people the germs of dangerous illnesses (especially dysentery). Therefore, latrines must be free from flies. The trench-latrine serves the purpose.

(5) Vermin

Besides flies there are body lice, ticks, mosquitoes, snakes, and scorpions in this country. Mosquitoes are carriers of fevers, and malaria. Combat the mosquitoes in the morning and in the evening in your barracks by continuously killing them. If you burn a light in your barracks, keep the windows closed when possible; mosquitoes are attracted by burning lights. Use your mosquito net when you go to bed. Be careful, however, that when you lie under your mosquito net that there are no mosquitoes in the net and that the net is carefully tucked in under the bed and no openings are left for mosquitoes to enter.

If you have body lice, report it immediately: body lice and ticks carry spotted fever and relapsing fever, and both are serious illnesses. The snakes in this country are poisonous. They hide themselves in the sand. Scorpions are often found under loose rocks. Therefore, do not run about with bare feet and naked legs. Inspect your sleeping-bag daily for snakes and scorpions. Shake out your boots before putting them on. They are a favorite hiding-place for scorpions.

*Stomach bands are not believed to serve any useful purpose and are not recommended by the U.S. Army Medical Corps.

It is frequently maintained that a drink of liquor is beneficial after you have suffered a snake bite. This is foolishness. Alcohol, under such circumstances, is harmful. If you should be bitten by a snake, apply a tourniquet directly above the wound on the side toward the heart. The pressure applied to the tourniquet should not be great enough to cause the wounded part to swell and turn blue. With a disinfected razor blade, make a cross-like incision at the wound. Each cut should be at most about 1 inch long and not deeper than 1/2 inch. Allow the wound to bleed for 3 minutes; sucking the poison from the open wound is frequently recommended. This should be undertaken only by one who has no open sores or cavities in his mouth. With the blunt side of the disinfected razor blade, rub several potassium permanganate crystals into the wound; bind the wound and remove the tourniquet. Then report to the unit surgeon or medical officer immediately.

(6) Venereal Diseases

Women who solicit freely are usually infected. You should visit those houses only which are approved by the military authorities.* Always use a condom. Follow orders, and take a prophylaxis after having exposed yourself.

(7) Concerning Animals

Dogs and cats are frequently carriers of diseases, e.g., rabies, serious worm and blood diseases. Do not handle dogs, cats, or monkeys.

(8) Vaccinations

The vaccinations prescribed by the military authorities protect you from serious diseases. The unvaccinated person not only endangers himself, but the lives of his comrades as well!

(9) Prevention of Malaria

Do not hesitate to take tablets to prevent malaria, when they must be taken! You do not know the danger to which you and your comrades are exposed.

(10) Skin Irritation ("Red Dog") **

"Red dog" (roter Hund) is an annoying skin irritation, which is caused by excessive heat and attended by extreme perspiration. Frequent bathing in warm water and lathering with medicinal soap (when available) is the best protection. If you have "red dog," lather yourself with medicinal soap, and allow the lather to remain on your skin for 15 minutes. Blot yourself dry--do not rub. Dry yourself especially carefully in those parts where the conformation of the body causes skin wrinkles and between the toes.

*In North Africa the Germans and Italians organized houses of prostitution for use of military personnel. This is contrary to U.S. Army practice.
**Prickly heat is undoubtedly what is here referred to.

(11) Slight Injuries

If you receive a slight wound on the calf of your leg from a thorn, or from striking against a sharp rock or from insect stings, apply a sterile bandage. If you allow such apparently trivial wounds to go unattended, they can develop into annoying and slowly healing sores.

INFANTRY

9. GERMAN NIGHT FIGHTING TACTICS

Based on experiences in Russia, the following are some German notes on night fighting.

* * *

a. General

Attacks on a wide front were less frequent than strong thrusts at selected points. Small operations with selected personnel were often carried out.

Special features of Russian methods are skillful use of darkness, surprise at dawn, silent raids on positions, clever digging at night, opening fire at short range with the use of flares, and eagerness to get to close quarters. When the ground is lit by the defenders with flares the enemy seldom attacks.

b. Equipment

For night fighting, it is recommended that a cap be worn, as it permits better hearing than does a helmet. Belt and shoulder straps should be removed. The collar should be open, and shoes and leggings laced. Ammunition can be carried in pockets and grenades in a sandbag. A pistol, dagger, and sharp spade should be carried. The first-aid kit should also be taken along.

Certain individuals will carry Very pistols, wire cutters, explosives and incendiary material, and matches which can be used in wind ("wind matches"). Machine guns, automatic rifles, submachine guns, and rifles will be ordered according to circumstances.

c. Approaching the Enemy

If possible, try to approach against the wind.* Move in twos. If a single enemy is encountered, get under cover, let him pass, and then spring on him from behind.

*Men who have not bathed for a long time can be smelled downwind at some distance. Sound carries better downwind.

Wire should be cut where dark background, craters, small hollows or bushes make crawling forward easier. To deceive the enemy, sacks and similar material can be hung up at other points, or fire opened at one point to allow silent forward movement from an entirely different direction.

Simple signals should be arranged beforehand, such as bird-calls, etc.

d. Assault Troop Operations

Suitable composition and order of march are as follows: Riflemen; section leader; long-distance hand grenade throwers; short-distance hand grenade throwers; hand grenade carriers; light machine-gun section. Flank protection, using machine guns and additional riflemen, is advisable.

e. Defense

In order to insure that riflemen do not mistake direction, rifles can be fixed in position with pegs while it is still light, so that when a position is occupied in the dark there is no difficulty in fixing the direction of fire.

ORDNANCE

10. AP AMMUNITION FOR GERMAN 8.8-CM FLAK 41

This new German 88-mm antiaircraft gun has already been described in Tactical and Technical Trends (No. 29, p. 5). The ammunition fired is HE, with either time or percussion fuze, and APCBC;* the weights of the projectiles are 20.68 and 22.44 pounds respectively. While an estimated muzzle velocity of 3,400 f/s was reported in Tactical and Technical Trends, it now appears from captured range tables that with HE the muzzle velocity is 3,280 f/s, with APCBC 3,214 f/s.

The total length of the APCBC round is 45.63 inches and the total weight 46.2 pounds. Each round is separately packed in a metal cylinder. The German nomenclature is "8.8-cm Pzgr. Patr.* Flak 41." The following are some of the details of this ammunition.

a. Projectile

Externally the projectile resembles the standard APCBC projectile for the older 88-mm gun. It is fitted with a ballistic cap, a piercing cap and double rotating band. The rotating bands of the specimen examined were iron, but in projectiles

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*Armor-piercing capped, with ballistic cap

**Abbreviation for Panzergranate Patrone, loosely translated "armor-piercing round."

for the older 88-mm gun, both iron and bimetallic bands have been encountered. The bursting charge is small and consists of 60 grams (.13 lb) of cyclonite. A Bd.Z* 5127 and a tracer are fitted. The base fuze operates as follows. A fixed igniferous detonator is situated below a striker with a compressed spring. The striker is held off the detonator by two balls which are kept in position by a collar located round the fuze body. The collar is kept in position by a shear wire. Upon impact, the collar sets forward against the shear wire and breaks it, the balls being thereby released. The striker, under the action of its spring then hits the detonator.

