

KASSERINE PASS BATTLES



Doctrines and Lessons Learned Volume II, Part 4



U.S. ARMY
CENTER OF MILITARY HISTORY

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Combat Command B, 1st Armored Division, Reports on Combat Experience and Battle Lessons, 1943

In the Field
10 June 1943

SUBJECT: Reports on Combat Experience and Battle Lessons for Training Purposes.

TO : The Commanding General, 1st US Armored Division.

I TACTICAL DOCTRINE

Generally speaking, the tactical doctrine as laid down by our field manuals has proven to be sound. The weakness lies in the fact that during the high tempo of combat, and more especially so with green and untried commands, a great many times elementary military teaching is forgotten or overlooked with the results that unnecessary lives are lost and often times the tide of battle turns with disastrous results. This weakness is not necessarily confined to the troops actually engaged in combat but runs on up to higher headquarters.

II TACTICAL TEACHING

In the Armored Force Field Manuals one obtains the idea from scanning the cleverly designed sketches of "do's and don't's" of small unit operations that it is desirable and proper for armor to attack anti-tank positions. Many sketches show varied methods of approach toward subduing an AT gun. (Experience has proven, at least in the Tunisian Campaign, that the AT gun is to be avoided as much as possible and only attacked as a last resort.) While the sketches are for the most part correct in the methods to be used under varied conditions still it should be more strongly emphasized that AT positions should be avoided by armor and only attacked when no other means of overcoming them is available. Instruction, before this command entered into actual combat, usually presented the theoretical tactical situation to the platoon and even company commander with the problem of attacking and destroying an anti-tank position. It was up to him to give a solution for this situation. A false picture was there created and also a feeling of over-confidence. In the initial stages of the operation of this command in November and December, 1942, such over-confidence resulted in the rapid whittling down of a medium tank battalion to less than twenty tanks within a few minutes of actual combat. Another incident: Shortly afterward a platoon of M-4 replacement tanks with new crews, upon being assigned a mission and given warning of the effect of AT fire against the M-3 tank, charged gloriously but vainly up a hill only to lose four out of five tanks from AT fire.

Talking to the platoon leader afterwards he truthfully explained that, one, he was confident that present enemy AT guns were ineffective against the new M-4 and, two, that his method of approach was based on an approved solution given under similar circumstances on maneuvers.

III ORGANIZATION OF A COMBAT COMMAND

Under the present set-up the staff of a combat command of an armored division cannot function properly unless supplemented by additional staff officers. Should all battalions be placed under the command of a combat command without a regimen-

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regimental headquarters these battalions will suffer in that certain of their staff officers, namely an adjutant, personnel officer, an assistant intelligence officer, a supply officer, a motor officer and a surgeon, will, of a necessity, have to work in the staff of the combat command which has none of these key staff officers. The already small staff of a battalion is thereby weakened by the loss of one or more of its staff personnel and as a result the battalion is handicapped. On the other hand when a regimental headquarters is placed under the command of the combat command along with other units, the regimental headquarters largely ceases to function as such, and the regimental commander and certain members of his staff, namely the intelligence officer, the executive officer, the operations officer, and the air operations officer are without a job except as assistants to the combat command staff or any other job given them by the combat commander.

In the Tunisian Campaign the tank regiment seldom, if ever, operated as such. At the present trend appears to be the use of separate battalions, accordingly it is believed that regiments should be disbanded and regimental staffs be incorporated into the combat commands thus giving the latter a complete working staff.

IV OFFENSIVE ACTION

Throughout the entire Tunisian Campaign, offensive action by American troops was marked by the dispersal of effort. At no time was a spearhead attack attempted and the general feeling appeared to be one of fear of an enemy counter-attack. It is believed, particularly in the latter stages of the campaign, that a concentration of effort upon a single objective rather than a coordinated drive with all U.S. combat troops in the line would have resulted in the conclusion of the campaign far more rapidly and with less loss of personnel and material. A step in the right direction towards this was the use of the 1st Armored Division, complete, in the final stages of the battle east of Mateur.

On only one occasion, in February at Ousseltia Valley while under the French 1st Army Corps, did this command have sufficient infantry. But no sooner was the mission of driving the enemy from the valley completed than the infantry was removed from this command by II U.S. Corps order and the golden opportunity of holding the pass to Kairouan was lost. Furthermore at no time was armor, when successful in making an advance as at Tebourba in December (while under the British V Corps), Ousseltia in February, Kasserine in March, Maknassy in April, followed up closely by infantry and its gains consolidated.

(In the employment of armor in the offensive, it is desirable to have the infantry and artillery team develop or detect soft spots in the enemy line and then throw all available armor against these spots for a break-through. Once the break-through is accomplished, motorized infantry and plenty of it should quickly follow up the advance of the armor.)

V THE DEFENSIVE

Two-thirds of the Tunisian Campaign was spent by American troops being on the defensive. It is well realized that the number of troops available to adequately hold in strength at all vital places was insufficient, but several weaknesses were noted which, if they had been rapidly corrected, would have improved the defensive strength of our lines immensely.

In moving about a battle-field, after its conclusion, it was always obvious where American troops had their positions due to the fact that the "digging in" differed from that of the enemy. Masters of the art are the Germans and every position held for any length of time whatsoever is pock-marked with dugouts or foxholes for the men and excavations for the 88mm guns and other field pieces. Even the airfields of the enemy show the "digging in" theory. Wherever possible, bomb shelters were built for the planes. No such shelters were ever noticed on our own fields. It is absolutely necessary that all troops be impressed with the "digging in" practice as many lives will be saved and troops, especially infantry and AT personnel may undergo severe artillery fire and even be over-run by tanks without suffering undue losses and still be able to carry on the battle. A shallow slit trench means an early grave, and a poorly dug in AT gun means a weapon and crew lost.

Concealment is neglected in most cases. American troops in particular are prone to use the skyline for a vantage point. In a great many cases officers are even worse offenders than the men and staff officers in particular are prone to "have a look at things" while standing on the crest of a ridge.

Main positions are disclosed to enemy aircraft and even enemy OP's by movement lighting of fire (British and French troops are even worse offenders than Americans on this point), hanging out washing, reflectors (windshields, tin cans, etc.) and all other things basic training insists not be done. In conjunction with the prevention of this, the aim should be to have alternative positions and only move to battle positions when the commanding officer feels the time is right.

Anti-tank mines were not used to their fullest advantage. (Counter-attack by enemy tanks is always a chief danger after the capture of a position. The remedy for this is the rapid organization of AT defense and the laying of minefields as quickly as possible.)

In connection with an enemy tank attack, there is a general feeling among the troops that the 37mm gun is not a good anti-tank weapon. Due to lack of confidence troops are prone to have a feeling of insecurity which is always bad for those on the defensive. It is most certainly desirable that a heavier caliber, lower silhouette AT weapon be provided.

Under any conditions reconnaissance and observation posts are vital. Throughout the Tunisian Campaign, the front line was, for the most, a loosely held general line and in such a situation OP's play an extremely important role. Unfortunately, reconnaissance by ground troops was usually not aggressive enough and reconnaissance by air almost always valueless. This latter was due to the fact that up until the time the enemy was on the run, all his movements took place at night (we never had any night reconnaissance flights) or if something was spotted during the day, the reports of this failed to reach units that were concerned.

Observation posts were widely used by the French and English and obviously by the enemy. Toward the latter stages of the campaign, their use and advantages began to be more fully realized by us. Even then, however, aside from artillery forward observers, personnel manning OP's were not impressed with the full extent of their duties. It is mandatory that everyone within the command have a knowledge of what to look for, record and report while on OP duty. There should be specially trained men in each outfit for this work. As the German is mostly a creature of habit, invaluable information may be obtained from the proper use of OP's.

VI LIAISON

Liaison between major units was often times lacking. This command, for over half the campaign, acted more or less as an independent unit and in many instances had little, if any, knowledge of exactly what was taking place or the contemplated actions by adjacent commands. Our liaison officers found that the British and the French were most cooperative but in some instances information was difficult to get from American units. Mutual liaison always existed between our own command and the British and French but often times American commands failed to establish it with this command. In the latter stages of the campaign, however, this situation improved enormously. It must be stressed that liaison is not only necessary but vital and there can never be too much of it between units.

VII EMPLOYMENT UNDER COMMAND OF A DIFFERENT NATIONALITY

It is recommended that no unit smaller than a division be employed under command of a different nationality. Each army has its own peculiar system of training and employment of units as well as the use of equipment. The result of attaching small units under foreign command results in the feeling of personnel involved that their equipment and organization is being used improperly. The inevitable is that a feeling of mistrust and lack of confidence springs up and naturally every effort must be taken to avoid such a feeling if we are to continue to be successful. It might also be added that communication and supply problems are also yet another difficulty in such a situation.

VIII COOPERATION BY SUPPORT AND OBSERVATION AVIATION

In the initial part of the campaign, close support aviation was completely lacking. Only one instance of close support is known to exist up to the latter part of January 1943. This occurred in the vicinity of Massicault on December 10, 1942. A flight of Spitfires (British) attacked and caused the withdrawal of some fifteen to twenty enemy tanks massing for an attack. The next example of close support occurred in Cusseltia Valley the latter part of January when a pre-arranged plan with the 12th U.S. Air Support Control of marking a target with smoke for air bombardment proved highly successful. From that time on close support increased and reached its maximum in the battle of the Kasserine Valley (actually the Bahiret Foussane Valley) around February 24, 1943. Here, in conjunction with our artillery, B-25's, B-17's, A-20's and all types of pursuit ships played a major part in stopping and finally routing the enemy. After this, close support missions were most difficult to obtain as apparently the tactical air force had put into being a plan which minimized close support missions requested by ground troops.

Aerial observation, as far as helping this command to know the whereabouts and movements of the enemy, must be considered worthless up until the latter part of April. At this time the enemy, being in full retreat, was moving both day and night and reports as to his whereabouts began to flow in. On the other hand, requests for aerial observation on certain definite localities were, even then, for the most, almost certain to be refused and if granted of little value due, one, the length of time required to get report back to requesting headquarters and, two, the lack of trained observers and observation planes.

At no time were night reconnaissance flights made on request and to the best of the knowledge of this command, were not ever attempted.

It is firmly believed that mutual liaison between ground and air must be improved down to and including a combat command especially when it is acting in a separate capacity.

Cooperation between ground and air increased as the campaign progressed but much greater progress is needed. Among the many improvements, too numerous to mention here, one simple and easily carried out plan could be accomplished. The air support control should send senior officers to visit front line positions and get the version of division and combat commanders actually engaged in fighting as to the improvement of air support in their sector. As each sector presents a different problem, spot solutions could be made and both ground and air would benefit in their relations and the close support rendered would undoubtedly be vastly improved.

Briefly summarizing steps to be taken to improve close support aviation, the following points are mentioned for consideration:

- a. Each armored division should have attached one observation squadron and one fighter-bomber squadron.
- b. A senior flying officer should be on the staff of each division to advise the division commander on the capabilities and limitations of aircraft available and also on all other air data.
- c. Division Headquarters and the two Combat Commands should have permanently attached air support parties. These parties not only should act as channels for air requests but also a source of all air reconnaissance information.
- d. A definite policy (something not in existence in the Tunisian Campaign) of air-ground radio communication and air support requests should be used.
- e. A system of air to ground and ground to air recognition signals should be in effect throughout the combat zone.

IX PYROTECHNICS

Throughout the entire campaign the enemy made extensive use of pyrotechnics and it was only in the late stages that their use came into even partial play by American troops. Both French and British troops, especially the British Eighth Army, also used this means of signalling. It is felt that pyrotechnics should be used in any future operation much more extensively and more emphasis placed on this phase in the training periods. On the occasions this command used this system it was most effective. Its harassing effect, even on seasoned troops, proved very great.

X DEMOLITION KITS

On numerous occasions, especially in the withdrawal from the Sbeitla - Gafsa area, the enemy was able to move rapidly in pursuit as little or no demolition was executed on bridges, culverts, defiles, etc. It is believed that at least one demolition kit of the cavalry type be an integral part of at least one in every three armored vehicles.

In connection with this it is also deemed highly desirable that every vehicle be equipped with some sort of a charge whereby a vehicle can quickly be rendered useless when it becomes necessary to abandon it. At the close of the campaign the enemy had in his possession scores of American vehicles, the majority of which would never have been able to be used had these vehicles been equipped with some sort of a destroying charge.

XI MAPS

Both British and American troops were severely handicapped throughout the campaign by the lack of good maps. The French had only a very limited supply of excellent maps of the country. On the other hand the enemy apparently had an unlimited amount of these good maps and greatly profited by them.

The maps we used were not only faulty in showing existing road nets but the reproduction of the original excellent French map was so poor as to be of very little value. Towards the latter part of the campaign the situation improved and new and better reproductions were finally obtained.

It is felt, however, that in any future campaign an adequate supply of good maps be ready for use upon demand.

For the Commanding Officer:

E. A. RUSSELL, Jr.,
Lt. Col., Cavalry,
Executive.

OFFICIAL:

/s/ D. D. KLOUS,
D. D. KLOUS,
Capt., Cavalry,
S-3.

REPRODUCED BY G-3 SECTION, HEADQUARTERS, 1ST ARMORED DIVISION, 30 JUNE, 1943.

15

Tankers in Tunisia

**HEADQUARTERS
ARMORED REPLACEMENT TRAINING CENTER**

Fort Knox, Kentucky
31 July 1943

Subject : What American Tankers have learned in battle.
From : Armored soldiers at the front in Tunisia.
To : Men of the Armored Replacement Training Center.

Armored soldiers at the front in Tunisia are trying to help you by what they say in these pages. Many of them answered this question: "What have you learned that will help a younger brother just entering the Replacement Center at Fort Knox?" They told these stories to **BRIGADIER GENERAL T. J. CAMP**, my assistant, at the front in Tunisia the first half of April, when the going was hard.

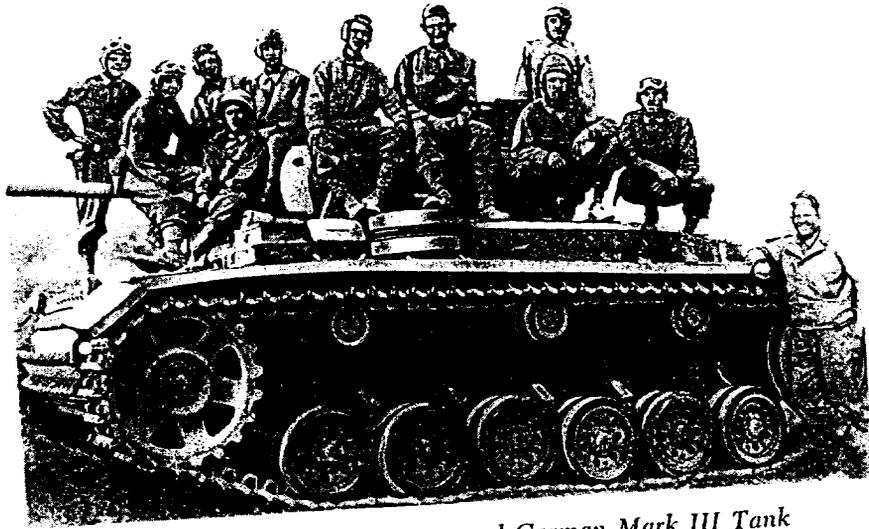
LIEUTENANT GENERAL DEVERS, at that time Chief of the Armored Force, included in his order to **GENERAL CAMP**, "Get first-hand information. Get the story at the front. Go to the enlisted man. See what he knows." I ordered him, "Find out if our replacements are in condition and are trained right for battle. Check them all the way from General Headquarters to the units and from the gang plank to the battlefield." Army Ground Forces also gave him a broad mission and **GENERAL EISENHOWER** appointed him his personal representative. **GENERAL CAMP** visited all American Armored Units in North Africa which had been in action up to that time.