The projectile is painted black and has a white tip. This, however, is not a specific indication for a projectile for the Flak 41 since it is known from documentary evidence that a similar projectile with similar markings is used in the older 8.8-cm gun. The weight of the projectile is 10.2 kilograms (22.44 pounds).

b. Cartridge Case

The cartridge case is necked and the specimen examined was made of brass. It carried no design number, but 8.8-cm Flak 41 was stamped on the base. It had the following dimensions:

Overall length	33.66 in
Length from base to shoulder	29.33 in
Length from shoulder to mouth	4.33 in
Diameter of rim	4.72 in
Diameter above rim	4.33 in
Diameter at shoulder	3.98 in
Diameter at mouth	3.50 in

An electric primer is fitted. The propellant consists of 11.91 pounds of tubular flashless propellant. The sticks have the following dimensions:

Length	29.13 in
External diameter	.189 in
Internal diameter	.059 in

An igniter containing the usual German igniter powder is fitted.

11. GERMAN MG-151 TYPE 15- AND 20-MM AIRCRAFT WEAPONS

A brief description of both of these types of aircraft gun was reported in Tactical and Technical Trends, No. 12, p. 2.

a. MG 151/15.

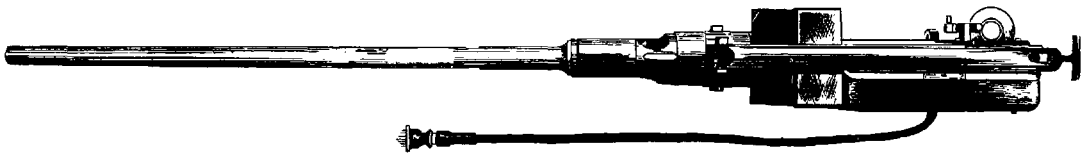
Additional information about the 15-mm weapon indicates that it is of Mauser design, manufactured by Rhein Metall, well constructed, and with excell-

*Abbreviation for Boden Zünder, meaning "base percussion fuze."

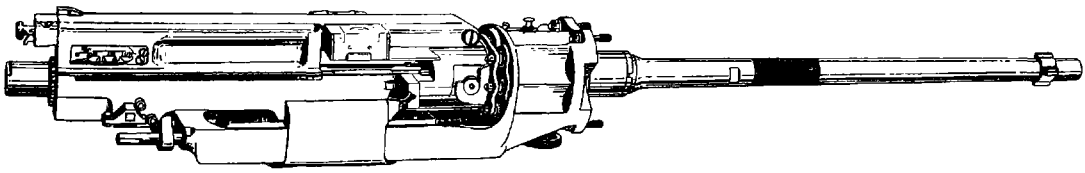
ent performance. As noted in the previous description, this gun (as well as the 20-mm) is cocked and fired electrically; the cocking mechanism consists of two sprockets and a roller chain driven through a train of gears by a small high-speed motor. Subsidiary hand cocking is done by a chain ending in the cross-bar at the rear end of the breech cover.

There is no applied safety device as electrical safety only is provided. Provisions are for automatic firing only. The firing is by electrical solenoid operating a sear release. The gun is recoil operated unassisted by muzzle blast. The system of feed is by disintegrating metal link belt.

There is a resilient front mounting comprising a cylinder sliding in an outer housing and acted upon by four double-acting buffer springs and 2 buffer brakes. The sliding cylinder has 2 hooks which engage with lugs on the gun casing to lock the gun and mounting together. The rear of the gun is supported by 2 annular bushings mounted in a bracket and sliding on 2 cylindrical rails attached to the aircraft structure.



GERMAN AIRCRAFT CANNON MG 151/15



GERMAN AIRCRAFT CANNON MG/151 20

b. MG 151/15 and 151/20 Compared

Sometimes it is erroneously supposed that the MG 151/15 and the MG 151/20 are the same gun fitted with interchangeable barrels. Though of basically identical design and similar appearance, they are separate and distinct weapons.

The MG 151/15 was first encountered, installed in the Heinkel 115. German aircraft now mounted with the MG 151/15 as standard armament are the following: JU-88 (night fighter), DO-217, HS-129. In all cases the fixed gun is mounted in the nose. Each of the following flying boats carries one or more of these guns in hydraulically-operated power turrets; BR-138-B, BV-138-C, DO-18-D, DO-18-G.

Construction details of the 151/15 are listed below.

Caliber (nominal)	15 mm (0.591 in)	Length (overall	75 1/2 in
Bore;		Barrel;	
No. of grooves	8	Weight	23 lb 14 oz
Pitch	1 turn in 16 in	Length (overall)	49 1/4 in
Direction	Right hand	Rate of fire;	
Weight (including		AP	740 rpm
(elec. control)	84 lb 1 oz	HE	680 rpm

Some of the differences between the 15-mm and 20-mm caliber 151 type of machine gun are shown in the following summary.

	15-MM Caliber	20-MM Caliber
Barrel:		
Length	49 1/4 in	43 1/2 in
Weight	23 lb 14 oz	22 lb 14 oz
Pitch (rifling)	1 turn in 16 in	1 turn in 23 in
Groove (width)	.157 in	.210 in
Groove (depth)	.009 in	.0105 in
Weight	84 lbs 1 oz	93 1/2 lb
Length (overall)	75 1/2 in	69 5/8 in

In addition, the 20-mm has a shorter chamber and a slightly larger diameter at front end; the body is strengthened on the underside; the housing buffer is different in design internally, and slightly longer. Also, the feed block, the cartridge stop, the electrical layout for cocking, and the bullet guide in front of the feed pawl vary in the two weapons.

QUARTERMASTER

12. SUMMARY OF CAPTURED FUELS AND LUBRICANTS

The following remarks, prepared by the U.S. Ordnance Department, are based upon British reports on the general examination of captured fuels and lubricants. For further information on this subject, see Tactical and Technical Trends, No. 22, p. 36.

* * *

a. General

The general high standard and uniformity of captured German materials is noteworthy. Their supply system was found to be functioning well in North Africa and their products were delivered in good condition. The same cannot be

claimed for the Italian materials or for their supply system. Lack of uniformity, improper marking, and the use of substitute materials was common in Italian products.

b. Aviation Gasolines

German aviation fuels are of particular interest. These are of two types: a blue B-4 fuel (bomber grade) of 89 to 91 octane and a green C-3 (fighter grade) of 93 to 96 octane. The B-4 grade consists of a 71.5 to 74 octane base gasoline plus 4.5 to 4.75 cc tetraethyl lead per gallon, while the C-3 grade consists of 83 octane base gasoline plus 4.26 to 4.6 cc of lead. The C-3 fuel is outstanding in that it has a particularly high rich mixture rating which is given as 110 British Engine Performance Rating compared with 100 for British Air Ministry 100 fuel. This appreciation in performance rating with rich mixture is undoubtedly due to the high aromatic content of the green fuel which is reported as 37.42 and 38.59 percent on two samples.

c. Motor Gasolines

The remarkable uniformity of the enemy's aviation gasoline is conspicuously absent in his motor fuels which include gasolines of various compositions, benzol, benzol mistures, and alcohol blends. It would appear that certain of the enemy's vehicles require a higher octane number fuel than others. Relatively poor base stocks with octane numbers as low as 47 are blended with tetraethyl lead, benzol, and alcohol locally. Samples which have been analyzed indicate octane numbers ranging from 54 to 77. Hence there is no indication of a general standard for motor gasoline.

d. Lubricating Oils

(1) German aircraft lubricants are of both solvent treated, straight mineral, and compounded (with viscosity index improvers) types of viscosity grades, SAE 50, 60 and 70. The viscosity index (92.5 average) and general quality are being maintained at a high standard. There is no indication that the Luftwaffe makes use of oils of reduced viscosity during the winter.

(2) Their engine oils and diesel lubricants appear to be for the most part a good quality high viscosity Pennsylvania type or solvent refined German oils without additives. They occur in viscosity grades, SAE 30, 40, 50, 60 and 70. Their gear oils which are in SAE grades 90, 140 and 250, are made from asphaltic (Roumanian) crudes; some of them contain fatty oils. Very few of them are extreme pressure lubricants containing sulfurized fatty oils or chlorinated materials.

It seems to be standard German practice to use the same recoil fluid in buffer and recuperator cylinders for the entire range of artillery. This fluid which is believed to consist of triethylene glycol and water, has no exceptional features.

SIGNAL CORPS

13. GERMAN RADIO "TACTICS"

From North Africa comes a report that when using short-range radio in the clear during combat, it was a frequent occurrence to have conflicting orders come in in excellent English, occasionally in a voice closely resembling that of someone known to the receiving station. Not only would this interference use up precious time, but more time would have to be consumed by broadcasting the message, "Disregard last order". German radio operators often knew American individual officer's names and called them direct. The best "cure" was to shift to another frequency.

GENERAL

14. GERMAN ARMY PROPAGANDA UNITS

Propaganda within Germany, according to an official Allied source, is the responsibility of the Ministry of Propaganda. In occupied countries and in the theaters of war, propaganda is the responsibility of a department in the Supreme Command of the Armed Forces (OKW) known as the Armed Forces Propaganda (Wehrmachtspropaganda or W.Pr.) with headquarters located at 27 Bendlerstrasse in Berlin.

The two authorities work in very close liaison with each other on questions of policy. In addition, the redistribution of all propaganda material received from the occupied countries and the theaters of war is the responsibility of W.Pr. Actually, W. Pr. controls the publications by press, radio, and otherwise, of the Ministry of Propaganda regarding operations by the armed forces and collateral subjects.

W. Pr. is also responsible for the appointment of all propaganda personnel in the occupied countries and the theaters of war.

a. Army Propaganda Units

These comprise four types of units:

1. Propaganda Depot Battalion (Propaganda Ersatz Abteilung)
2. Propaganda Service Battalion (Propaganda Einsatz Abteilung)
3. Propaganda Battalions (Propaganda Abteilungen)
4. Propaganda Companies (Propaganda Kompanien)

Units 2, 3, and 4 are provided by drafts from the Propaganda Depot Battalion. The propaganda companies are numbered in the 501 series and more than fifteen are numbered in the 601-700 series. The battalions appear to be unnumbered and there are also propaganda companies which are unnumbered. Unnumbered battalions and companies bear names which correspond to the country

or territory in which they operate. All personnel belonging to these units are classed as signal corps personnel and wear lemon-yellow piping.

(1) The Propaganda Depot Battalion

This depot battalion is housed in the Propaganda Kompanien Barracks located in Potsdam. It is a pool for trained propagandists awaiting assignment, in addition to being the training center. The battalion consists of four companies: 1st company, journalists: 2nd company, photographers and war artists; 3rd company, war reporters; 4th company, depot company, which includes administrative personnel, and personnel who have returned to the depot after completing a tour of duty.

In addition there is a section for radio propaganda experts. Recruits are mainly men who in civil life were journalists, press photographers or film cameramen. They receive normal infantry training and frequently are sent on courses of from 4 to 6 weeks duration at the Ministry of Propaganda.

(2) The Propaganda Service Battalion

This battalion has its HQ in Potsdam in the same barracks as the Depot Battalion. It consists of two companies: 1st company, a pool of linguists; 2nd company, called the Propaganda Liaison Company (Propaganda Verbindungskompanie which provides personnel for ensuring the transit of propaganda material (including periodicals and daily papers), to and from the various branches of the propaganda organization throughout the occupied countries and the theaters of war. Its strength is about 400 men.

(3) Propaganda Battalions

There is one of these in each of the occupied countries. In Russia, there are three. They are concerned with conducting and controlling propaganda among the civil population. Propaganda battalions were formed in advance, for countries about to be invaded, and were among the first to make contact with the civil population. Their principal function in the early stages of occupation appears to be the reassurance of the civil population with a view to rendering assistance in the maintenance of public order, and to assist in the reestablishment of public utilities.

The organization appears to be elastic, as each battalion is modified according to the area in which it works. They have an HQ Section in the chief town or capital, and a section (Staffel) in each of the more important towns. Each section is similarly constituted and has a total personnel of about 30. These include:

Section Commander
Adjutant
Film Censor
Theater Censor
Literary Censor
Advertisement Censor (who controls public speeches and advertisements)

All of these are Sonderführer (special director). The remainder are clerks and orderlies. Sonderführer are personnel with specialist qualifications acquired in civil life. They wear uniform, and are subject to military law. They do not hold military rank, but are classified as ranking with NCOs, platoon, company, battalion, and other commanders.

The organization is clearly shown in France, where there is a Propaganda Battalion HQ in the Hotel Majestic in Paris, and propaganda sections located in Bordeaux, Dijon, and other towns. There are propaganda battalions at Riga, Smolensk and Kremenchug (in the Ukraine) with offices (Aussenstellen) in the smaller towns. There is one such Aussenstelle at Minsk.

The propaganda battalions are controlled by the W.Pr. in Berlin and forward material there. The literary censors control all published matter and keep a watch on all book-shops. Radio transmitting stations are all controlled by the propaganda battalions who appoint switch censors. In Russia the propaganda battalions provide troops with posters, leaflets and illustrated publications to distribute to the inhabitants of villages. Loud speaker vehicles are made available to them and it is laid down that they must include in their propaganda such topics as news favorable to the progress of German troops, the release of prisoners belonging to minority regions, administration of real estate, etc.

(4) Propaganda Companies

Our official source states, a propaganda company consists of the following personnel:

(a) reporters, radio commentators, photographers and cameramen, whose duty it is to secure reports of troops in action, for publication by press and radio, and to take films for inclusion in newsreels.

(b) a welfare section (Betreungstrupp), whose duties include the distribution of literature to the troops and the arranging of entertainments, and the showing of films for the troops.

b. Method of operation

The reporters, radio commentators, photographers and cameramen are allotted to units in action as required. In Africa for example, a war correspondent platoon (Kriegsberichterzug) was attached in August 1942 to the Ramcke (Parachutist) Brigade. This platoon was organized in four "reporter sections" of which two were light, and known as "word and picture sections" (Wort und Bild), and two were heavy, and known as "radio and film" sections (Rundfunk und Film). The two light sections were attached, one following the other, for a period of about three weeks, to the front-line troops. The two heavy sections were attached to units for short periods according to the situation. Films taken in Africa were silent - the dialogue being added later in Germany from records made on a "Magnetophone" and synchronised. In Russia sound films are usually made on the spot. The propaganda company in Africa did not broadcast, but recorded material

for programs and the records were forwarded to Berlin for distribution. For this work there were Spanish, French, English, and Arabic - speaking officers on the roster of the company.

c. Welfare Section

The section possesses a mobile motion picture truck, several mobile film units on trucks, a band wagon, two loud-speaker trucks and a mobile library. A general staff officer, of about lieutenant colonel's rank with the Panzer Army in Africa directed the movements of this equipment, and those in charge of it reported to him once a week. The films, shown by the unit, were those current in Germany and no special propaganda films were shown. The mobile truck gave its shows in the open air using forward projection, with the audience between the screen and the truck. Antiaircraft protection was always provided. Sometimes movies were given in tents.