The talks were informal, occasionally the enemy interrupted. No one had a chance to see the record of his talk, usually he didn't know the conversation was being written down in longhand.

The men who talk to you in this book won the hard way; heart and soul they hope you will learn from them how to win easier than they did. You had better learn *now* to kill or be killed or else you'll learn the hard way in battle.



C. L. SCOTT
Major General, U. S. Army,
Commanding



American Tankers on a captured German Mark III Tank



Only the Army has gasoline in North Africa

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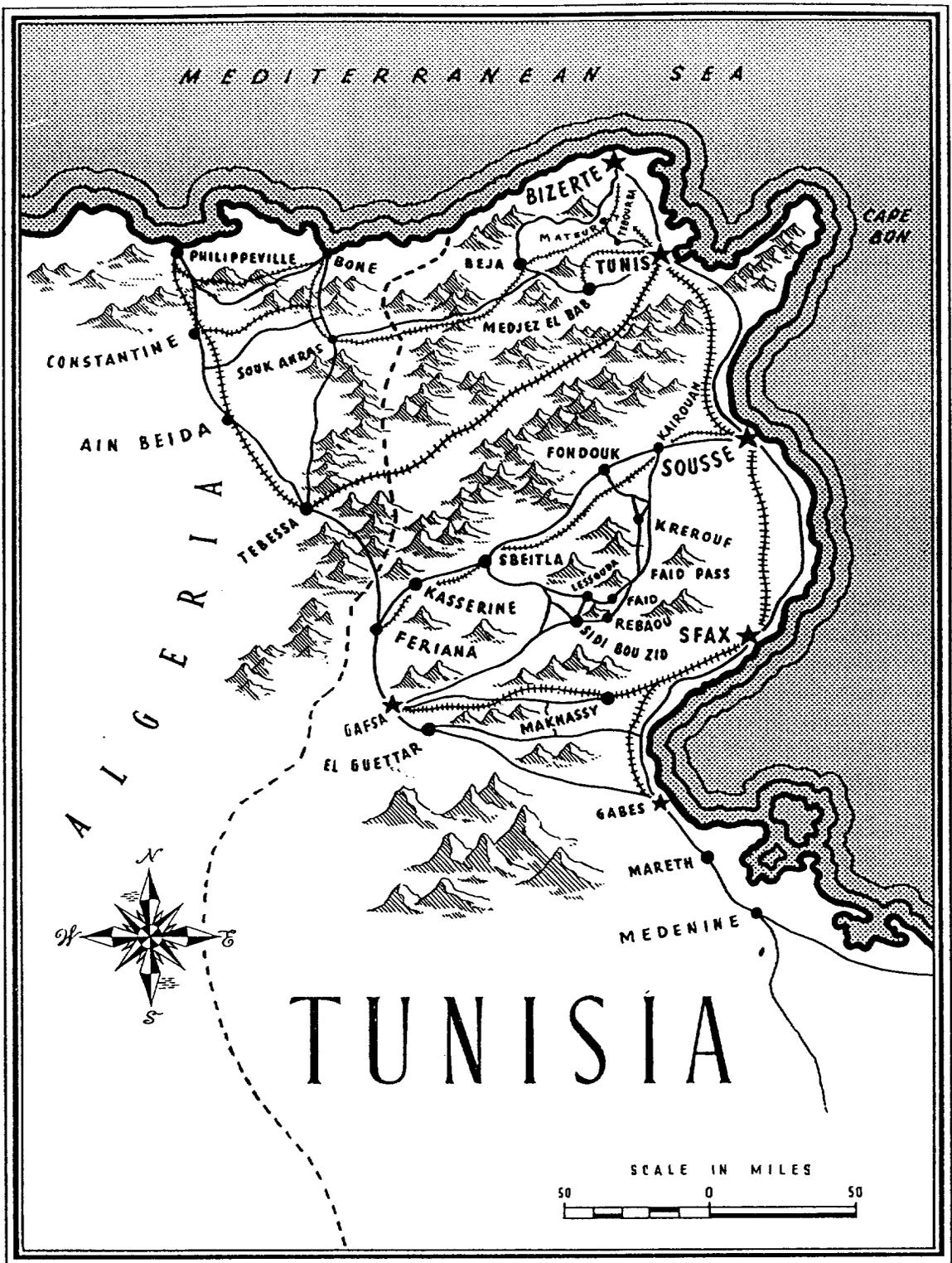
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**These pictures were taken by a North African Replacement Center.*



TANKERS IN TUNISIA

INTRODUCTION

In this book you will not find the "big picture" of the North African campaign, but you will find the little tricks that saved the lives of fighting men and that may save yours. These men won victory, and you can win if you will do what they tell you.

You ought to feel exceptionally good about one thing—the people in Africa who knew said that the armored replacements had received the training necessary for victorious fighting and were the tops of all American replacements.

You should get ready for battle here. Let **SERGEANT DuHAMEL** of the 60th Infantry, from an outpost on a mountain peak in Tunisia, tell you in his own words how soon a replacement may be fighting.

"I was sent as a replacement. I sailed from New York 5th March; landed in Oran 19th March; sailed from Oran 21st March; arrived Phillipeville night of 24th March; left Phillipeville by truck 25th March; arrived at a post near Constantine 25th March; left 26th March; arrived Ain Beida 27th March; left Ain Beida 31st March; arrived 9th Division 31st March; was on outpost this mountain 1st April. I am one of one hundred replacements of the 60th Infantry who are on this section of the mountain range."

(See Page 13)*

Six places in less than a month! Direct from New York to a fighting post in Africa from which the enemy was repulsed by hand-to-hand fighting in a night attack on 4 April, the day after this talk. That is how close some of us are to the front.

The outstanding point from all statements was the need for exact discipline. The private soldier felt the need of this discipline, as did the officer, because it meant that he could be sure that the other fellow was doing his part. All through the pages you will read stories which will tell you this.

GENERAL EISENHOWER said, "Discipline is vital. A possible 50% improvement in value of men results from making them tough and well disciplined. See that orders are carried out exactly. We need exactness in uniform and in saluting. Great nervous energy is required of commanders. They must meet requirements and exact discipline and obedience."

GENERAL HUEBNER said, "Discipline is vital. The most important command is right face, that is, to have a thing done at once, immediately."

GENERAL SAWBRIDGE went a little further—he paid a tribute to armored replacements and then said, "Replacements generally lack fundamental discipline. They have not learned initiative or to act for themselves. They wait for a non-commissioned officer."

You should think about this; discipline means more than just obeying direct orders, it means doing what you ought to do without orders. The ability to rely on the other men in

*NOTE: The number given below each quotation is the number of the page in this book where the full statement, from which the quotation has been taken, may be found.

TANKERS IN TUNISIA

your company and on the men of all the companies of all the arms that are working with your company to do what they ought to do is what wins victories and costs the enemy lives.

Physical fitness, maintenance of equipment, skill in arms, are important; but above them all is that discipline which makes it possible for each man to depend with safety on all his comrades.

In the modest accounts that follow are stories of the highest heroism. Often you will have to look closely to see how well these men have done. In years to come you will find that many of the men in this book will have won fame for their deeds, for the deeds of which they tell only those parts which they think will be of help to you.

You will learn here of the tanks that burned, of men who were killed, but remember, the enemy paid a high price for them—they paid with the “unconditional surrender” of all of North Africa, with hundreds of thousands of prisoners, and with abandoned equipment that hasn't yet all been counted.

The stories told here were told at the front wherever armored troops were found.



LEADERSHIP

Platoon leaders learned in the North Africa fighting that to lead, you've got to be out in front. **LIEUTENANT HILLENMEYER** of company “H”, 1st Armored Regiment, said, “As a platoon leader, I learned that you've just got to lead your men. When you get out in front, they'll follow you easily. If you're moving in sections, the platoon leader must go in the forward section. And what's almost as important is the fact that every man must know what's going on. You've got to take them into your confidence and explain the show to them. They'll always respond with better fighting.”*

(See Page 24)

SERGEANT BECKER of the 1st Armored Regiment told me, and I quote: “It's a funny thing, being tank commander. You have got to run the crew, be stern, and show leadership. I had a new driver for an M3 tank. I told him to drive up a slope to a certain place and then stop. He got excited and went all the way up the hill. I told him to back up to the right place. He got excited again and went all the way back down the hill. He wouldn't listen to the inter-phone communication so I hollered to the 37 gunner to stop him, as I had my head out. Finally we stopped him and we drove up to a safe firing place and I asked him why he didn't pay attention to me. Over night, I explained how I wanted him to drive and how I wanted him to pay attention, and I told him if he didn't I would close his slot up completely and make him drive blind. That fixed him. I think I have a good driver now.”

(See Page 28)

I was also told of how **PRIVATE MOORE**, Company “L”, 6th Infantry, led a charge of 20 men to recapture a hill from which his company had been driven. **PRIVATE MOORE**, through

*NOTE: Also see pages 21 and 46. These accounts do not agree and should not agree because all grades must exercise initiative and the application of principles varies according to circumstances.

INTRODUCTION

his own leadership, in the absence of any commissioned or noncommissioned officer, gathered together a group of men and charged the hill, all standing up with the exception of two men who crawled up, one to throw hand grenades into a machine gun nest and the other to shoot the enemy when they came out.

LIEUTENANT COLONEL RINGSOK told me: "Frankness with your subordinate leaders is the biggest thing in leadership. The officer should be truthful. If he doesn't know, he should admit to the noncommissioned officers that he doesn't know all the answers and that they must work it out together. You can't impress the organization of the battalion too much in the States. Let them learn it there rather than have to learn it here, for it is absolutely necessary that the men know the workings of a unit when leaders turn up missing in action and subordinates take their places."

(See Page 40)



RECONNAISSANCE

"A reconnaissance of the field, if you are lucky enough to be able to make it, is the most important thing I can think of," **LIEUTENANT COLONEL HIGHTOWER** told me. "In tank fighting nothing is more important than expert reconnaissance of your routes of advance and withdrawal. Several times both we and the Germans have moved up on what we thought was a good clear route only to find a dry wash, nine or ten feet high, blocking our way, causing us to withdraw."

(See Page 19)

LIEUTENANT HILLENMEYER, also of the 1st Armored Regiment, said, "Sir, if we're going to get anywhere, we must put greater emphasis on good reconnaissance. I know of one instance where we went into battle not knowing what was there. We saw the enemy tanks go into Faid Pass and that night we had a dry run back in our concentration area. Next day when the attack came off we found the thing was a blind—the pass was covered with deadly antitank stuff. It plastered our one company that went in."

(See Page 24)

STAFF SERGEANT WILLIAM HAGLER of Company "E", 1st Armored Regiment, related this incident to me: "At Medjes-el-Bab there was little or no reconnaissance. Our infantry attacked in the morning. One platoon of tanks was supposed to follow the right flank, and it was supposed to be protected by another platoon. We had no reconnaissance other than our own on foot. We walked the tanks in. We had no orders other than to await a tank attack. The following morning about 0900 hours, we lost two tanks to the 88-mm guns. The first was the command tank. I went forward to get the crew and lost my tank by three 88-mm gun hits. Subsequently the entire command tank crew was lost by mortar fire. I was wounded and taken to the rear. I am confident that reconnaissance would have saved those two tanks. The light tanks followed us around."

(See Page 33)

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LIEUTENANT McCracken of the 1st Armored Regiment told me, "Everyone thought Sergeant Jackson's buddy, Sergeant Hamner, was cracked when he remarked that he saw a building moving around. But it was a German gun position. They are very smart and use houses, sand dunes, or hay stacks as gun positions. The moving building turned out to be a vehicle with windows painted on representing windows of a house."

(See Page 32)

However, it was **SERGEANT FRANK SABIN**, of Headquarters Company, 6th Armored Infantry, who really summed up the whole subject of reconnaissance when he said, "The battalion commanding officer and the commanding officers of the companies do better when they make reconnaissance. Seems like the battalion does 100% better when they do."

(See Page 41)



TANK TACTICS

In discussing tank tactics with **LIEUTENANT COLONEL HIGHTOWER**, I was told, "Generally they (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-mm guns. 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. We've just got to learn to pick those guns up before closing in on them."

(See Page 19)

LIEUTENANT COLONEL HIGHTOWER then added, "Take it very slowly. Germans do it that way all the time. Do not shift gears once you start, particularly in the dusk, because the backfires will give you away. Keep the tanks out of column at all times. Never travel in column, travel in 'V', line, wedge, but never in column. Stay off the roads. Get off the roads and never use them. In this country, too, we've learned to move slowly so as not to reveal our position. You can't boil up to battle at high speed without broadcasting your coming in a big cloud of dust."

(See Page 19)

LIEUTENANT THOMAS B. RUTLEDGE of the 751st Tank Battalion said, "One thing I learned: the next time we move up, before we close up on the objective, it is a good thing to look down on the ground in front of the objective and if you see anything that looks like the enemy or enemy guns, fire away at it with canister. We were so close that with keen observation, even two or three rounds or some machine gun fire would have downed many machine guns. I believe this would save us a lot of grief afterwards. We know there are lots of mines, but when approaching the objective we seem to forget those machine guns. So, instead of covering

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the ground in front of the objective with machine gun fire, we thought only of the objective, which was on the hill."

(See Page 52)

SERGEANT LASLEY of the 1st Armored Regiment, who had been a tank commander for eleven months and had been in several actions, told me, "When you are fired upon, if you have a good tank like an M4, you try to find out where the enemy is and fire even before you find a good position. Of course, it is best to get under cover as soon as you can. You should go from one firing position to another as a platoon. But at times, we must go on our own. Some times you must act on your own because you can see the ground that you are going on better than the platoon leader. The driver and assistant driver should assist in picking our targets. They can be on the alert and pick out targets that the gunners can't see."

(See Page 37)

Tactics as practiced by **SERGEANT BUTLER'S** platoon, of Company "I" of the 1st Armored Regiment, was to have one section of the platoon advance while the other section covered it. He said, "One must act on his own a great deal of the time. You can't wait to be told when to fire or where to fire. When you see something which you think worth firing upon, take the chance. The function of the officer is to keep the men together and tell them what is going on. The soldier has to use his individual judgment."

"You should keep your troops on the alert always, ready for quick movement," **SERGEANT BUTLER** added as an afterthought.

(See Page 40)



TANK GUNNERY

LIEUTENANT COLONEL HIGHTOWER, in talking about our armored tank gunnery, said, "Bore sight to beat hell but don't let the boys try to do it at 1000 yards so the axis of sight and tube coincide, because when you are shooting at 6000 yards there is no telling where it will hit. Keep your sights parallel. Bore sight on a distant object; the more distant the more effective."

(See Page 19)

Listen to what **SERGEANT JAMES H. BOWSER** of the 1st Armored Regiment says about gunnery: "The gunnery instruction they gave us in the States was good. No sir, I wouldn't change it. There's just one thing you must remember when you're fighting Germans. When you shoot at them they stop and try to kid you into thinking you knocked them out. Then when you turn your back on them, they open up again. Sir, we shoot until they stop and then keep shooting until they burn up. It's a good idea, too, to check your ammunition closely. Once I had to climb out of a tank during an action to ram a bent shell case out of my gun and then hurry back in before the machine guns got me."