Periodicals for the troops are produced in the various theaters of war. In Africa the periodical was entitled "Die Oase" (The Oasis) and was produced by a lieutenant with one enlisted helper. The number of copies was limited and a standing order existed that it must not be sent out of Africa.

As regards transport, the propaganda company in Africa had the following, which is probably a typical allotment.

Two small cars (Volkswagen) - one for the company commander
One large car
One mobile movie truck
Four mobile movie outfits on trucks
One ration truck
One office truck
One field kitchen
One clothing truck and armory

The propaganda company in Africa used the regular courier aircraft for forwarding its material to Berlin, though propaganda companies in Russia are known to have aircraft of their own.

15. THE TODT ORGANIZATION AND AFFILIATED SERVICES

The most important of the German semi-military organizations engaged in economic operations is the Todt Organization, abbreviated, O.T. Under the leadership of Dr. Fritz Todt, this organization expanded from a small body in 1933 to an army of half a million in 1941. Much of the success of the O.T. is due to its leader. An engineer and road builder and an early Party member, Dr. Todt combined personal acceptability to the Nazi hierarchy with great administrative ability and drive. The organization created by him represents the most specific Nazi contribution to the war effort, despite the fact that it has historical antecedents in the

First World War.

Beginnings

The first task assigned to Dr. Todt was the construction of the Reich superhighways in 1933. An enterprise was established for this express purpose by law of June 27, 1933, with the official designation of "Company for the Preparation of Reich Motorways."

Work began on the roads in 1933; 100,000 men were employed in 1934, with an additional 150,000 men employed on work connected with the highway construction such as the construction of bridges, work in quarries, etc. In 1935 some 250,000 persons were employed directly or indirectly in this work. By the end of 1937, 2,000 kilometers (1250 miles) of highways had been built and an estimated 1,000 kilometers (625 miles) were completed in each of the following two years.

The Westwall

The efficiency of the organization in carrying out the highway construction was such as to lead to its next major assignment in 1938, the completion of the Westwall. The fortification work begun in 1936 by the Army under the direction of its own engineers was not satisfactory to Hitler, who ordered Todt to take over the construction work on May 28, 1938.

It was for this task that the O. T. as such was founded. With Army engineers retained as advisers on the technical aspects of the fortifications, a civilian organization was set up by Todt from headquarters at Wiesbaden to complete the construction.

A variety of organizations were called upon to contribute materials, equipment and personnel to the O. T. One-third of the production of the cement industry was required. Additional excavators, concrete mixers, pneumatic drills, tractors, and trucks were requisitioned from the private construction industry. Large numbers of freight cars from the Reich railroads were permanently assigned to the movement of materials and supplies. Two-thirds of the rural bus fleet of the Reich Post Office was turned over to the O.T. Truck drivers, dispatch riders, and traffic control officers from the NSKK (National Socialist Motor Corps) were assigned to the project.

The O. T. began work on the Westwall with 35,000 men on July 20, 1938. This number was increased to 342,000 by October 6, 1938. In addition 90,000 workers were employed by the Staff of Fortification Engineers (Festungspioneerstab) and 100,000 men from the Reich Labor Service. The work on the Westwall was completed in December 1939.

War Activities

The magnitude of the O. T.'s activities increased after the outbreak of hostilities. It operated extensively in Poland, Norway, the Low Countries, and

France on building and construction projects. The most important project undertaken in the West was the construction of the Second Westwall (the so-called Atlantic Wall) along the Atlantic coast from Kirkenes, near the North Cape, to the Spanish - French frontier.

On the Eastern Front several vitally important tasks have been performed by the O. T. The maintenance of the Russian road system in operating condition is its most difficult assignment, one involving the continuous employment of thousands of laborers. In addition, the permanent repair of many of the key bridges in the intermediate zones has been carried out by the O. T.

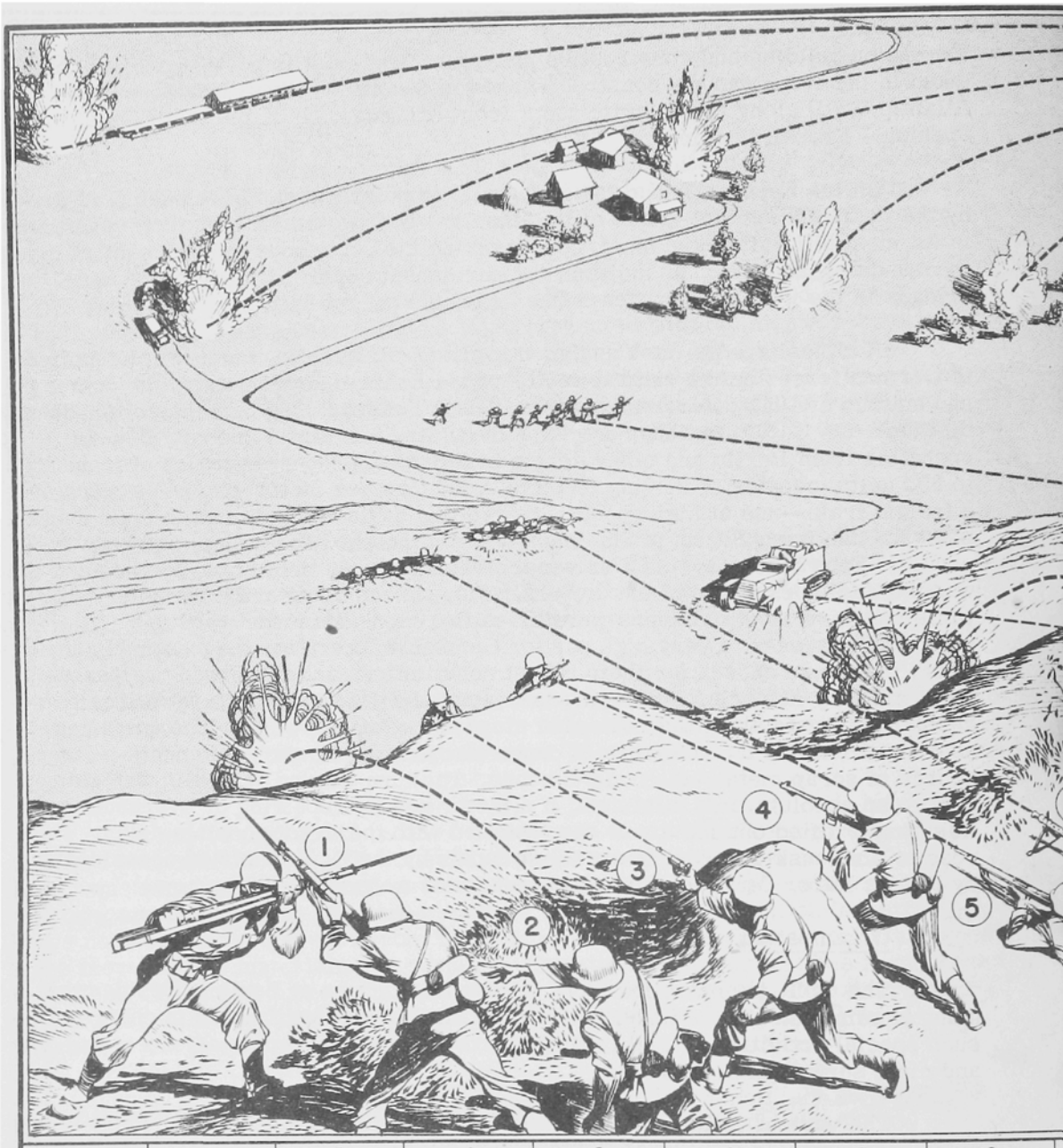
A typical special task assigned to the O. T. was the transport of supplies to German forces on the central sector of the Eastern Front during the summer and autumn of 1941 before railroad service to Smolensk had been restored. In this task, the O. T. used huge trucks with two trailers (total capacity 30 tons) operating from Berlin and other depots in Germany proper, in trains of from 200 to 300 units, capable of moving 6,000 to 9,000 tons per motor-train--as much as a freight train--and at high speeds. Travelling day and night, such a train could make the run from Berlin to Smolensk (approximately 1,000 miles) and back once a week. Each truck carried 3 drivers, sleeping bunks, and simple cooking and washing facilities. Two of the drivers relieved each other at 2-hour intervals while the third slept. Drivers were classified as civilians and received 180 reichmarks a week, a very high pay for German workers for the extremely trying work; they were chosen for their robust constitutions and many were released from military service for this purpose. Rest and repair stations were located at regular intervals along the route, but stops were few and brief. The unloading near the front and the reloading of captured or damaged war equipment--a large source of scrap metal--took only 3 hours. The turn-around at Berlin was also kept to an absolute time minimum; if a motor needed repairing or overhauling it was simply lifted out and a new one installed with the least possible delay. The road to Smolensk was kept in excellent repair by the O. T. assisted occasionally by Reichs Labor Service units, and breakdowns were very rare.