(See Page 27)

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TANK MAINTENANCE

In tank fighting, one of the most important things is to keep your tank and its weapons in good condition. In many cases you will be on your own, a long way from any maintenance equipment. As **LIEUTENANT NORMAN** of the 1st Armored Regiment told me, "You don't get a Goddam thing done to the tanks unless you do it yourself—and don't delay doing it. Bring lots of brushes to clean the guns."

STAFF SERGEANT WILBUR R. WHITE of the 13th Armored Regiment said, "When full maintenance is not available, look out for certain things: battery, water, keep check on control boxes in turret."

He added, "The night before this attack (at El Guettar) started, our M3 threw a track. **SERGEANT McVEY** and I put it back with the tools we had on the tank. The captain complimented us because if the tank had been left, Jerry would have shelled it when daylight came."

(See Page 49)



INDIVIDUAL PROTECTION

COLONEL HAINES, Commanding Officer of the 1st Armored Regiment, told me a story of the difficulty he had had for a while getting one soldier to wear his helmet. The soldier had claimed that it was too heavy. But the other day the soldier came to **COLONEL HAINES** and said, "I'll never be without this helmet again. You will never have trouble getting me to wear it."

When **COLONEL HAINES** asked him why, the soldier showed him the helmet and said, "See this dent! Just look at it!"

(See Page 30)

LIEUTENANT COLONEL HIGHTOWER told me, "Although we've knocked down several enemy aircraft we find that our men are having trouble with their leads. You've got to shoot planes as you would ducks. The big fault with our antiaircraft fire is that about 60% of it does not have enough lead. Our boys don't seem to realize the speed of those ships. The .50 caliber machine guns, however, will keep them high. German pilots seem to despise the stuff."

(See Page 19)

LIEUTENANT COLONEL HIGHTOWER then added, "We've also learned that it's important for everyone to know what to do with wounds, especially shock. Although I saw one man die

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of shock from a simple hand wound, I've also seen our men save almost 500 casualties by prompt treatment of their wounds with sulphur drugs and proper treatment for shock. Most of the sulphur drugs are administered by the men themselves. A couple of weeks ago one of my sergeants fixed up a man who had been severely wounded on the head and neck when he was blown off a tank. Today, the man is back in action."

(See Page 19)

STAFF SERGEANT WILBUR R. WHITE said, "When under artillery fire, stay in your tank—it's better than any foxhole." **LIEUTENANT HOLTZMAN** showed that he agreed with **SERGEANT WHITE** when he said, "The tank is the best slit trench in the world when shells or bombs are falling. I feel safe in it and stick close to it at all times."

(See Pages 49 and 35)

SERGEANT JOHN T. MAHONEY expressed his views as to personal security by saying, "In a bombing attack, don't try to run too far from your half-track. Go about 20 or 30 yards and then hit the dirt."

(See Page 43)

SERGEANT FRANK SABIN said, "Dig good foxholes. We learned in Sbeitla Valley that foxholes offered smaller area and less chance of getting hit by bombs and shrapnel."

(See Page 41)

LIEUTENANT THOMAS B. RUTLEDGE told me the following incident: "I gave the order to abandon (the tank) to the right because the gun was on the left. As we opened the door, machine gun fire started. I went to the front of the tank to see where it was coming from, and it was coming from both sides. We flattened out and started crawling. I stayed behind the rest with a Tommy gun. The driver was leading. One of those guns saw us and when one man raised up it hit him in the tail, and another man was hit in the back and another in the shoulder. Immediately I ordered everyone to freeze themselves flat to the ground."

(See Page 52)

SERGEANT DuHAMEL of the 60th Infantry told me, "We moved up into the hills here night before last. Yesterday I got permission to go out scouting, and took a man with me. Today I came alone and didn't tell them I was coming, because I didn't want one of those other men with me. It was because the men on patrol exposed themselves so much that I went off alone today. The commanding officer of the other company up where I am, a second lieutenant, I overheard saying he wanted to get away from this new group because they exposed themselves so much."

(See Page 13)

SERGEANT WILLIAM T. ETRITGE of the 6th Armored Infantry had this to say: "Three main things that I think are important: the first is to keep your weapons clean—they won't fire if you don't. Stay under cover. I have had men who were not under cover and they haven't come back. Then get all the fire on the enemy that you can. It is best to keep very

*NOTE: On another occasion I was told the story of an American patrol of 12 men who were heard talking while out in front. They never reported back.—TJC

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quiet. At any time at night whenever you make a slight noise the enemy immediately opens up with machine gun fire and mortars."

(See Page 14)

"You can find anti-personnel mines if you watch closely as you go along. You can see the three prongs sticking out. About seven pounds of pressure will set them off. We have taken them out and put the pins back."

SERGEANT LELAND A. SUTHERLAND also confirmed the need to keep down when he said, "The scouts drew enemy fire. All the machine guns fired and the men had to learn one thing—that was to stay down. I lost three men. I can harp and preach but the men won't get down. I have learned that artillery couldn't hurt you if you just got down in a foxhole while the firing was going on."

"I have no experiences to relate, but have had the hell scared out of me here for a month or so. I have learned that we have to play for keeps. I think that my men are getting smarter now. In our company we have not got many replacements. We got sixteen last night. Everyone felt good to get them. I put my best men with them, I picked a good old man for each new man. The old man showed the new one just how to dig his foxhole and told him everything. We were sorry they were mostly from Cooks' and Bakers' School. We need riflemen."

(See Page 16)

STAFF SERGEANT SEABORN DUCKETT of the 6th Armored Infantry wanted me to tell you this: "The first thing is to keep your head and have good concealment. Keep your eyes open because the Germans are pretty smart and you have to keep awake to get them. At Kasserine Pass I know we lost some men by going to sleep. You got to be awake all the time.* We lost men by wanting to go to sleep. They seem to get the idea that they should have rest more than anything else. They don't get scared until it's too late.

"Up at Kasserine Pass a man didn't carry out orders that he should have, orders to move to the top of the mountain, and some of those that went to sleep didn't come out. It is necessary to obey orders."

(See Page 17)

PRIVATE JACK MOORE of the 60th Infantry, who led the charge I have already referred to, had this to say, "It seems like everything the enemy uses is designed to harrass a man. They start firing at night and the guns seem to crack overhead, and it makes it seem as if they were right on top of you. The tracers seem to have curves on them. But if you wait, and take it easy, you can soon tell where they are. They have snipers that don't have much of a chance of hitting anything but scare the hell out of you. I am not afraid of it now anymore but last Monday we took a pretty good beating from their artillery. It was our second attack, and many men were pretty scared, but you readily realize that if you are in the ground it is pretty ineffective."

(See Page 17)

*NOTE: Another story of guards not being alert to investigate noise or trouble: Eight Italians came into an American position, killed two officers and four men, and captured six men. This incident was later reported to higher headquarters as an attack by forty enemy tanks.

INTRODUCTION

STAFF SERGEANT FRED W. ERDWINS of the 6th Armored Infantry told me, "I have never seen a man killed in a slit trench, but I did see three men killed who did not start in digging as the others did. Entrenching tools are very valuable and almost as necessary as a man's arms."

(See Page 47)

PRIVATE BLAIR H. CONARD, 6th Armored Infantry, said: "In this war there is no front. The enemy may come from the rear as the enemy tanks did to my company. We saw the tanks at the rear, but thought they were our own. One half hour later they moved up and shot hell out of our half-tracks."

(See Page 47)

LIEUTENANT WILLIAM S. NORMAN, 13th Armored Regiment, suggested, "In training, get recruits used to sound of artillery shells. Many men shiver and shake and are terrified of artillery fire. But remember when you hear the 'freight trains' coming, most of them aren't coming anywhere near you." Then he added, "The most important lesson is not to worry. Respect Jerry, but don't worry."

(See Page 48)



TRAINING

Many men offered suggestions for increasing the efficiency of the basic training they had taken here at Fort Knox. I mention a few of them here to show how these battle scarred veterans are thinking.

When I spoke with **SERGEANT SWATZLANDER** of the 1st Armored Regiment, he said to me, "Sir, if I had a brother coming in combat, I would want him to know well the functioning of the tank and all its guns. I would want him to know personal care—just how long to stay with a damaged tank before leaving it. After it has been hit it is a big fire hazard. You stay as long as you can. If you have to leave, you do it quickly."

(See Page 28)

When I asked **SERGEANT HAGLER** of the 1st Armored Regiment what was the most important thing for a tanker to know, he answered, "Everything. Every man must know his job and the tank commander must know them all."

(See Page 33)

LIEUTENANT HOLTZMAN suggested to me, "Try to arouse interest in learning first aid. The most valuable asset when a tank is hit is to know the use of sulphur powder and pills and the treatment of burns, puncture and laceration wounds." He also added, "Everyone in the armored force should be able to drive a tank. Everyone should be able to do everyone else's job so that he can carry on under casualties."

(See Page 35)

SERGEANT FRANK SABIN of the 6th Armored Infantry had several things to say: "I wish I had learned in the States to have a lot of real fire over my head. We got scared awfully

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at first. Any kind of firing over your head would help. It would still pay if you lost one or two men when you considered whole armies. The way to do it is to crawl and see where they hit, then either cross to the right or to the left. Just look and use your head. As soon as they fire fall flat on the ground, and when they reload jump up and run while they do. Experience and guts count.

"The driver should be ready no matter what happens. Should know all guns, etc. Back in the States they didn't teach that, but we have to know it here. In garrison I didn't care so much for work, but I do here. I don't mind it here. New men aren't well-trained. I had a hard time when I was first in the front lines. I was gun shy, scared. New men should work themselves in. They shouldn't be in too big a hurry. They must be cautious."

(See Page 41)

SERGEANT GEORGE CLELAND, 6th Armored Infantry, said, "Men in the States should be trained to dig foxholes. It will save lives. Foxholes are better than slit trenches because they protect a man more and you can fire out of a foxhole and you can't very well out of a slit trench.

"If I went to the States to train men the first thing I would stress to a new man is leadership. I would make the man have confidence in his leader, and train him in every weapon, camouflage, and to dig foxholes; also to cover up tin cans. (Tin cans reflect light and give away positions.)

"If you are going to harden a soldier up, keep him hardened up and don't let him get soft. Start hard training and keep it up. Men should be hardened before they go into combat.*

"In the States we didn't have enough night training. Men should be trained in use of stars for navigation. All men should be trained to know organization in the States."

(See Page 42)

SERGEANT JOHN D. MAHONEY of the 6th Armored Infantry said, "I found at Maknassy that too many men stand around the observation point and give the position away. We lost a man in a counter-battery fire that way.

"We have the most need for training in the .30 and .50 caliber machine guns. Not all our men can read a compass or a map. We should have had some training in booby traps. Don't pick up things. Watch where you step.

"I don't think the recruit training is tough enough. The new men are too soft. The more training the better. We need harder training right now so we won't get soft. Every man should know how to fire every gun in the battalion and be able to operate the radio."

(See Page 43)

LIEUTENANT KENNETH D. WARREN of the 6th Armored Infantry had the following suggestions with reference to training: "Some of our replacements have been riflemen only. We need men trained in the machine gun and in the 37-mm gun. We have had to train most of our mortar men. None knew the 75-mm gun. Men should be trained to dig in a machine gun as well as themselves. A machine gun that can be seen will draw fire just as a vehicle will."

(See Page 43)

*NOTE: At another time I was told of a battalion which had to hike 31 miles in mountainous terrain and then enter combat without any rest.—TJC.

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CAPTAIN D. A. KERSTING told me, "Recruits need much more night training before coming over. I remember spending only 4 nights out in all my night training, but here we spend 40 nights out of every 45 doing night work; night attack, night outpost, night patrol, etc. Night training should not have to be learned here when the men have to do it for record.

"The organization of the unit should be known thoroughly, not only by the leaders but by the privates and by everyone else. You should know what every person does.

"Don't shoot at any plane except when attacked. There should be no shooting at night even if bombed. All leaders should know compass reading and terrain study thoroughly. You should always drive without lights except for blackout lights away from the front lines."

(See Page 45)

GENERAL

To the things the soldiers and officers at the front in Tunisia tell I add the following observations:

The American tin hat is the finest military washing and laundry equipment ever given a soldier. With it soldiers can keep themselves and their clothing clean. Remember a dirty soldier is a bum and mighty liable to be a sick bum.

Our American soldiers have been our best diplomats in Africa. The soldiers like children; they have given them part of their rations to eat, a piece of candy or a piece of chocolate. The kindness of our soldiers to these people has made friends not only of the children but of their families and all the people, and this is a priceless asset.

The smart American soldiers learned to give respect and consideration to people who talk and dress differently from themselves. The dumb American soldier is liable to jeer at anything strange. This dumb American soldier must be taught very carefully to have good manners, otherwise he can do more damage in a few minutes than a hundred smart men can ever atone for. You can figure for yourself how you would feel if a British soldier, or a French soldier, or an Arab soldier, jeered at the way you trained, or shot, or talked, or ate. Our soldiers and our officers do represent our country and they absolutely must represent it properly.

A British officer of the widest tank experience told me that our M4 tank was the finest tank in the world. He thought it was better than anything else the United Nations had and was better than anything the Germans had. He thought it would be the best tank for the next five years. The American soldiers in Africa who fought in these tanks feel the same way. The confidence and satisfaction of our soldiers in their equipment was well expressed by **SERGEANT BECKER** when he said, "I like the M4. I look at the German tank and thank God I am in an M4."

(See Pages 56 and 28)

T. J. CAMP,
Brigadier General

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*Captured German Mark II Tank now used in training
at a North African Replacement Center*



Outpost on Djebel bou Douaou – 3 April 1943

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INTERVIEWS AT THE FRONT

SERGEANT R. DuHAMEL, Headquarters Company, 3rd Battalion, 60th Infantry. Djebel bou Douaou, 3 April 1943.

I was sent as a replacement. I sailed from New York 5th March; landed in Oran 19th March; sailed from Oran 21st March; arrived Phillipeville night of 24th March; left Phillipeville by truck 25th March; arrived at a post near Constantine 25th March; left 26th March; arrived Ain Beida 27th March; left Ain Beida 31st March; arrived 9th Division 31st March; was on outpost on this mountain 1st April.

I am one of 100 replacements of the 60th Infantry who are on this section of the mountain range. Some of these men never fired the rifle. Some, including myself, have never thrown a live hand grenade. The men have little respect for authority. They always talk back as if something was being put over on them, and never take their orders cheerfully. The men talked as they came up the mountain in spite of being cautioned not to. (The older soldiers, who had been there ten days, nodded emphatically that this was the case.)

We moved up into the hills here night before last. Yesterday I got permission to go out scouting, and took a man with me. Today I came alone and didn't tell them I was coming, because I didn't want one of those other men with me. Yesterday I guarded some prisoners back. The other men are quieter today. It was because the men on patrol exposed themselves so much that I went off alone today. The commanding officer of the other company up where I am, a second lieutenant, I overheard saying he wanted to get away from this new group because they exposed themselves so much.

I left my blankets and pack carrier back with the APO (Rear echelon of the 1st Armored Division), and am in with another boy in a cave. He had four blankets. I didn't know we were going to stay out. I asked, and no one knew anything. We left with one day's rations.

On the way to the front we had good food and shelter, were in pup tents part of the time. I had a ride in a truck to a steam bath near Ain Beida. In camp near Constantine we were lucky, we had mattresses with straw. I left my extra clothes back at the APO; it is all in one barracks bag. The rations on the way up were good—if they were "C" rations, they were heated.*

(At 2200, 4 April, Germans made a night attack on this position. It was repulsed by hand-to-hand fighting and grenades.)

* * * *

*NOTE: This conversation took place on the top of a jagged mountain peak, Djebel bou Douaou. For five miles the track we followed to the foot of the mountain was under observation and within range of various German guns, and for that reason our party was limited to one peep load of 3. The Germans frequently fired guns, up to 88's even at small vehicles. The officer who drove the peep had perfected himself in the SOP for single vehicles to avoid fire. This procedure is to use a change of pace. Drive at a relatively high speed long enough for the Germans to figure a lead, then change abruptly to a relatively low speed and keep this speed about long enough for the Germans to figure a new lead, then go fast again. If this is done properly a vehicle is hard to hit. We were not fired upon.

I wanted to get a picture which would show the precipices and the mountain ranges. After we finished talking I posed the other two of our party so that the mountain ranges would show in the background. When the picture was taken we started down the mountain; a minute or two later the peak we had left was plastered with German mortar fire.—TJC

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COLONEL STACK, Commanding the 6th Armored Infantry, Maknassy, 5 April 1943.

We had a man who stepped on a 'Bouncing Betty' the other day, but was not badly hurt. He had an ammunition carrier over his shoulder and I think that is what saved him. He said to the doctor, 'Doc, it seemed that something was just pushing my foot and leg up in the air when I stepped on it.'

We captured some German rations the other day and they were good—good food. All Europe is feeding Germany, as the containers showed that the food was produced in Czechoslovakia, Belgium, and in many other countries.

SERGEANT WILLIAM KEITH, Company "G", 6th Armored Infantry.

When you are up in a place and not firing and the enemy are dug in, unless you can find something definite to shoot at, and you are sure you can hit it, hold your fire. It does nothing but draw enemy fire on you and will draw mortar fire. Men are hard to keep quiet and hard to make stay down in places like that. I think the best place to work is on the enemy flanks or in behind the enemy. We traveled fifty miles behind the enemy lines one time and they never got us. This was at Kasserine Pass.

The enemy will shoot at anything that moves and he will shoot anything that he has got at it. He does a lot of wild firing.

We haven't had many replacements, two or three in our platoon.

We eat "C" rations and they are pretty good. We don't cook them, but eat them cold. Get along pretty well on that.

COLONEL STACK: "C" ration cans open below the top. This makes a very messy dribble and gets the men dirtier than necessary.

SERGEANT KEITH: We don't use our mess kits except when we are back from the front. Most of the men use the lemon juice in their water because it seems to make it last longer. We get a canteen a day and it isn't too much, but we get along on it.

When you are moving men they are dependent on the noncommissioned officer or leader as to how to move forward. Sooner or later they will lose contact with the noncommissioned officer, as he has to stay at the head. You should have a second-in-command. It is a good thing to have the individual man keep in contact with the man in front of him. The new men don't know many of the men in the company and get lost into some other platoon or company. If you have a good second-in-command he can keep them together. The men follow better than trying to send a man up by himself.

COLONEL STACK: That is why our losses are so high in noncommissioned officers and officers.

SERGEANT KEITH: There is another thing, sir, we have men in our company that don't know how to shoot rifles, and that is pretty tough.

• • • •

SERGEANT WILLIAM T. ETRITGE, Company "I", 6th Armored Infantry, Maknassy, 5 April 1943.

Three main things that I think are important: the first is to keep your weapons clean—they won't fire if you don't. Stay under cover. I have had men who were not under cover and they haven't come back. Then get all the fire on the enemy that you can. Our company has been longer in this battle than any other company, from the 15th of February to the 3rd of April. My men were jumpy then but they are better now. We get plenty to eat and get a canteen of water a day.

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The enemy has a good machine gun, but if you can get through you have got him. You can get away from his artillery and his mortars.

Three days ago we were going to attack, we were going towards the hill. I put scouts out in front. The enemy let my scouts get within 20 to 25 yards of them and, I guess thinking we were all there, put mortar fire behind us and opened up with machine gun fire ahead. They got my two scouts. The scouts had got close enough so that they couldn't be hit by mortar or machine gun, but it looked as if they were hand grenaded. The grenades set the grass on fire under the scouts and when one got up to put the fire out, they got him. We seen we could not get past the machine gun so we were ordered to withdraw.

I would say the enemy's best shots use telescopic sights. Nobody could shoot that long a distance and be as accurate. One took a piece out of the seat of my pants at what seemed a very long distance. Without a telescope, he could not see to shoot that close. After I got back I was watching the hill for the two scouts and seen six Germans come back and get one of the scouts; I know that he wasn't dead. They wouldn't let us get up to the other one.

I have replacements that have never shot a rifle. They came from Fort Knox from the Cooks' and Bakers' School. They came with pistol belts and rifles. Most have never fired. I have six of them.

The best way to fight is first artillery, then tanks, and us to follow tanks up. That hill is booby trapped and mined.

It is best to keep very quiet. At any time at night whenever you make a slight noise the enemy immediately opens up with machine gun fire and mortars.

We can whip him if we can get to him.

At one place the enemy had machine guns placed and protected by snipers. We were to take the hill. I was 200 to 250 yards from the enemy and was lying down. I seen a sniper from the top of his nose up. I knew that it would take a good shot and I had my rifle pointed in his direction. I decided to wait and finally he moved up to chest height and I squeezed one off but didn't hit him. Then I seen another, just his helmet, then he raised and I squeezed another one off; I got him, he raised up on his toes and fell over. I never did get any fire from them. I sent a scout out to locate machine guns and a sniper got him in the stomach. There was a bunch on the hill that fired at everything. This scout that got wounded knocked six out of one machine gun nest with a hand grenade and the other bunch thought that he was going to throw another one and took off, but were cut off from behind. That drove them back to their gun.

All I know to do is to keep firing at them.

The boys have nicknamed the German machine gun the 'typewriter' because it is so fast.

You can find anti-personnel mines if you watch closely as you go along. You can see three prongs sticking out. About seven pounds of pressure will set them off. We have taken them out and put the pins back. We call them the 'jumping jacks'.

One time a boy about 25 yards in front of our half-track was fussing around and digging in the ground. All of a sudden he exclaimed, 'Look what I have uncovered—a bomb!' There was a large size bomb buried in the ground. I told him to let it alone and taped it off.

The boys always say that if you want to spot an enemy plane in the sky to look about 2000 yards in front of the antiaircraft fire.

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COLONEL STACK: We can't get the men to lead the airplanes with antiaircraft fire. They just won't lead enough.

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SERGEANT LELAND A. SUTHERLAND, Company "C", 6th Armored Infantry, Maknassy, 5 April 1943.

We were attached to the 2nd Battalion when the last attack was made and we came under fire. Just the minute we got up there we made a night attack. The scouts drew enemy fire. All the machine guns fired and the men had to learn one thing—that was to stay down. I lost three men. I can harp and preach but the men won't get down. The whole battalion tried to advance but couldn't, so we had to encircle around the right. **COLONEL RINGSOK** asked me how many men I had. I told him I had 30 men. He took us around the side and the objective we had to take was one hill that night. We were doing fine work as far as jobs could go. But it got pretty expensive as far as men were concerned. You could not buck that kind of dug-in position with rifles, and the artillery was no good—the enemy would just get in holes until the firing was over, and come out unhurt. I have learned that artillery couldn't hurt you if you just got down in a foxhole while the firing was going on. The men soon learned to get down while they are firing.

They have guns set up that don't have a grazing fire, but cross-fire. They are set up to get you on the sky line.

I have no experiences to relate, but have had the hell scared out of me here for a month or so. I have learned that we have to play for keeps. One thing them Germans and Italians are like, a corporal in my platoon says, like gray squirrels; they can't stay still, all you have to do is lay down and shoot them as they pop up. If you wait long

enough they will pop up. You just lie and wait. I have got a couple of them myself. I have seen them knocked down all the way from here to Oran.

I think that my men are getting smarter now. They learned from Kasserine Pass. We lost vehicles and the men scattered. There is safety in numbers. We had 40 men and got through them. If you have a patrol of 10 men, and they spot you and shoot at you, you don't shoot back—you leave. But if you have a whole platoon you answer them back.

In our company we have not got many replacements. We got sixteen last night. Everyone felt good to get them. It made my platoon feel fine. I put my best men with them, I picked a good old man for each new man. The old man showed the new one just how to dig his fox hole and told him everything. We were sorry they were mostly from Cooks' and Bakers' School. We need riflemen.

Our medical battalion takes care of both sides; if we find Germans we take them in too. We had two brothers fighting side by side. One time we had a machine gun nest to take and one of the two brothers was in my platoon. We got up to the place where the machine gun was and this brother got up to throw a grenade. He got hit in the head but I know that he wasn't dead. We couldn't bring him out. We were ordered to carry on the attack. I don't know whether he died or what happened to him. Do they take care of our men the same way? A few days ago the same kind of thing happened and the German and Italian medics took care of some of our boys. A medical corporal went up there the other day to get one of our wounded men and was waved back because the area was booby trapped.

I think that they are the poorest rifle shots on earth. Our main trouble has been the ar-

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tillery. The M1 is our best gun. We argue pro and con on the Springfields and M1's, but it is the M1 for me.

It took 3 squads to take a machine gun nest on high ground at night by working up by crawling. We got where he couldn't depress the gun down enough to hit us. We got him surrounded while the rest of them drew fire. The men went forward and threw hand grenades. He shot all around like a cornered tom-cat. GENERAL WARD was right up there with us. I was the man that loaned the rifle to him and he drew fire for us. His carbine had quit on him. I believe he also threw a grenade at the machine gun nest.

It is impossible to fight anybody that is dug in when you have rifles only. One doesn't consider the sniper dangerous; you consider him more of a harrasser. One thing is, you can't find him out. I have had glasses and never could spot them. We put machine guns out in the night and take them in during the day. In the day we have observation posts, one man at them at all times. We have the observation posts where the most trouble is expected.

The first night at the front it would give you the jitters. The enemy would send a blast of fire to let you know that he was still there, and they fire all kinds of fire-works.

He has one of the fastest guns I have ever seen, but he is not accurate. He is the poorest shot there is, or else I can run the fastest and dodge the fastest of any one I know.

The first flares that I seen I thought the Germans were advancing on me. Now I don't pay no attention to them, and we throw them too. The German shoots like hell but don't hit anything. You can see the tracers going overhead. The first attack we made I got one boy shot in the shoulder and it was

a long shot, about 1000 yards, but I guess it was just a lucky shot.

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STAFF SERGEANT SEABORN DUCKETT, 6th Armored Infantry, Maknassy, 5 April 1943.

The first thing is to keep your head and have good concealment. Keep your eyes open because the Germans are pretty smart and you have to keep awake to get them. At Kasserine Pass I know we lost some men by going to sleep. You got to be awake all the time. We lost men by wanting to go to sleep. They seem to get the idea that they should have rest more than anything else. *They don't get scared until it is too late.* Up at Kasserine Pass a man didn't carry out orders that he should have, orders to move to the top of the mountain, and some of those that went to sleep didn't come out. It is necessary to obey orders. I believe that my men obey me because they think that I know what I am doing, and the new men seem to have confidence in me. A lot depends on a smart leader.

We have had no opportunity to use the weapons on the half-tracks except for anti-aircraft fire.

What ranges for fire have you and the enemy used?

Around 300 yards. The enemy lets you get right on him before he fires. He lets you get right into his traps and then opens up with machine guns. I have had very little rifle fire from the enemy.

Most of our casualties have been from machine gun fire except one that was caused by a bomb. We had four killed in the last action, and none wounded.

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PRIVATE JACK MOORE, Company "L", 60th Infantry, Maknassy, 5 April 1943.

It seems like everything the enemy uses is designed to harrass a man. They start

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firing at night and the guns seem to crack overhead, and it makes it seem as if they were right on top of you. Their tracers seem to have curves on them. But if you wait, and take it easy, you can soon tell where they are. They have flares that make it look like convoys coming down the road, and they have flares that are good for nothing, but make it seem like an attack is taking place. They have snipers that don't have much of a chance of hitting anything, but scare the hell out of you. I am not afraid of it now anymore but last Monday we took a pretty good beating from their artillery. It was our second attack, and many men were pretty scared, but you readily realize that if you are in the ground it is pretty ineffective. I try to tell the men to take it easy. On a patrol the other day we were looking over an area in which it was understood there was a machine gun. We went out and looked around and nothing happened until we got past it. When most of the men got past the gun it started in. We looked all around to find it. One sergeant got hit twice in the hand and started to look for a better position to get in. I don't believe there were any better positions. It was just as good to lay on the flat ground. They have a mortar up there and nobody has ever got up to it. We hear vehicles that I guess are bringing ammunition to them. At night they fire several rounds just for nothing. Most of them have good guns and it seems as if they shoot at everything. If a man was over there with a gun and the enemy knew that he couldn't hit him, he would shoot anyway. Three days I laid up there out of gun range, but they would shoot.

We are doing all right. We got a new bunch last night and they were jittery and nervous at first and because of it we nearly lost a lieutenant. I don't blame the new men for getting jumpy. The sergeant put these men in digging new positions. One of the

fellows was digging when another man came up. He gave the countersign but the new man, because he was jittery I guess, didn't hear it, reached down and brought his gun up and fired. It was lucky that he missed though; the distance was about eight feet. The other day a few got scared and made a run for it, but a second lieutenant got them back in their positions and they stayed it out. This was during a real shrapnel barrage. They took it pretty good. We were glad to get replacements and they are very anxious to learn. I believe that no matter how long a man has been in the Army, until he hears that first one go over, he is a rookie.

* * * *

CAPTAIN GAIL H. BROWN, 60th Infantry, Maknassy, 5 April 1943.

I have learned considerable from many true experiences, first of all about foxholes. It is something no one back in the States realizes the importance of, until he actually comes under fire. The next thing I would consider important is being able to shoot at the proper time rather than wasting ammunition; this was a big thing at our landing at Port Lyautey.

The next thing that I noticed up here, the first night we hit here and made the attack towards the big hill, was a massing of troops when they came under fire. They herded together like sheep. I was weapons commander at the time. I found machine guns emplaced close together and where they had no field of fire. The heavy machine guns and light machine guns placed close together. However, after organizing my own machine guns and mortars and trying to help the infantry to spread out and get a field of fire, they actually learned for themselves, because that night enemy artillery and mortar fell in on us. As it was they were spread

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out and well dispersed. The troops learn very fast.

The next thing that I find important is the getting of information down to the troops, for the very simple reason that they don't know what is happening and they don't know what to expect and what to do at the proper time. It has been emphasized before, but the officers don't seem to realize the importance of it. The discipline is very good and the morale high. Replacements seem to help in this because it seems like the men have someone new to talk to and tell stories to. At one time we were to get replacements and were told that they were coming in but they didn't come. The morale went down a lot that night. Last night they came in and we told them to dig foxholes and everything that we learned by experience. The replacements look like a good bunch of boys. They were a little scared at first because they didn't know what to expect and the people at the rear told them so many different stories. The replacements arrived last night and received baptism of mortar fire this morning. Nobody was hurt because they dug all night and had good foxholes.