Organization

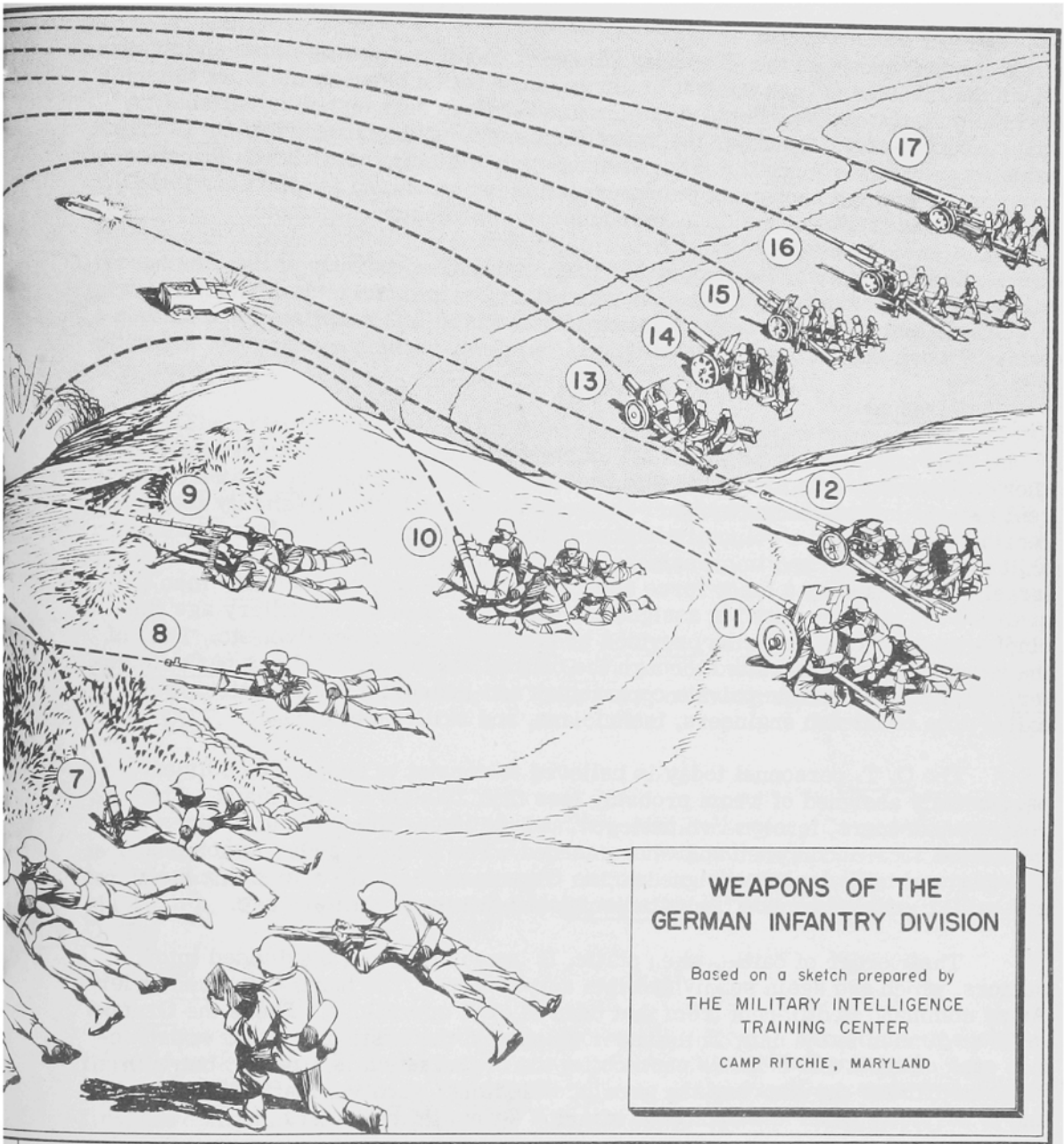
The O. T. is controlled from the Central Offices at Berlin. Besides the general administrative offices, there are a number of departments in charge of such special activities as rail transport, road transport, repair services, and day and night surveillance services.

The various field projects of the O. T. when not working under army command, are supervised by local "chief works departments" which maintain direct liaison with Berlin. The workers on these fields projects are quartered in "chief camps", each of which is under the command of a camp commander (Lagerführer). The men in each camp are divided into groups (Gruppen) of 25 or 30 workers, which are led by a Gruppenführer, and sent as units to the construction project.

The working facilities, housing, sanitary conditions, etc., of the men on the various projects are the responsibility of a "Front Control" A subdivision of this



1 SEITENGEWEHR	2 HANDGRANATE	3 PISTOLE	4 MASCHINENPISTOLE	5 GEWEHR 98K	6 LEICHTES MASCHINENGEWEHR 34	7 LEICHTER GRANATWERFER	8 PANZERBUCHSE 39
BAYONET Length - 15 1/2 Carried by all riflemen	HANDGRENADE Delay Fuse - 4 1/2 sec Danger Radius - 20 yds Variable number per rifleman	PISTOL Cal - .35 Semi-Automatic Carried by personnel who do not carry rifle or submachine gun	SUB MACHINE GUN Cal - 35 - Automatic Eff Range - to 200 yds Used by small unit leaders and company commander	RIFLE Cal - .31 Eff Range - 400 yds Six per squad	LIGHT MACHINE GUN Cal - .31 Eff Range - 800 yds Rate of Fire - 100/150 rpm One per squad (Model 42 now being manufactured)	50-mm MORTAR Eff Range - 350 yds Rate of Fire - 6 rds - 9 sec Danger Radius - 25 yds One per platoon	AT RIFLE Cal - .31 Eff Range - 200 yds Rate of Fire-6/8 rpm Three per rifle company