We remove enemy mines by tying a heavy stick on a rope and dragging them out and exploding them. Handle the booby traps in the same way.

I had one experience that I will never forget. It was the second day of battle and we were making an attack that night. COLONEL TOFFEE, Battalion Commander, was just wounded in the knee and the Executive Officer was in the Rear Command Post. I was up by GENERAL WILBUR, who had been up at the time to reorganize the troops on the ridge. Then I went on up and got on top to help in this and found no American troops but looked into the faces of German troops. I got two incendiary bombs thrown

in my face and was shot at also. I shot back and believe that I got one. Then my pistol wouldn't work any more so I got out of there. I later found out that the boys were back reorganizing.

Most of our casualties have been from mortars and artillery and some machine gun fire. They open up with machine gun fire at night and our machine guns fire back. Then they open up with mortars and artillery fire. The mortars seemed to be coming in from the back of us.

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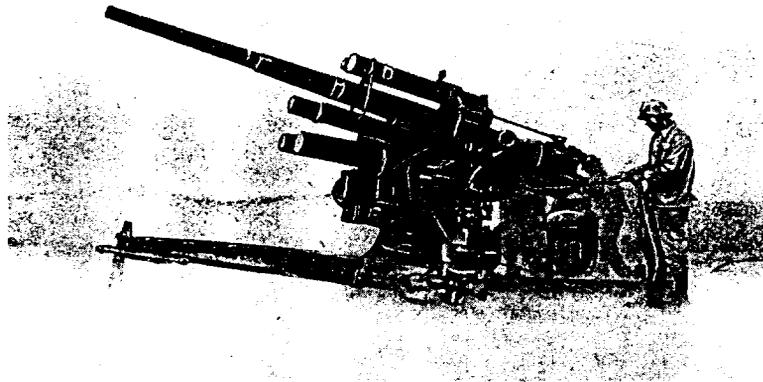
LIEUTENANT COLONEL L. V. HIGHTOWER, Executive Officer, 1st Armored Regiment, First Armored Division. (Commanding Officer, 3rd Battalion, 1st Armored Regiment, during battles of Faid Pass and Sidi bou Zid.) 1 March 1943.*

In tank fighting nothing is more important than expert reconnaissance of your routes of advance and withdrawal. Several times both we and the Germans have moved up on what we thought was a good clear route only to find a dry wash, nine or ten feet high, blocking our way, causing us to withdraw. In this country, too, we've learned to move slowly so as not to reveal our position. You can't boil up to battle at high speed without broadcasting your coming in a big cloud of dust.

German antitank gunnery has made our reconnaissance a particularly tough job. They drag their big 88-mm guns up behind their tanks and drop them in position. Usually the crew digs the gun in a hole, twelve by twelve by six feet deep, practically covering up the shield and exposing only the barrel of the gun. We've found those guns particularly hard

*NOTE: The next four interviews took place before my arrival. I had a copy of them and we discussed them.—TJC

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Side view of the German 88-mm Gun

to locate and they can break up your entire show if you don't pick them up in time. Apparently they use mats to hide the muzzle blast. Once we hunted a gun within a thousand yards for three days and then only found it by spotting the personnel approaching the gun position.

Generally they 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-mm guns. 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. We've just got to learn to pick those guns up before closing in on them.

Although we've knocked down several enemy aircraft we find that our men are having trouble with their leads. You've got to shoot planes as you would ducks. The big fault with our anti-aircraft fire is that about sixty percent of it does not have enough lead. Our boys don't seem to realize the speed of those ships. The .50 caliber machine guns,

however, will keep 'em high; German pilots seem to despise the stuff.

The basic training they had in the States means a lot to our boys over here. Every time they hit the ground you'll find them digging a helluva big hole. I have yet to see one man get hit in a properly dug slit trench. One of my lads dug a shallow one and he came out with a bullet hole clear through the cheeks of his tail. You don't have to mention light discipline to them. They'll hoop and holler at anyone who uses a light at night, regardless of rank.

We've also learned that it's important for everyone to know what to do with wounds, especially shock. Although I saw one man die of shock from a simple hand wound, I've also seen our men save almost five hundred casualties by prompt treatment of their wounds with sulpha drugs and proper treatment for shock. Most of the sulpha drugs are administered by the men themselves. A couple of weeks ago one of my sergeants fixed up a man who had been severely wounded on the head and neck when he was

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blown off a tank. Today, the man is back in action.

The support artillery gives us is only as good as their observer. Commanders must get in the habit of assigning their best men as artillery observers.

Our 37-mm guns will knock out tanks if the crews will only camouflage their guns perfectly and then hold fire until the enemy comes in at point blank range. German camouflage is excellent; it's hard to believe they can hide a gun as well as they do. The rifle grenade is a good weapon at close quarters and will knock out anything under a Mark VI.

When the Germans go into position they'll hide their guns and tanks in anything, including Arab huts. And then they dress their personnel in Arab garb while going to and from their positions. Usually they'll try to suck you inside of a 1200 yard range. They frequently use machine guns to range themselves in and you can duck their shells by watching their 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. We think that's a good idea and are beginning to follow suit. Sometimes they'll get the range with high burst smoke shells. But when we see three of those in a line we take off—that's the high sign for the Stukas. When firing, we always shoot low—even the ricochets will hit them. Most of our misses have been high.

We also need a good system for identifying friendly tanks. Once when my radio was knocked out I heard my own tanks turning their guns on me—and I really sweated out that approach. At dusk it's always hard to tell which vehicles are friendly, and we're always afraid to shoot until they're right on top of us. When the Stukas come over, the German tanks send up a line of rockets and orange smoke to show their positions.

One evening several Mark IV's followed a British tank column right up to their tank park until a 25 pounder battery spotted the strangers on the tail of the column and blew them off the road.

In using tanks in action, take it very slowly. Germans do it that way all the time. Do not shift gears once you start, particularly in the dusk, because the backfires will give you away. Keep the tanks out of column at all times. Never travel in column, travel in V, line, wedge, but never in column. Stay off the roads. Get off the roads and never use them. You don't need an assembly area for a reinforced battalion. You can go right into action without first using an area. Push your tank destroyers well forward, and keep your infantry ahead.

It is according to the situation whether the infantry goes ahead of the tanks. If it is a defense position that has had a chance to organize positively and definitely, I would most certainly have the infantry with the tanks. I would have them follow the tanks on foot, but I would have the infantry right there. Once those 88-mm guns start to bark, you can't pick them up in your tank. Attack them with infantry. Get the infantry out of the half-tracks. Don't take any thin-skinned vehicles with the tanks, they open on them the first thing. Don't take your assault guns or mortars with your tanks, because they will smash them in open country.

The artillery observer has got to be right with the assault company commander or the tank battalion commander, and I mean not more than 35 or 40 yards away. Of course that is standard operating procedure. I just mention it because it is so necessary.

Teach your commanders to stay out of the fight until they are the last tank or thereabouts. They are too prone to become in-

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terested in a personal duel, and forget about their control of the units.

A reconnaissance of the field, if you are lucky enough to be able to make it, is the most important thing I can think of.

Medium tanks don't get bogged down so easily. If you come to a bog, don't ever let them try to shift gears, shift before.

The Germans bring their 88-mm guns towed behind their tanks (may be 75-mm guns, or both—I know they bring 88-mm guns). They tow them up and dig in. Their tanks come out and get your attention and, unless you know their tricks, they lead you right between their guns and they get behind you and get you. Don't always bite at the first 88-mm guns which shoot at you. There will be several up much closer. The first 88-mm gun that barks and the first tank are generally bait and you shouldn't plunge at them. If they stage any night attack or late evening attack and neither side stays there, they will come out and put their 88-mm guns in no-man's-land away ahead of where their tank positions are. Their tanks were within 1000 yards of the Pass, but their guns were 4000 yards ahead of the Pass.

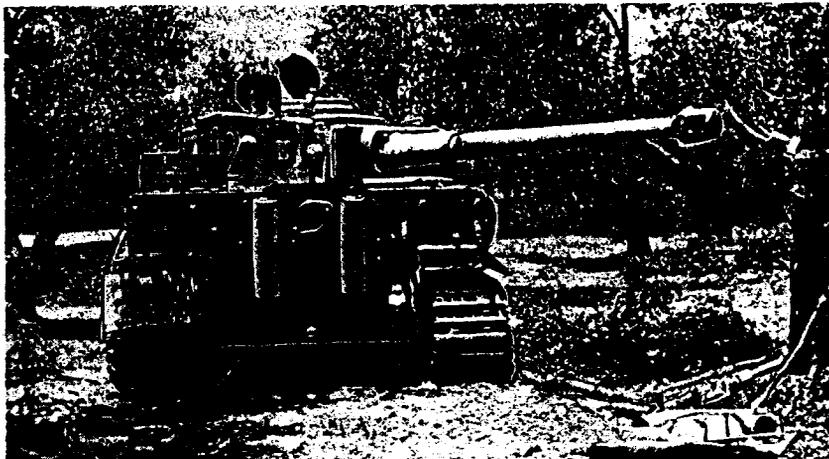
Four 88-mm guns, if dug in, are a match for any tank company. They are the most wonderful things to camouflage I have ever seen. They are very low to the ground. You can watch the fire coming in, little dust balls on the ground give them away and show how low they are. They just skip along the ground. The pit is 12 by 12 by 6. 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. The crew is even dressed in Arab clothes, and they do everything to camouflage their position. You can get them out with high explosive ammuni-

tion, with your artillery. If a tank gun can find them, you can get them out. Over 1200 yards there is no use worrying about them. Their shells bounce off the medium tank at that range. Under 1200 yards, watch out. The enemy's gunnery stinks at long ranges. I feel that our men are better. If we can fight a tank for a tank and a gun, I think we can do it, and that is giving them great odds, because I would say the gun is worth four tanks, but we can do it.

You can see the shells coming. You can watch the adjustments they are making. They all seem to be short and behind. Then they get up and begin to shoot under the tank. During this time, we knocked out four tanks. We picked off the leader. You can tell after a while which is the leader by the difference in the vehicles. They pick at such things as half-tracks with two antennas, etc., and we caught on after a while. When you get one of their commanders they stop and seem sort of dazed.

The ten German tanks were sitting on a ridge shooting at half-tracks. They had been at my left rear and I hadn't seen them. There was a Mark VI, Mark IV's, and some Mark III's. They stopped on the crest and did a right flank and started to get in column. They will put a Mark VI in the middle and the others on the flanks, always making one flank heavier than the other, however. We picked out one and hit him and he stopped. We burned the next one. Then the Mark VI, which I thought was a Mark IV, came close. They are hard to identify, but have a more or less square outline, with an offset box on the side. You cannot identify their guns. We bounced four off the front of him. Then another tank came up right along side of him, and it was easy to move a hair to the left and pick him off. We had no armor piercing am-

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*View of a German Mark VI Tank with
its 88-mm gun turned to the rear*

munition so I know a high explosive shell will crack a Mark IV. You should shoot low and it will ricochet and kill them in the turret, or damage them so they will be of no use.

Our 105-mm gun is good against tanks. I watched one gun hit three tanks coming in a big mass of tanks, approximately thirty tanks, and with high explosive ammunition he collapsed three of them like taking shoe boxes and shoving them flat. The rest of them scattered or moved up to the right. We had to leave because more were moving up.

The 50-mm gun is almost the same as to amount of powder as the 88-mm gun. I think their antitank guns are mostly 88-mm and 75-mm. The only 50-mm I have seen are in Mark III's and Mark IV's. Just go slow and watch them. Get your reconnaissance out in front, men on foot. If you rush right out there you will rush right into it. You want some artillery well forward. 105-mm guns shooting at over five thousand yards aren't much value. I think they shouldn't ever be over 4000 yards in either direct or indirect fire.

I worked against hostile infantry some. We got a few of them and they went in their foxholes. We shot at them and don't know whether or not we got a lot of them. They will stand there and use those 20-mm cannon at you, but it doesn't bother you. I did run across a small German or Italian tank and found the tail end of a rifle grenade near it and the tank was burned and blasted to pieces.

Stukas with 500 pound bombs really don't hurt the tanks unless there is a direct hit, except for the dust. You have to move out of it. When the Stukas appear the Germans shoot green and white, or green and red, flares, changing every day—they also shoot a blast of orange gas to identify themselves. Another thing, they mark a target with three smoke shells. After these three bursts you had better clear out, for they will be over in about one minute.

They use a lot of high burst ranging. The artillery will shoot one, apparently getting the range from a map, and they will hit one overhead and then drop right down on you.

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It is easy to dodge an 88-mm gun because they start with machine gun bullets. When they begin hitting you, turn suddenly right or left to avoid it.

Bore sight to beat hell but don't let the boys try to do it at 1000 yards so the axis of sight and tube coincide, because when you are shooting at 6000 yards there is no telling where it will hit. Keep your sights parallel. Bore sight on a distant object; the more distant the more effective. We had one tank which threw a track which we couldn't possibly get started, and we had a lot of ammunition. That commander stood there with his glasses and proceeded to throw a lot of high explosive shells. German tanks went in all directions. That quadrant is very worth while; and glasses are necessary.

Before we put a single round of ammunition in our carrying racks we try them in their guns. A lot of them won't fit, and the battlefield is a bad place to find it out, although I know of two sergeants who climbed out under fire and rammed the shells out.

At Sbeitla it was the tanks that bothered us more than the antitank guns. There were just too many. With a detached air, we were just seeing how many of them we could get before they got us. The Germans will come up about 60 yards at a time, sitting there looking, then moving again. The Mark VI was the main threat. Our boys always came out of the top of the tank, not the escape hatch. Sometimes the Germans machine gun the crews and other times they don't bother. I was very thankful for my good physical condition. We had to run about half a mile before even halting. The country was very flat and they could have got us with machine gun fire.

COLONEL STACK: We have got to do some sucking in ourselves instead of being sucked in. Move with extended intervals, not all in front, but with a long tail so that when they do pull a trap or envelopment there will be something to back us up. Companies should be deployed with considerable distance between them.

LIEUTENANT COLONEL HIGHTOWER: I think it should be nearer 9 wave tank attack rather than 3 wave. Watch the envelopments and hideouts. I still believe that at 2 to 1 odds we can lick them, because our boys can shoot better. I have seen one German tank versus one American tank and the Americans hit many shots before they. They can't hit at all at long ranges.

Every battery I saw of the 91st Field Artillery did a bang-up job all the time, and I have had them all at one time or another. "A" Co. of the 701st Tank Destroyer stayed right to the bitter end and Wray should be promoted. He salvaged vehicles on the field and did a fine job. We could use him in the regiment. He is so utterly fearless and his men are the same way. Of course my men are the bravest in the world.

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1ST LIEUTENANT H. F. HILLENMEYER, Commander, Company "H", 1st Armored Regiment, 1st Armored Division. (Platoon Leader, Company "H", during battles of Faid Pass, Rebaou, Sidi bou Zid.) 1 March 1943.

Sir, if we're going to get anywhere, we must put greater emphasis on good reconnaissance. I know of one instance where we went into battle not knowing what was there. We saw the enemy tanks go into Faid Pass and that night we had a dry run back in our concentration area. Next day when the attack came off we found the thing was a blind—the

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Pass was covered with deadly antitank stuff. It plastered our one company that went in.

The Germans always seem to know what's there before they attack. They use air-photo reconnaissance. For several days before an attack we can set our watches by the JU-88 that comes over each morning and evening taking pictures. If we fire on him he'll hurry home and come back with a pack of Stukas.

Those 88-mm guns have been causing us trouble because it's hard for us to knock them out with our flat trajectory weapons. They're dug in too deeply and we need real artillery support with good observation to root them out.

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.

As a platoon leader, I learned that you've got to lead your men. When you get out in front, they'll follow you easily. If you're moving in sections, the platoon leader must go in the forward section. And what's almost as important is the fact that every man must know what's going on. You've got to take them into your confidence and explain the show to them. They'll always respond with better fighting.

You've probably heard this too, before, sir—but the smaller units are simply not given enough time to prepare their individual plan of attack or maneuver. Higher headquarters should realize that we need some time to get the show running.

It would really be worth the time, over in the States, for the men to shoot at night with tracer bullets. The Germans use all tracers and sometimes they raise hell with the troops. Tracers throw a helluva scare into you anyhow; every one looks as if it's headed straight for you. The Germans are cracker-jacks at

night fighting—our men need more training in it.

In a scrap we throw high explosive stuff until the enemy comes in range and then we change to armor piercing. Sometimes we set the high explosive for delay, fire low, and watch the Germans duck wildly as it ricochets over the ground.

I'm also concerned, sir, with another question of tactics which is probably none of my business. But we had always been taught that the Germans attacked at dawn or in the early morning light. Actually, however, they're even more apt to hit at dusk with only half an hour of light left in the sky, just to confuse you. Then they'll throw everything they have at you—including their star shells and Very lights—in an attempt to put you on the run.

We don't fire on planes until they start firing. If we did, we would have had the Stukas on our necks every time.

It's extremely important that we keep our star markings. Several times we were about to open fire on our own tanks, until we saw their markings.

One day an 88-mm shell knocked a piece of armor plate into one of my tanks while the shell lodged in the tank wall.

'Shut the door', the driver screamed to the man in the turret, 'there's tracers coming in down here!'

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SERGEANT BASKEM BENNETT, Tank Commander, Company "H", 1st Armored Regiment, 1st Armored Division, 1 March 1943.

I almost lost my driver and assistant driver once when the tank caught fire as the turret was turned to the rear position. They were able to get out only when another man in my crew jumped back in the burning tank and turned the turret, allowing these two to get away.

TANKERS IN TUNISIA

No sir, I have not used any smoke as yet, although it might be OK against one of those big Mark VI's.

(Asked to give an account of his experiences in the battle of Faid Pass, Sergeant Bennett continued:)

We had started across the field, sir, when suddenly ten German tanks came up on our flank. They opened up on me and hit me three or four times before they came through. Meanwhile we were firing continually.

About that time two 77-mm shells went through the turret and I discovered that my tank was on fire. I called down to the driver and radio man, but they must have been hit, because they didn't answer. The tank was burning badly now so I jumped out with the remainder of my crew. Our tank was burning yet, but it just kept going forward, and we jumped into a ditch and watched it go.

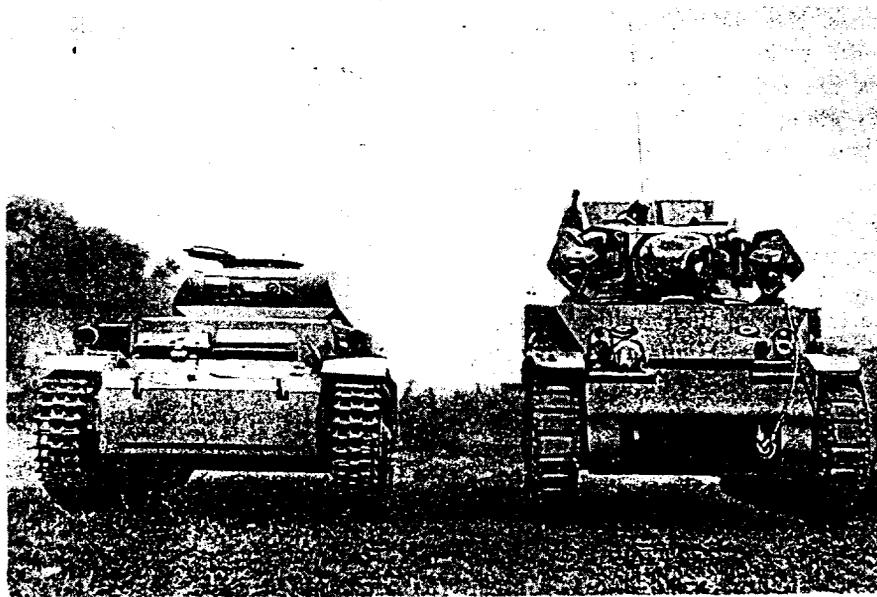
Soon we were surrounded by German tanks. We lay in the ditch for several hours until one of the German tanks started toward us. We thought he was going to run us down so we stood up with our hands over our heads. The German officer in the tank spoke good English. He asked me where our side-arms were and we told him we didn't have any.

He asked where our carrier was and we pointed to our tank which had traveled several hundred yards down the field before burning out completely.

The German officer then pointed towards our lines and told us to go so we took off quickly.

All together we fired about 20 shells. We hit two tanks and I know one was really knocked out because I saw it go up in flames.

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Front View of a German Mark II Tank and an American M5 Tank

INTERVIEWS AT THE FRONT

SERGEANT JAMES H. BOWSER, Tank Commander, Company "H", 1st Armored Regiment, 1st Armored Division, 1 March 1943.

Yes sir, this is my third tank but I've still got all of my original crew with me. We were burned out of our other two tanks under fire.

Our ammunition supply has been good—we've always gotten the stuff we needed although we had to quit our two tanks long before we used up our ammunition. A tank commander has got to remember that he can knock the track off a Mark IV long before he can hit it with armor piercing ammunition. The high explosive ammunition might be OK against the Mark VI's, but we always saw too many of them to give it much of a try.

The Germans usually open up with their machine guns while they're ranging you in with their heavier stuff. The driver can tell when they're coming close so he keeps moving and ducks them. I hardly ever talk to my driver in battle—I just let him keep driving. We always stopped to shoot but we did turn the stabilizer on when we were moving. I guess the stabilizer's all right for what it was built.

The gunnery instruction they gave us in the States was good. No sir, I wouldn't change it. There's just one thing you must remember when you're fighting Germans. When you shoot at them they stop and try to kid you into thinking you knocked them out. Then when you turn your back on them, they open up again. Sir, we shoot until they stop and then keep shooting until they burn up.

Sometimes we've attacked with the sun in our eyes and that makes it pretty tough on the gunner. He can't see where he's shooting while the Germans sit back there and pop anywhere they want to.

I think, sir, that if you trained a battalion of infantry to operate at night, they could slip into a German tank park and really raise hell. One night after we were burned out of our tank during action, we made our way to within 30 yards of a parked tank, thinking it was an Arab hut. They don't seem to worry about security at night.

It's a good idea, too, to check your ammunition closely. Once I had to climb out of a tank during an action to ram a bent shell case out of my gun, and then hurry back in before the machine guns got me.

(Asked to give an account of his experiences in the battle of Faid Pass, Sergeant Bowser continued:)

I'm on the right of my platoon leader and he's in the center. I've got another tank on my right. We start in at daylight, move down the Pass between the mountain and the marsh, and pretty soon at nine o'clock we run into the Germans. They started in with their machine guns but we just let it rattle by and then they opened up with their heavy stuff. I looked to the center and saw the lieutenant's tank go up in fire. So I turned my gun on the antitank gun that knocked him out and smashed it with my first shot of high explosive ammunition. We knew that it was really hot; nine of our tanks had been cleaned out. They knocked my track off but I said, 'Hell, we'll sit here and use her as a pillbox.'

Then one of my boys said our tank was burning. I didn't know how long it had been on fire. Still the fire didn't look too bad, so we stuck by our guns and kept shooting until an explosion almost rocked us out of the tank. One of my crew was wounded but the others were all right, so we took off towards our own lines. We walked for two hours and carried the wounded man with us. Several times along the way German airplanes strafed us.

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TANKERS IN TUNISIA

CONVERSATIONS WITH MEMBERS OF THE 3RD BATTALION, 1ST ARMORED REGIMENT, COMBAT COMMAND "B", 1ST ARMORED DIVISION, MAKNASSY, 4 APRIL 1943. ENEMY ACTIVITY CAUSED INTERRUPTIONS.

SERGEANT SWATZLANDER, Company "I", 1st Armored Regiment, 1st Armored Division.

Sir, if I had a brother coming in combat, I would want him to know well the functioning of the tank and all its guns. I would want him to know personal care—just how long to stay with a damaged tank before leaving it. After it has been hit it is a big fire hazard. You stay as long as you can. If you have to leave, you do it quickly.

My tank crew were good; I think they were the best. I think we will lick the Germans.

I have one new man. He is good, learns fast, and works well. He was formerly with the 2nd Armored Division, I believe, and was a truck driver.

Steel tracks are better than rubber track when we don't have hard surface roads.

How do you know how to aim with the different ammunition?

Learn and you know it. I don't follow a table, I never look at it.

I run the tank by the inter-phone. No trouble.

When do you button up?

I stay open.

The .50 caliber guns are good against aircraft, especially to keep them up there and prevent strafing.

I fire mostly individually and not as a section or platoon.

I use cover and concealment as much as possible, but there isn't any right here.

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SERGEANT BECKER, Company "G", 1st Armored Regiment.

Don't lose your head; being jittery in battle ruins a lot of communications. Keep your head—main thing.

We have the right ammunition.

Don't button up your tank or you can't see anything.

M4's are fine.

It's a funny thing, being tank commander. You have got to run the crew, be stern, and show leadership. I had a new driver for an M3 tank. I told him to drive up a slope to a certain place and then stop. He got excited and went all the way up the hill. I told him to back up to the right place. He got excited again and went all the way back down the hill. He wouldn't listen to the inter-phone communication so I hollered to the 37 gunner to stop him, as I had my head out. Finally we stopped him and we drove up to a safe firing place and I asked him why he didn't pay attention to me.

Over night, I explained how I wanted him to drive and how I wanted him to pay attention, and I told him if he didn't I would close his slot up completely and make him drive blind. That fixed him. I think I have a good driver now.

I am lucky, as I have never lost a tank, but how I don't know. We saved two tanks out of the company.

When our platoon leader told us to withdraw, we withdrew by backing up. He became confused, perhaps because his gun was pointed to the side. Instead of backing up he turned at right angles and ran up on a ridge. He didn't come back.

I like the M4. I look at the German tank and thank God I am in an M4. The M3 is nice looking, but should be three feet lower.

I think we will lick the Germans in time. I think we are good.

INTERVIEWS AT THE FRONT



*Front View of a German Mark III Tank
and an American M4 Tank*

I haven't heard any news in four days. The rumor in the company is that we had Faid Pass. But our platoon leader says 'no'. ('No' was right.)

You can't do nothing unless you have a good driver. He must go where you want him to go.

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SERGEANT SIPES, Company "G", 1st Armored Regiment.

New men need more training. They haven't enough gunnery and no driving instruction.

I am a tank driver and was in action in Faid Pass. I didn't get my tank out. I button up my tank when not in bad terrain. I fire as a part of the platoon if possible; if not, I fire individually. I fire in hull defilade and fire both while moving and still.

I have learned not to rush into anything you can't see. We fight too fast, should go slower and be sure of ourselves. The best way is to fight as a platoon. Cover each other as they move forward. I haven't been able to

use the blitz tactics they taught us. Our tactics is for some in hull defilade as the others move forward.

In my tank an 88-mm shell came through the turret and set fire to the powder; only four got out, two out of the door and two out of the turret. I don't think the door should be locked. If the gun is to the rear, you can't get out the door. I have an M4. There should be a larger opening hole, so in case the turret is to the rear, you can get out.

As a driver, I pick out targets and maneuver into position with the help of the tank commander. I know never to pull up over a hill without stopping in hull defilade and observing first.

I think we have learned a lot and can lick them. It's bad enough to be on the winning side, it would be terrible to be on the losing side.

How close up is your maintenance company?

MAJOR MILLS, Regimental Motor Officer: Just back of companies and battalion when in combat.

TANKERS IN TUNISIA

COLONEL HAINES: The Battalion had crossed 500 or 600 yards across a bridge which was under fire. The maintenance was also across. A message came in to the Command Post: 'Need some of Pappy's boys'. (Pappy is the motor officer and Pappy's boys are his men.)

I asked if any big boys were needed; the answer was, 'not just yet'.

We have two pappy's, but we don't think the Germans know them, or what each does.

The medium tank had damaged a track. We sent a wrecker over under cover of darkness—a distance of thirty miles. The wrecker was not needed, but it did escort the tank back, as it was thought that track would not hang on. The tank had 31 track connection guides broken loose and the tank was started back to the service park on its own power without repair with the wrecker following in case needed. The tank came in without repair.

Where do you change engines?

MAJOR MILLS: Back with rear echelon maintenance if situation warrants it, closer if situation is possible—in regiment.

COLONEL HAINES: The maintenance company got cut up at Sidi bou Zid. They are now doing swell military police duty and guarding mine fields.

We drew 36 M4A2 Diesel tanks from the British. We like them very much.

*NOTE: This was a perfect radio message. Here is an example of a bad radio message: 'Colonel, my command post and command half-track are 100 yards down from that tank burning on top of the hill. Jerry is shooting everything that moves in or out here. I am going to wait and move out when I think he can't see me.' I was beside this half-track which had been hit by a splinter when the shot hit the tank.—TJC

We don't wear tin hats in tanks, but they are never out of hand's reach.

Make your training program include more battlefield tactics.

More training in:

1. Physical conditioning.
2. First aid (men have saved and can save each other's lives).
3. Marksmanship in major weapons.
4. Observation with field glasses.
5. Estimation of terrain, range, etc.
6. Personal reconnaissance.
7. First and second echelon repair for all crew.
8. All ranks should know how to set up, use, and maintain communications.

COLONEL HIGHTOWER: A lot more and better target practice is needed for tanks. It is better to miss 500 rounds in the United States than one round here.

COLONEL HAINES: The driver is less important than the gunner. The gunner should have a higher rating.

The 'C' ration is cooked by the crew. There should be a cooker in each tank.

COLONEL HAINES: Clothing and combat suits are adequate. Replacements are hard to get.

I had trouble getting one soldier to wear his helmet. He claimed it was too heavy. The other day he came over to me. He said, 'I'll never be without this helmet again. You will never have trouble getting me to wear it.'

'Why?' I asked.

He showed me his helmet. 'See this dent,' he said, 'just look at it.'

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INTERVIEWS AT THE FRONT

INTERVIEWS WITH OFFICERS AND MEN OF THE 2ND BATTALION, 1ST ARMORED REGIMENT, AFTER GENERAL McQUILLAN'S ADVANCE THROUGH REBAOU PASS, 11 APRIL 1943.

STAFF SERGEANT KERMIT JACKSON, Company "D", 2nd Battalion, 1st Armored Regiment, Krerouf, 11 April 1943.

I've picked up a lot of stuff that I didn't know when I came over here. The most important thing that I've learned is to keep in hull defilade at all times. You can't barrel-ass across open country. In Sidi bou Zid we had 8 tanks left in a wadi with me. The platoon leader gave orders to pull back. I decided to get back as fast as possible and barrel-assed back and got hit in the ass with an 88. If I had backed out I probably would have come out OK.