WEAPONS OF THE GERMAN INFANTRY DIVISION

Based on a sketch prepared by

THE MILITARY INTELLIGENCE TRAINING CENTER

CAMP RITCHIE, MARYLAND

10 SCHWERER GRANATWERFER	11 3.7 cm PAK	12 5 cm PAK	13 7.5 cm LEICHTES INF GESCHUTZ	14 15 cm SCHWERES INF GESCHUTZ	15 10.5 cm LEICHTE FELDHAUBITZE	16 15 cm SCHWERE FELDHAUBITZE	17 10 cm KANONE
81-mm MORTAR	37-mm AT GUN	50-mm AT GUN	75-mm INF HOWITZER	150-mm INF HOWITZER	105-mm GUN HOWITZER	150-mm HOWITZER	105-mm GUN
Eff Range - 1200 yds Rate of Fire-20/25 rpm Danger Radius 35 yds Six per MG Company	Eff Range - 800 yds Rate of Fire - 15 rpm Twelve per AT Co in Infantry Regiment	Eff Range - 1000 yds Rate of Fire - 16 rpm Eighteen per AT Battalion in Infantry Division	Max Range - 3900 yds Rate of Fire-10/20 rpm Six per Howitzer Company in Infantry Regiment	Max Range - 6000 yds Rate of Fire-5 rpm Two per Howitzer Company in Infantry Regiment	Max Range - 12,000 yds Twelve per light battalion in Division Artillery	Max Range - 16,500 yds Eight per medium battalion in Division Artillery	Max Range - 20,000 yds Four per medium battalion in Division Artillery

organization, known as the "Security Service" conducts investigations and supervises the transfer of men subject to disciplinary action between the work camps and the punitive camps. In these camps, the men are segregated by nationality, and perform heavy duty under the surveillance of armed guards. The O. T. maintains its own police force for internal security and discipline. The O. T. police are responsible for protecting the construction projects, and for the safety of the trains and trucks of the O. T. en route to the projects.

The medical service of the O. T. functions independently of the other services. It is supervised by a surgeon-general in Berlin and is administered on a regional basis, with itinerant physicians and dentists, and hospitals for each camp of more than 500 men.

Personnel

The total number of personnel employed by the O. T. is not definitely known. However, it is estimated that over 500,000 were employed in 1941. Recent reports indicate a much higher figure in 1942 and 1943. Originally the O. T. recruited workers on a voluntary basis. Since then there has been a complete shift to conscription and impressment. The construction of the Westwall was largely undertaken by a labor force conscripted in one way or another:- men qualified for military duty but assigned to the O. T., men over military age (including ex-service men), men provided by the Reich Labor Service, etc. Part of the labor force was recruited through the official employment offices (Arbeitsämter). In addition, certain private contractors and industrial organizations were called upon to furnish engineers, technicians, and skilled workers.

The O. T. personnel today is believed to consist of about 450,000 men permanently assigned of whom probably less than 200,000 are Germans. The rest are prisoners, foreign "volunteers" and the like. The O. T. also hires or impresses local labor when and where needed. The German cadre is composed of experts of military age assigned to the Organization, young men doing their pre-military labor service (Arbeitsdienst) and men over military age.

Their order of battle, when static, is based on areas, subdivided into sectors, which are again subdivided into sub-sectors. The basic unit when under Army command is different from that used in civil operations. There the Gruppe of 25 or 30 men is the unit, while under the Army, the basic unit is the construction gang of about 100 men. When mobile, the organization is similar, but with different names. In this case the area is called the Operation Staff (Einsatzstab) and is normally under the command of Army Group Headquarters.

Affiliated Service Organizations

(1) Bautruppen (Construction Troops)

To deal with the enormous number of engineering problems that confront a modern army, the German Army has resorted to three principal groups: first-line pioneer troops; second-line engineer troops, the so-called Bautruppen,

organized on a battalion basis, and the O. T. units.

As we have seen, the O. T. units are semi-military in organization, and normally the farthest removed from the front. The regular pioneer troops are absorbed in front-line tasks. In between them and the O. T. are the Bautruppen, definitely military in character, but reserved for such tasks as bridge construction (Brückenbaubataillone) of a more permanent kind, road building, railway (Eisenbahnbaubataillone), and fortification works (Festungsbaubataillone). These troops had their prototype in the First World War, when the regular pioneer troops proved insufficient in number to handle all the repair jobs. At that time private construction firms were called upon to furnish technical personnel and skilled workers, who were organized into special mobile units for emergency construction work.

The principal periods of usefulness of the Bautruppen were the May 1940 campaign and the opening months of the Eastern Campaign. Since late 1941 the original Bautruppen personnel has been increasingly absorbed into front-line duty and the O. T. has had to take over much of the more permanent construction and repair work originally assigned to the Bautruppen.

(2) NSKK

The NSKK (Nazionalsozialistisches Kraftfahrkorps - Nazi Motor Corps) provides the drivers and trucks for the O. T. In organization it is similar to the O. T., but has less independence, its units being normally subordinated to units of the O. T.

(3) TNH

The TNH (Technische Nothilfe - Technical Emergency Corps) also works in closely with the O. T. It is however, a more skilled organization consisting for the most part of specialists in such matters as oil wells, hydro-electric plants, etc. The TNH will normally draw any manual labor it may need from the O. T.

Civilian Firms

The O. T. can and often does control civilian firms. Sometimes the whole firm is put to work, at others only the equipment is hired. Many civilian contractors worked for the O. T. during the building of the Westwall, and French firms are known to be working on the Atlantic defenses at present.

Uniform and Pay

(a) Uniform Originally only the German members of the O. T. wore a uniform, consisting of a khaki tunic, open at the throat. On the sleeve is a red brassard with a black swastika in a circle on a white background. About three inches above the left cuff is a narrow band with the words Org. Todt in white

Gothic lettering. The belt is black with a plain buckle. Army boots are worn. Foreign workers normally wear civilian clothes with a grey brassard on which is stitched the unit or squad number. It appears, however, the foreigners who are willing are now being put into uniform and that they receive higher pay in consequence. If in uniform, foreigners wear distinguishing piping, showing their nationality, on their shoulder straps.

(b) Pay Previously, pay in the O. T. varied greatly. It has recently been reorganized, and it is now believed that all full time German employees receive soldier's pay plus bonuses and that an allowance is paid direct to their families. Foreigners usually receive a small wage.

Conclusion

The O. T. contributes a great deal to the German war effort. That the army can spare so many trained engineers to a para-military organization is explained by the fact that the O. T. does carry a great deal of the work which would otherwise be the responsibility of the army engineers. That the O. T. is now stretched to a surprising degree, and the fact that it is capable of doing so much and such valuable work at such great distances from Germany is yet another proof of the genius for organization of the Germans.

SECTION II

NOTES ON COMBAT

NOTES ON COMBAT

Present-day methods of warfare embrace many problems hitherto absent or completely non-existent in previous wars. Specific admonitions emphasizing the importance of some of these questions, such as the necessity for good discipline, the conduct of troops under varying conditions of combat, and other factors influencing the success of operations, are contained in the following extracts from a letter of instruction to Corps, Divisions, and Separate Brigade Commanders, and from a report entitled "Notes on Combat," both by Lieutenant General G. S. Patton, Jr., now commanding the U.S. Seventh Army. These documents were written as the result of American experience in Tunisia. As stated by General Patton, nothing herein is in material disagreement with our training doctrine, his purpose being to stress certain points.

* * *

a. Discipline

There is only one sort of discipline - perfect discipline. Men cannot have good battle discipline and poor administrative discipline. Discipline is based on pride in the profession of arms, on meticulous attention to details, and on mutual respect and confidence. Discipline must be a habit so ingrained that it is stronger than the excitement of battle or the fear of death.

Discipline can only be obtained when all officers are so imbued with the sense of their lawful obligation to their men and to their country that they cannot tolerate negligences. Officers who fail to correct errors or to praise excellence are valueless in peace and dangerous misfits in war. Officers must assert themselves by example and by voice.

Currently, many of you have defeated and destroyed the finest troops Germany possesses. This should make your men proud. This should make you proud. This should imbue your units with unconquerable self-confidence and pride in demonstrated ability.

One of the primary purposes of discipline is to produce alertness. A man who is so lethargic that he fails to salute will fall an easy victim to an enemy.

Officers must have self-confidence and men must have confidence in their officers. Close-order drill, meticulously executed for two daily periods not to exceed 30 minutes each when practicable, will go far towards developing confidence and self-confidence.

It must be impressed upon officers that it is their paramount duty to set the example in courage. They must be the last ones to take cover and the first ones to leave cover. They must not show emotion except the emotion of confidence.

Americans, with arms in their hands, are fools as well as cowards to surrender. If they fight on, they will conquer. If they surrender, they will starve. Reports from prisoners of war in Germany indicate that the casualties in prison camps, unintentionally inflicted by our air bombardment, are in excess of those encountered by hostile bombardment on the battlefield. Cowardice must be ruthlessly eliminated.

Present methods of warfare demand a higher discipline than anything we have previously conceived. Discipline can only be insured by meticulous obedience to orders and regulations, to include military courtesy, dress, and behavior. It is absurd to believe that soldiers who cannot be made to wear the proper uniform can be induced to move forward in battle. Officers who fail to perform their duty by correcting small violations and in enforcing proper conduct are incapable of leading. Requiring officers to carry out their duties in the enforcing of discipline brings out in them the latent ability to command in battle. The prime essential to victory is to have all officers obsessed with their obligation to their country and their troops, and imbued with the determination that they cannot fail in the performance of their duty and live with their own conscience.

The regulations as to speed, distance, and intervals between vehicles must be maintained in combat and out. Any driver who violates either should have his driver's permit revoked and be reduced to the grade of basic private.

Any officer, who, while riding in a vehicle, permits the above violations, or who on seeing them fails to take corrective measures, should be tried or fined under the 104th Article of War. Officers are always on duty, and their duty extends to every individual in the U.S. Army, not only just to members of their own organization.

b. Infantry Employment

Infantry occupying a position must use the method of mutually supporting small groups wired in. The fact that they are surrounded does not justify surrender. It should be a matter of pride with troops as well as individuals that they never surrender as long as they have weapons and ammunition.

The absurd practice of advancing by rushes when ground defilade exists must be discontinued. When casualties, due to fire, make movement too costly, artillery observers with the front line infantry must automatically call for smoke on the enemy producing the small-arms casualties. Where casualties result from artillery fire or mortar fire, every effort must be made to neutralize the enemy observation posts by smoke from our own artillery or mortars. As soon as enemy observation is neutralized, the troops formerly pinned down by fire must move because even though the enemy's observation is neutralized he can still lay on his former data, but cannot change his data to cover the movement.

In addition to the ability to march and deploy at night, troops must be able to fight at night both in the moonlight and in the dark. This ability can only be obtained by practice. Troops who cannot fight at night are valueless.

In order to ensure that time is not wasted or confusion caused in setting up mortars and machine guns, the crews of these weapons should have standing gun drill daily both by daylight and in the dark. They should be further instructed in the method of laying by the ladder system.

Reconnaissance is of paramount importance. If small vigorous reconnaissance patrols are sent out before dark, the enemy front can be located, and taking advantage of this knowledge, our troops can move into position from which to attack at dawn, or under favorable circumstances, during the night. Without meticulous reconnaissance, either form of attack is suicide.

c. Tactics

There is no approved solution to any tactical situation. There is only one tactical principle which is not subject to change. It is: "To so use the means at hand as to inflict the maximum amount of wounds, death, and destruction on the enemy in the minimum time." The following points, all of which are as old as war, are emphasized as useful means in obtaining the above result.

The primary mission of armored units is to destroy infantry and artillery. Tank versus tank battles, although sometimes necessary, are expensive and indecisive.

Tanks advancing against other tanks or antitank guns must govern their movement by the existence of cover. In the case of a platoon, when other cover is lacking it is possible for 4 tanks to fire smoke at the located enemy guns or tanks, while the other tank moves to a new position. If tanks are advancing under the supporting fire of other tanks, the supporting tanks must immediately open with smoke on any enemy gun or tank which takes the moving tanks under fire. After an object has been smoked, HE, or when the range permits, machine guns, should be fired into the smoke to prevent movement. When, or if, it is desirable to slow up or halt tanks before they are within effective armor-piercing range, the use of smoke is indicated.

Never attack strength - "Catch the enemy by the nose with fire and kick him in the pants with fire emplaced through movement." You can never be too strong. Get every man and gun you can secure provided it does not delay your attack.

In battle, casualties vary directly with the time you are exposed to effective fire. Your own fire reduces the effectiveness and volume of the enemy's fire, while rapidity of attack shortens the time of exposure.

Our mortars and our artillery are superb weapons when they are firing. When silent, they are junk--see that they fire!

Flat trajectory fire against machine guns must be delivered from a position near the axis of enemy fire. This pins the enemy down until the grenadier with the bomb and bayonet kills him from behind.

Few men are killed by bayonets, but many are scared by them. Having the bayonet fixed makes our men want to close. Only the threat to close will defeat a determined enemy. Bayonets must be sharpened. Owing to the size and strength of our men, they are invincible with the bayonet. They must know this.

In mountain warfare the highest peak must be taken first so as to insure observation and permit subsequent attacks down hill. This is best done by a night attack by a small unit which must seize the peak and be reinforced at dawn twilight by sufficient troops to hold it. To reinforce in the dark may cause confusion and firing on friendly troops.

In forcing a pass secure the heights first. There are always trails leading to the rear of hills. It must always be remembered that inviting lines of approach are invariably defended, and an advance by such lanes, without securing the heights covering them, is almost suicidal.

Movement across country at night is very slow; therefore the enemy will stick to the roads as long as possible. Patrols well out, observing the roads, will find him, but if they sit right on the roads, they will be captured.

Never take counsel of your fears. The enemy is more worried than you are. Numerical superiority, while useful, is not vital to successful offensive action. The fact that you are attacking induces the enemy to believe that you are stronger than he is.

Battles are fought by platoons and squads. Place emphasis on small unit combat instruction so that it is conducted with the same precision as close-order drill. A good solution applied with vigor now is better than a perfect solution ten minutes later.

In battle, small forces - platoons, companies, and even battalions - can do one of three things, go forward, halt, or run. If they halt, they will be destroyed in place. If they run, they will be an even easier target. Therefore, they must go forward. When caught under fire, particularly of artillery, advance out of it; never retreat from it. Artillery very seldom shortens its range.

IN CASE OF DOUBT, ATTACK!

Oral orders will be repeated back.