In a wadi, the company commander was looking for a place to cross. He found one, and 88-mm guns were waiting. They didn't use their armor piercing ammunition but used their high explosive ammunition. We all crossed in column. They didn't open up until the rear tank crossed, then opened with armor piercing shell. I never saw so much armor piercing. All tanks took off cross country and tried to outrun bullets, but couldn't run fast enough. I got in a hull defilade and saw nothing but fires. Every tank on high ground was burning.

Any time that 88-mm guns open up you can expect enemy tanks on your flanks, and you had better start backing up or they will follow a pincer movement about your flanks. Now we keep more of our tanks in reserve and on the flanks and we use the German 'cod-lock'. Cod-lock means a cinch. We pull it on them since they have caught us and we plan to use it on them in the future, too.

Here is what I mean by 'cod-lock'. In the battle of El Guettar we received a report of 70 tanks that were preparing to attack. We were all set. The field artillery was going to give them air burst. We were going to put some tanks out for decoy. We then were going to suck them through the pass by backing up through it. Back of the pass was a reverse slope that had tank destroyers on it, and back of them were a battalion of tanks, who were going to attack on the flanks, should they come through.

There was only one way, and that was through the pass. We kept playing about out of 88 fire and they started after us but wouldn't come through. We have learned the lesson and hope to teach the Germans a few of their own tricks.

When a tank catches fire, you come out any way you can. I came out the turret once, and not the escape door, as I was supposed to do. In that escape I think most of the men got out of the tank but didn't get back to our own lines. Men should be cautioned to go separately and not bunch up, as the Germans will machine gun you if you are bunched.

LIEUTENANT HOLTZMAN: Sergeant Jackson has received the silver star citation once and has been recommended a second time. In the second citation he gave help to a wounded man under heavy shell fire after safely maneuvering his tank to defilade the wounded man. If he had not backed the tank to help the wounded man he probably would not have been here now, as several shells fell where his tank had been.

The tank is the best slit trench in the world when shells or bombs are falling; I feel safe in it and stick close to it at all times.

I was commanding officer of my platoon in the last fight. The Germans let the platoon go through and started shelling me. They pick the leaders off first if possible. I saw their fire,

TANKERS IN TUNISIA

and put out their gun position, but you can't find the guns unless you see the flashes. They usually camouflage their guns. They do a damn swell job of it.

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SERGEANT DECKER, Company "D", 1st Armored Regiment, Krerouf, 11 April 1943.

In our last position at Gabes Pass, I saw gun positions that had been tunneled 30 feet back in the rocks. They were still good after being shelled by 155's. After the capture of the position I had permission of the platoon commander to go in the area looking for German radio receivers. These excellent gun positions are not the rule, only when they have lots of time. Their general procedure is to mine gun positions so tanks can't come up to run over them.

LIEUTENANT LASELL, Company "D", 1st Armored Regiment, Krerouf, 11 April 1943.

That sand mound might be a good German gun position (he pointed to a sand mound 200 yards away); you couldn't see the gun from here.

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LIEUTENANT McCracken, 2nd Battalion, 1st Armored Regiment, Krerouf, 11 April 1943.

Everyone thought **SERGEANT JACKSON'S** buddy, **SERGEANT HAMNER**, was cracked when he remarked that he saw a building moving around. But it was a German gun position. They are very smart and use houses, sand dunes, or hay stacks as gun positions. The moving building turned out to be a vehicle with windows painted on representing windows of a house.

The Germans not only hate lead and shrapnel as much as we do, but they definitely don't like smoke. I think **SERGEANT JACKSON** will bear me out in this. It has an awful effect on their morale.

Another thing is ricochet firing. Catch a tank approaching and drop a high explosive

shell 60 to 80 yards in front. Give it time to travel the necessary distance and it will burst on their heads. I don't like high bursts and I know they don't either.

Ricochet bursts in a half-moon pattern and has five or six times more explosive force than ordinary ground bursts. It drives them down in a slit trench; then wait for them to come out, and then give them another one.

The German tanks and gun carriers have their mufflers and exhausts pointed to the high heavens rather than to the ground, thus eliminating another possibility of raising dust clouds.

One time when we were short of binoculars, **GENERAL WARD** took field glasses from his Division Staff to give to the tank commanders.

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LIEUTENANT BORESH, Commanding Officer, Company "E", 1st Armored Regiment.

The company was reorganized a month before the battle of El Guettar. There was a question of how it was going to work out. It did quite well, better than I thought.

On the 31st of March I was called to Headquarters at 11:30 and was told that we would attack at 12:30. I had no time for reconnaissance, only to locate gaps in the mine fields that we had to go through, but I had time to tell the platoon leaders the order. The attack started on time and we came under heavy artillery fire when we went through the mine field. After that we got nothing until we reached the top of a ridge near the objective. A platoon leader was wounded. I led his platoon up cautiously and got a little small arms fire. One of the tanks got too fast and was knocked out. Later, when we reached the objective, one of the other platoons lost a tank also. After accomplishing our mission, we took a defensive position and began to fire on 88-mm guns that could be

INTERVIEWS AT THE FRONT

seen from our position. I think we knocked out 4 guns and several vehicles that could be seen on the road below, also a tank.

One German gun was hit at 3500 yards. We fired at a lower level, estimated the elevation, and hit it.

Although we have had air burst 20 to 25 feet off the ground, we were not hit. Lucky, I think; air bursts are more frightening than dangerous.

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STAFF SERGEANT WILLIAM HAGLER, Company "E", 1st Armored Regiment.

I saw a German Mark IV tank and an American M4 tank fire at the same time once, and both caught fire.

A tank has its place in a counter attack where the enemy hasn't had time to place antitank guns. They are also most useful in the retreat of the enemy, but they are expensive to make an attack with against a well organized position. I believe that our losses in personnel are light in comparison with our tank losses. For tank losses of 8 we lost:

4 men killed.

1 crew of 5 missing.

7 men and 1 officer wounded.

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LIEUTENANT PARKER, 2nd Battalion, 1st Armored Regiment, Reconnaissance Officer.

You told them all about it. We just walked into a trap at Sidi bou Zid. I was on the right flank. We passed through the Regimental Reconnaissance Platoon. We had artillery to our right rear. No one told us that they were coming through. I think I was the first one to give them the word that they were coming. They came out of the hill southwest of Sidi bou Zid. I gave the warning, but our people didn't do anything that I know of. Then I got the artillery observer. The tanks were then 300 yards away. I know of only 3 artillery shells that fell on our right. I lost my recon-

naissance car and came out in a peep that night. I brought 9 men out with me.

I can't understand why there was no artillery fire, as the tanks were perfect targets—massed 30 feet apart. Possibly no communication.

The Germans clean the battlefield of everything. At Medjes-el-Bab the Germans cleaned up, after darkness, only 800 yards away. We found only burned out tanks and wheels the next morning. The German recovery crew was joined by the returning tank crews, who signal each other with flares. The tank crews assisted the recovery crews in locating and pulling in damaged equipment. The Germans also use flare signals in locating stuff at night.

We got one of the boys back yesterday that was burned and had been in the hospital. He got burned in the battle of Sbeitla—**SERGEANT REECE**.

SERGEANT HAGLER: He is a good boy. His nose was peeled like a cherry when we took him out. He has lots of guts.

I had to wait a week for some tank clutches and spark plugs and had to rush like hell before this move from Faid. Last night was the toughest road march I ever made.

LIEUTENANT PARKER: It's embarrassing to have to go up for information under fire and then have to go back under fire and then go up for more information again. The most favorable place to hide is in the defilades to get the information.

SERGEANT HAGLER: Spare parts we get now by robbing the battlefields. Engines are pulled in the maintenance 10 or 12 miles to the rear.

At present, sir, the clothes I have on are all that I have. I wash them in gasoline and they dry in about 5 minutes.

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PRIVATE HABAR, Headquarters Company, 1st Armored Regiment.

All the clothes I have, I've got on, sir. I lost the rest when I was driving for the Quartermaster two months ago. I wash fatigues in gasoline and boil underclothes with GI soap.

STAFF SERGEANT WILLIAM HAGLER, Company "E", 1st Armored Regiment.

At Medjez-el-Bab there was little or no reconnaissance. Our infantry attacked in the morning. One platoon of tanks was supposed to follow the right flank, and it was supposed to be protected by another platoon. We had no reconnaissance other than our own on foot. We walked the tanks in. We had no orders other than to await a tank attack. The following morning about 0900 hours we lost two tanks to the 88-mm guns. The first was the command tank. I went forward to get the crew and lost my tank by three 88-mm gun hits. Subsequently the entire command tank crew was lost by mortar fire. I was wounded

and taken to the rear. I am confident that reconnaissance would have saved those two tanks. The light tanks followed us around.

At Smitty's farm at Medjez-el-Bab on December 10th, Germans packed mud on the turrets of their Mark IV tanks to make them look like our M4 tanks. Our own foot reconnaissance picked this up and we were ready for it. Our position was of stationary disguised artillery. We waited until the Mark IV's were within 800 yards, then opened fire. We got five Mark IV's, one of our M3 tanks being used by the Germans, and one German motorcyclist in a United States Army combat suit. We found only three guns. The German tanks were carrying shock troops.

At El Guettar on 31 March 1943, I was protecting the company commander's left flank. His platoon lost one vehicle from 88 fire. He knocked out one 88. By looking through my glasses, I saw it roll over. I knocked one motorcyclist off his cycle with a .45 caliber pistol and broke his hip. I made him crawl to me and searched him, but found



M10 TD emplacement looking toward Faid Pass. This TD crew had worked day and night to dig two such emplacements in the stony soil

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nothing. Heavy artillery fire was going on with air bursts—I was in a sweat. One crew of my platoon abandoned its tank, which had been hit. Later the company commander, 1ST LIEUTENANT BORESH, with a driver, went back under fire and recovered the tank. I saw a cyclist getting away and thought him to be a messenger, so I shot a super HE just ahead of him and he ran into the burst. Pretty expensive shot, but he was out of 30 caliber range.

Afterwards we assembled, gathered the wounded, and came out by a roundabout route. I was covering the retreat. I saw a gun crew running to their gun and gave them four supers. They got in the way and we went on. We came to a mine field at dark. We bedded down and moved on at daylight.

GENERAL CAMP: What is the most important thing for a tankerman to know?

SERGEANT HAGLER: Everything. Every man must know his job and the tank commander must know them all. The most important thing I have learned here is the German employment in depth of antitank guns. In tank versus tank, our M4's can handle them two to one, and everyone here will tell you the same. We're learning. The last battle, El Guettar, went better than the one before (Sidi bou Zid). When going into a battle where you expect to lose 10 tanks, take 25 extra.

CAPTAIN A. R. MOORE, Company "F", 1st Armored Regiment.

The M10's look good to me; all the boys who drive them swear by them. They use them hull down in defilade, nose over.

We lost 4 vehicles to Teller mines. Around on the other side of the hill there were antitank guns ½ mile in depth.

At present we have a few super shells saved for a special occasion.*

COLONEL TALBOTT: Often we can't tell whether vehicles are ours or theirs. Once when the 2nd Battalion had three tanks left and the 3rd Battalion had six, and we were fighting a delaying action, we couldn't determine whose tanks were where. By holding our fire we let Jerry occupy a ridge.

I prefer maps to photos. It all simmers down to the fact that you can't beat that personal reconnaissance.

1ST LIEUTENANT HARRY T. HOLTZMAN, Company "D", 1st Armored Regiment, Krerouf, 11 April 1943.

This battalion tried twice to crack the pass east of El Guettar. The start for Gabes was made too late. The first day we reached a mine field at dark and had to stop; you can't operate tanks after dark without infantry in front.

The second try—we were the third of three companies—I put one platoon in front and two in reserve to meet 88-mm guns or counter attack. This is best to put platoons in the formation which can best be controlled. This is dependent on terrain. Give the platoon leader his objective, sector, and the position of the company commander and of other platoons, and let him work to the objective as

*NOTE: Maintenance became the subject of the conversation. Everyone talked at once and earnestly about 'salvaging' spare parts from abandoned vehicles. The scribe could not keep up. Talking about a race to get to a certain abandoned, disabled, American tank, one exclaimed, 'Christ, someone beat me to that one; homelite gone, radio gone, we had tried to beat the Ordnance to it, damn it.'

Another stated, 'My crews go back with the tanks to the Ordnance and they keep a guard with a Tommy gun posted to see that no one gets away by mistake with even a single wrench from it. We have to have all our equipment and the men look out and see that they do have it and don't lose anything. What good is a tank that doesn't have a crank or gun sight?'

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best he sees fit. Keep in contact by radio. The old teaching of over-running antitank guns is impossible here; 88-mm guns are almost always protected by tanks, mines, and other antitank guns.

My tactics in an attack: Platoon in inverted wedge to proceed when it sees fit. Move cautiously. Company commander behind company working from observation post to observation post, even up to 100 yards from leading platoon.

During this attack on the Pass protected by the mine fields the tanks had to proceed in column through the mines. The Germans let the entire company go through the mines. One tank was lost by fire from a Mark IV tank, but the remainder pressed on.

Having gone through the mine field I engaged a Mark IV tank. The description of the engagement will demonstrate some of the Germans' tactics and some of ours. The Germans opened fire from a well camouflaged position, 2000 yards on the flank, with a 77-mm gun; supporting artillery fired an air burst to keep the tank 'buttoned up' and thus obscure vision. I was able to observe the flash. Immediately we turned this tank, which had been caught from the vulnerable flank, head into the gun, thus placing the heaviest armor towards the enemy. The enemy's shot was short. I began to back up, the only thing to do when caught in the open. After I reached better ground, the German and I both started maneuvering against each other among the low hills. Finally I caught the German coming around a hill the correct range to which I had already found by firing two rounds of high explosive ammunition. My first round of armor piercing ammunition immobilized him. I fired several more into his Mark IV tank. He did no more damage. We expended altogether 18 rounds on his tank.

Our tank track had been hit twice and the tank was limping. Jerry always picks a command tank. When you are being shelled by indirect fire, as we were then from 88-mm guns, keep moving in a circle to throw his range and deflection off.

In the meanwhile a second platoon had come up as requested of COLONEL TALBOTT by me, and got into position to do indirect fire. The 88-mm guns were spotted at 6000 yards. The platoon began to fire high explosive ammunition, semi-indirect fire (by guess and by God), and dumped in 200 rounds. Results were not clear. In the meanwhile a platoon of M10 tank destroyers had arrived. Then two German Mark II tanks appeared near the knocked-out Mark IV tank. They were destroyed by the fire of the tank destroyers and of our tanks.

Suggestions on training:

An officer is a school teacher before and during combat.

Talk constantly over the radio to the men you lead.

Most of the 1st Armored Division is well-trained, but one must keep reminding them of their training.

During our training we jump from one thing to another too much. This is thought to hold interest, but really accomplishes nothing. We need longer, more interesting periods.

Men who have been in combat want more training.

The major training subjects we need are, first, all kinds of gunnery.

In small arms we stress too much correct position and range procedure. We need training under combat conditions at longer ranges and especially 'pot shots' and fire and movement combined.

INTERVIEWS AT THE FRONT

COLONEL TALBOTT: Our tanks were the only moving targets available. Men fired at the tanks rather than at towed targets.

LIEUTENANT HOLTZMAN: In teaching tactics the terrain board training is most valuable. We made a board of the Sidi bou Zid battle area and reviewed ours and the enemy's movements. The terrain board need not be elaborate. Give students model tanks, give the platoon leaders objectives, and let the entire crew solve problems. Give the situation and let them dope it out.