The tendency prevalent in lower echelons of issuing inaccurate and conversational orders will not be permitted. Orders to a squad must be as exact, though much shorter, than orders to any army corps.

Mine fields, while dangerous, are not impassable. They are far less of a hazard than an artillery concentration. Troops must move forward through them.

Troops should not deploy into line until forced to do so by enemy fire.

d. Artillery Fire

Artillery concentrations, particularly when combined with the use of smoke, are effective in stopping or destroying tank attacks. In firing on peaks, artillery must not attempt to bracket, but must fire short and work up-hill. When it has good range on the top, it can use smoke to cover an infantry attack or neutralize observation, otherwise it should use shell fire to destroy observation.

In giving close-fire support to our infantry, especially in mountains, the artillery must open well forward and creep back. The observer conducting the fire should be with the infantry.

The use of smoke must be emphasized. A concentration of white phosphorus against enemy tanks will usually immobilize them and frequently cause the crews to leave them. If the crews remain in them, they must put on their gas masks. When tank destroyers, artillery, or tanks engage hostile tanks or antitank guns at decisive ranges, they should have smoke immediately available, so that if they get a miss on the first shot, they can follow it with smoke. This gives them a chance either to maneuver or to catch the enemy when he emerges from the cloud.

Tank attacks against positions defended by artillery or antitank guns should be preceded by high-burst artillery concentrations on the located or probable location of such guns. Tanks with the tops closed can operate under such conditions with perfect impunity, but the enemy will have difficulty in manning his weapons.

e. Armored Reconnaissance

In armored reconnaissance, the following points are of importance. This applies to the reconnaissance troop with infantry divisions and the reconnaissance battalion with armored divisions.

Junior officers in reconnaissance units must be very inquisitive. Their reports must be accurate and factual, not exaggerated. Negative information is frequently more important than positive information. Information not immediately transmitted is valueless.

All members of a reconnaissance troop should know what they are trying to do. Reconnaissance obtained in front of one division must be transmitted to reconnaissance units of adjoining divisions. Troops must not report types of guns or vehicles unless they are certain. The report that three 88's are firing at them may lead to erroneous conclusions. The report should state that three artillery pieces are firing, unless a definite identification is secured.

Reconnaissance units must not lose contact. At night, listening posts off the road are of vital importance. These listening posts should be at least six miles in front of the normal outpost.

Reconnaissance units should not be used for security missions. Their sole purpose is to get information. They must have sufficient strength in tanks,

assault cannon, etc., to obtain this information. They should have direct radio communication with reconnaissance planes.

f. Antiaircraft

When attacked by enemy planes, every weapon must be fired against them.

On the other hand, every effort and every disciplinary measure must be taken to prevent firing against our own planes. If we have relative air superiority, it is better to wait until planes attack before opening fire than it is to shoot down our own planes. On the other hand, our planes should avoid, even when it entails considerable difficulty, coming in from the direction which the enemy would use or just after he has passed.

Commanders are responsible that their antiaircraft guns do not fire on friendly planes. Panicky firing will be rigorously dealt with. By this is meant when one antiaircraft gun opens fire, others immediately join in without identifying the target. Never fire at a plane until you have identified it or it has attacked you.

If attacked by friendly planes, through error, show yellow smoke.

g. Tactics of Landing Operations

All landing operations will be rehearsed on sand tables. These can be improvized on the ground and need not be complicated. The rehearsal should commence with the boats and terminate with the platoons. In each case, the officer in charge of the unit will give, at the sand table, the actual orders or instructions which he will give in battle.

Owing to the fact that we do not always land where we expect to, junior commanders, to include platoons, should know the general as well as the special plan and wherever they land will use their best efforts to insure the success of the general plan. This is always done by offensive action.

Speed and ruthless violence on the beaches is vital. There must be no hesitation in debarking. To linger on the beach is fatal.

In landing operations, retreat is impossible.

Every unit in the assault echelons must have a magnetic azimuth, and where possible, a distant directing point.

The initial objective for each unit in securing the primary beach-head must be specified. It should be a natural terrain feature capable of identification, even in darkness.

Above all else, the assault must push on relentlessly to its objective. You know where you are going; the enemy does not. Utilize the initiative thus afforded.

You must be prepared to smother the beach with fire. To this end, medium tanks, assault cannon, self-propelled guns, mortars, and machine guns should be emplaced on all suitable craft so that they can fire on the beach prior to landing. You will arrange a means of suspending this assault fire when your leading waves have landed.

Guides on beaches must know their jobs and do them.

Antiaircraft weapons will be emplaced on all suitable craft so that they can be fired while at sea. All vehicles possessed of antiaircraft weapons will have them arranged for the immediate opening of fire. Troops will disembark with fixed bayonets. Life belts will be inflated prior to landing. They will be dropped on the beach.

Assault infantry must be provided with the maximum number of large wire cutters. Hand grenades are useful in the assault of the beach.

Vehicles landing over beaches should do so in second; first speed is too slow. Motors must be wide open as the vehicles hit the water or beach. Maximum speed across sand is necessary. Motors must be warmed-up ten minutes before craft grounds.

In landing operations, intelligent reduction of tire pressure is vital to the successful crossing of beaches and sand dunes. All vehicles, including artillery tractors, will have tire pressures as follows:

VEHICLES	PRESSURE IN LBS
Truck, 1/4-ton, 4 x 4	6
Truck, 3/4-ton, 4 x 4, command and reconnaissance	15
Truck, 2 1/2-ton, 6 x 6, amphibian	12
Truck, 2 1/2-ton, 6 x 6, cargo	15
Truck, 4-ton, 6 x 6, cargo, with winch	15
All half-tracks, combat tires completely deflated	
All trailers will carry normal pressure.	

h. Maintenance

Weapons will be kept in perfect working order at all times. This should be checked frequently by officers and non-commissioned officers.

Vehicles will be properly maintained in combat as elsewhere. Particular attention must be given to tire pressure, lubrication, and the batteries.

Upon the completion of each phase of an operation, all vehicles will be serviced and replenished, so that the next phase may be started without delay.

Commanders are responsible that all vehicles are marked in accordance with Paragraphs 6-14, AR 850-5.

i. Medical

Each soldier will be provided with one bottle of twenty-four (24) halazone tablets for purifying water. A first-aid packet, consisting of a dressing, sulfanilamide powder, and sulfadiazine or sulfanilamide tablets, will be carried at all times within the first-aid pouch.

j. Miscellaneous

Whenever troops have gained a position which they purpose to hold, they must immediately mine it. Time and effort can be saved if part of the mine field is dummy.

In the location of towed antitank guns, these guns must be emplaced where they can neither see nor be seen beyond their effective antitank range. They must be dug in.

Every effort must be made to maintain wire communication to the front. The value of wire communication cannot be overstated.

Where a command post using radio is in position more than six hours, the radio vehicles must be under remote control wire from the command post and at a distance of from half a mile to a mile away from it. If this is not done, the enemy will get radio bearing intercepts and be able to locate the command post for air attack.

k. Conclusion

We can only conquer by attacking.

In landing operations, continued ruthless pressure by day and by night is vital.

In the initial phases of any campaign, we must be particularly emphatic in the ruthless destruction of the enemy. Remember that a pint of sweat will save a gallon of blood!

SECTION III

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TACTICAL AND TECHNICAL TRENDS, ISSUES 21-30 (INCLUSIVE)

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TACTICAL AND TECHNICAL TRENDS, ISSUES 21-30 (INCLUSIVE)

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