If you run into one of the 88-mm guns, there will be two more. You can't crush those antitank guns. They are employed in depth and are protected by mines, tanks, and smaller antitank guns. When an 88-mm gun is located, leave one tank to engage it and send the rest of the platoon to the flanks to locate other guns. These antitank guns are employed in depth with 88-mm guns in the rear. The 88-mm guns open fire first, drawing the tank commander's attention. The tank will make this gun his objective and, if possible, advance on it, until he is caught from the flanks by 47-mm guns and/or tanks. Tanks will draw our armor towards the 88-mm guns. Solution at El Guettar was to send two reserve platoons to the flanks and call for artillery support.

At El Guettar no high ground was available to artillery observers. Tankers did observing for from one to five battalions at one time. I would have every man in the battalion a forward observer able to give initial data and adjust fire.

Try to arouse interest in learning first aid. The most valuable asset when a tank is hit is to know the use of sulphur powder and pills and the treatment of burns, puncture and laceration wounds. In a JU 88 bombing

April 1st, the men were caught outside of the tanks.

Everyone in the Armored Force should be able to drive a tank properly. Everyone should be able to do everyone else's job so that he can carry on under casualties. The higher gears on a tank are seldom used in combat. One gear is used during approach and attack. Slowly moving, dustless tanks have a terrifying aspect.

LIEUTENANT McCracken: At Sidi bou Zid, slowly moving German tanks were at the proper place at the proper time. Our down-pointed mufflers raise much dust. Jerry's exhaust points up.

COLONEL TALBOTT: We have now learned to move over normal dry bunch-grass terrain without dust.

During the February 15th Sidi bou Zid battle, part of our reconnaissance trapped on top of Lessouda Mountain observed dustless German tanks creeping at very low speed, for many hours, to reach proper position for a surprise attack.

Radio instruction should get to the point where every ordinary soldier can check and use every set. Procedure is important. No extra chatter. Everyone in the company can operate sets.

German planes will wheel overhead and pretend to 'peel off', thus attracting attention of the ground troops. While this distraction is taking place, German tanks will attack the flanks. We call this the 'Smith Brothers' Act.

* * * *

SERGEANT LASLEY, Company "C", 1st Armored Regiment, Maknassy, 4 April 1943.

I have been a tank commander for eleven months off and on. I have seen action at

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Faid Pass and also in two or three small actions involving only artillery shelling.

I ran the tank by interphone. Once in a while we have trouble with the interphone. When it goes out, I do the best I can. I holler to the gunner; he hollers to the assistant driver.

I fired individually and picked my own target. The platoon leader did not designate the target.

Our practice has generally been to move from place to place under the direction of the platoon leader, who used the radio. One section covered the movement of the other as well as they could. But we were afraid to fire too much on the flanks for fear of hitting our own tanks.

The German tactic is to try to make it look easy. They draw you in. They even

used one of our captured vehicles as a decoy. They get you in, and then they give it to you.

At Faid we were on a plateau. It was dark. We were firing, on the move, at flashes. We were too close to the artillery. So we backed away and fired on the move. We used a stabilizer, firing at a range of 300 to 400 yards. Finally our tank was hit with an 88-mm shell. It was the third shell which finally destroyed the tank. The first two bounced off. When the third hit, the tank caught fire immediately. The shell landed on the floor of the tank. Shrapnel went into the hull and on the floor. I believe the ammunition caught fire first, then the gasoline. We all got out except one man. When we left the tank it was still running backwards in reverse. We started to run toward our own lines.



What a German Mark III Tank looks like against the background of North African terrain

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As long as we have as much equipment as the Germans, we can match them.

We had armor piercing ammunition when we needed it.

When you are fired upon, if you have a good tank like an M4, you try to find out where the enemy is and fire even before you find a good position. Of course, it is best to get under cover as soon as you can. When fired on, you should get out of the fire area, find cover, and then fire.

You should go from one firing position to another as a platoon. But at times we must go on our own. Sometimes you must act on your own because you can see the ground that you are going on better than the platoon leader.

The driver and assistant driver should assist in picking out targets. They can be on the alert and pick out targets that the gunners can't see.

We also lost a tank when coming back in to Sidi bou Zid. The motor stopped and we couldn't go further. We left it but didn't destroy it because we thought the Americans would take it over again. We went into the town. Then our company commander sent us back to destroy the tank.

I have a good, well-trained crew. One is from the 2nd Armored Division, the others from 'I' Company.

The M4A2 seems to be a swell tank.

* * *

SERGEANT NEAL, Company "I", 3rd Battalion, 1st Armored Regiment, Maknassy, 4 April 1943.

I am a platoon sergeant. In the action at Sidi bou Zid I was the driver for the platoon leader.

During the first week we were near Sidi bou Zid guarding the Pass. We were equipped for indirect firing. All of our tanks were in the vicinity of the Pass—set back about 5 or

6 miles. We'd come within 2000 yards of the Pass every morning, fire into the Pass, and pull back. We were just back of Lessouda Mountain.

On the morning in question, we were in the cactus patch southeast of Sidi bou Zid. We got up and had orders to be on the alert. Suddenly we saw firing where 'G' Company was. We fired back. It lasted one hour. Then we pulled up towards the north and along the road in line formation. At this time hell broke loose and we continued to fire. When we first opened up the targets were hard to see. Then we saw firing from the mountains to the east. We fired until we had orders to pull out and go back to Sidi bou Zid. We went back and remained there. Tanks kept coming. We pulled out and were met by a line of tanks from the southwest. That's where we lost four other tanks, including our tank. We were fired on by Mark VI tanks and 88-mm guns. Our tank was hit in the turret. It listed and caught on fire. I believe it was a Mark VI tank which hit us.

We all got out of the tank and lay in a ditch all night while German tanks passed us. Then we went into the mountains and walked to Kasserine. We lived with the Arabs and ate their food and water.

What I've learned here in Africa is that it is important to respect, not fear, the 88-mm guns. You must keep in turret defilade. They can knock you out at 3000 yards. I have also learned that tanks must have support. If we had air and infantry we could have done a good job. If the infantry had been ahead of us at the Pass, they could have helped quite a bit.

We had an M4 tank. It worked OK.

We should have plenty of reconnaissance. We will have a much better chance if we know what we are doing.

* * *

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SERGEANT BUTLER, Company "I", 1st Armored Regiment, Maknassy, 4 April 1943.

I was the tank commander of a medium tank. We did reconnaissance work. I was in action at Faid Pass.

At Faid everything was vague. We didn't have enough information concerning where the enemy was. If we could get correct information in this respect, we could do a better job.

For example: (pointing to a map) When we first moved up here (southeast of Sidi bou Zid) we were told that there would be one 105-mm gun and several 88-mm guns, and that is all. Then we went on a reconnaissance (north of Sidi bou Zid) and found many heavy mortars and ground guns, probably 47-mm guns. This was in the Pass. When we left and tried to get out we were attacked by Messerschmitts and Stukas. This shows that the German air and ground forces are well coordinated. Finally we got out and withdrew to the vicinity of Sidi bou Zid. We were told that we'd have an alert the next day. They seemed to know something was going to happen, but they didn't know what. Then after the fireworks started we went towards the oasis along the North road. My tank was the point, in support of the colonel. We were told to pull off the road because we had been fired upon. Here is where we lost most of our tanks, because we pulled off the road and stopped. I believe that tanks should keep on moving, even if slowly. Thus, for example, the other day we were in a scrap near the bridge. We tried moving around and didn't get hit at all.

The tactic we use is to have one section of the platoon advance while the other section covers it.

I'd say one must act on his own a great deal of the time. You can't wait to be told when to fire or where to fire. When you see

something which you think worth firing upon, take the chance. The function of the officer is to keep the men together and tell them what is going on. The soldier has to use his individual judgment.

You should keep your troops on the alert always, ready for quick movement.

At Faid we were too close to the Pass. We didn't get a chance to maneuver. They came around on the left and cut us off in retreat. We ran through the German lines and up into the mountains. Most of the company did likewise. We were pretty much depleted.

We have plenty of artillery here now. Infantry should be used for reconnaissance up mountains, etc.

LIEUTENANT COLONEL RINGSOK, 6th Armored Infantry, and members of his Battalion, 14 April 1943.

It is recommended that each Battalion or Unit Commander have a mounted radio (510) on a ½ ton vehicle to be used in reconnaissance and to keep contact with his company commanders. Reconnaissance should be as complete as possible. If the enemy line is 600 yards distant, reconnaissance should go up 558 yards away.

The ½ ton vehicle can go almost any place that a man can. When the terrain becomes such that the jeep cannot be used, the 510 can be dismounted to make a 509, and communication continued. I strongly recommend the above.

The Germans will infiltrate into our line and stay there all day, firing the machine-pistol indiscriminately. He may not have a target but he does it for the nervous effect it produces on us. Our defense for that is to have each platoon do a mopping up job until it contacts the adjacent units and the area is

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cleared of such people. We use the self-propelled 37-mm gun on the carrier to do this and take in prisoners. We back it up and fire canister into the holes when we find the Germans.

The Germans will become discouraged by continuous firing of weapons. It is terribly annoying to them. So now, throughout the night, we have members of the squads take turns at firing the machine guns. It also helps keep the men awake and on the jobs. At no set time, but off and on and many times during the night, the guns are fired.

Something else to consider is the ease with which you can use indirect firing with the machine gun. Indirect firing can be most advantageously used and it does not need to be made complicated. We simply go out where we can see, and fire, and make records of it on stakes, and at night when we wish to fire a certain distance, we just elevate to the desired height as shown on the stake. We were using indirect firing one night to good advantage when we were firing on a road. Evidence was seen the next morning when we saw a truck burning on the road. The firing cut a supply road three miles away.

The German flares and night signals gave my battalion a lot of trouble at first. The Germans fire flares continuously all night long, mostly to annoy and disturb troops. My troops, at first, would cease firing and attempt to G-2 what the enemy meant. But really, in most instances, it didn't mean anything but was meant to distract the troops. And it will distract them unless you teach them to pay no attention to it, but to continue the battle and fire flares in return. After all, you can't do anything after the flare is fired.

We fire lots of flares in the battalion now, and when Jerry fires at us, we fire in return.

I got my men used to the German flares by getting all I could, including those I could

borrow from the British, and we fired them all night at Jerry. Now we take flares with us and fire them at Jerry at night. We do this on all the nights that we don't use them for signals, then we use them only for signals. But my men now pay no attention to the enemy flares.

We were taught to fire the ground signal projector and white illuminating flares to mark front lines, but they will light up our area 200 yards square and will show the enemy our position rather than show us his. They should be shot out in advance of our positions and fired so that we are in the dark and the enemy is illuminated.

CAPTAIN D. A. KERSTING: Need to know how to operate all weapons.

COLONEL RINGSOK: In battle, the first time men are under fire, issue some kind of order—give them something to obey and take their attention.

CAPTAIN KERSTING: Need battle inoculation.

Need a good obstacle course training in the States.

SERGEANT FRANK SABIN, Headquarters Company, 2nd Battalion, 6th Armored Infantry, 14 April 1943.

Dig good foxholes. We learned in Sbeitla Valley that foxholes offered smaller area and less chance of getting hit by bombs and shrapnel.

I wish I had learned in the States to have a lot of real fire over my head. We got scared awfully at first. Any kind of firing over your head would help. It would still pay if you lost one or two men when you considered whole armies.

I had rather go in my peep than walk when on reconnaissance.

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Flares keep the Germans guessing. Don't shoot them over the front lines of a troop. Shoot 200 or 300 yards in front of our front line troops so it lights the enemy.

The first time I went through crossed machine gun fire, COLONEL RINGSOK taught me to use my head. I went through it 12 or 14 times. I also led 8 or 12 men through. The way to do it is to crawl and see where they hit, then either cross to the right or to the left. Just look and use your head.

As soon as they fire fall flat on the ground, and when they reload jump up and run while they do. Experience and guts count, faulty leadership hurts.

Get men who have been in action, change things that men don't need, and teach slit trench, teach gun positions and how to shoot all guns. Teach machine gun position, which we didn't learn to make.

Our battalion officers and noncommissioned officers are good in battle. The sergeants took over the officers' jobs and the corporals took over the sergeants' jobs. We didn't learn the organization of the battalion in the States. We learned it here and now everyone knows where he should go should the next leader go down.

They didn't teach terrain in the States. The colonel teaches me the terrain and the enemy situation.

The battalion commanding officer and the commanding officers of the companies do better when they make reconnaissance. Seems like the battalion does 100% better when they do.

All men in the Command Post should be ready for rear-guard action. They should have holes dug in just like the men in the front lines in case of envelopment.

The driver should be ready no matter what happens. Should know all guns, etc.

Back in the States they didn't teach that, but we have to know it here.

In garrison I didn't care so much for work, but I do here. I don't mind it here.

There should always be a stragglers' post. A sergeant could collect the stragglers and send them back. At first we didn't have a straggler's post and we had men and vehicles 150 miles back. COLONEL RINGSOK once collected a bunch of artillery stragglers and gave them rifles and we had a big battle.

If we stay there and fight the Germans will back up.

New men aren't well trained. I had a hard time when I was first in the front lines. I was gun shy, scared. New men should work themselves in. They shouldn't be in too big a hurry. They must be cautious.

SERGEANT GEORGE CLELAND, Company "D", 6th Armored Infantry, near Sidi bou Zid, 14 April 1943.

When you push the enemy back the ground between your position and the enemy's position should be checked for snipers. I think patrols should be equipped with additional fire power.

The hardest thing for my squad to do is stay together.

Men in the States should be trained to dig foxholes. It will save lives. Foxholes are better than slit trenches because they protect a man more and you can fire out of a foxhole and you can't very well out of a slit trench.

If I went to the States to train men, the first thing I would stress to a new man is leadership. I would make the man have confidence in his leader, and train him in every weapon, camouflage, and to dig foxholes; also to cover up tin cans. (Tin cans reflect light and give away positions.)

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If you are going to harden a soldier up, keep him hardened up and don't let him get soft. Start hard training and keep it up. Men should be hardened before they go into combat. Physical training on a boat is fine, but weapon training is wasted.

Flares should be used at night to confuse the enemy. They are very effective. You should also fire machine guns at night even if you don't see the enemy. It has a very effective demoralizing effect on the enemy.

In the States we didn't have enough night training. Men should be trained in the use of stars for navigation. All men should be trained to know organization in the States. The half-tracks carry enough ammunition. Peeps should have trailers to carry ammunition from half-tracks to the guns.

SERGEANT JOHN D. MAHONEY, Headquarters Company, 2nd Battalion, 6th Armored Infantry, 14 April 1943:

The 75-mm howitzer is good for Mark II's and III's. We got three German tanks with high explosive ammunition, and one lucky shot got a Mark IV.

In a bombing attack, don't try to run too far from your half-track. Go about 20 or 30 yards and then hit the dirt.

I found at Maknassy that too many men stand around the observation point and give the position away. We lost a man in a counter-battery fire that way. At El Guetter we had the only other counter-battery fire.

We have the most need for training in the .30 and .50 caliber machine guns. We have men who don't even know their nomenclature and functioning.

COLONEL RINGSOK: Many recruits have never fired .30 or .50 caliber machine guns or driven half-tracks.

SERGEANT MAHONEY: Training in bivouac is good. It keeps men from being lazy. It keeps them refreshed on nomenclature.

Not all our men could read a compass or a map. Our new officers are medium good and good.

There should be a Coleman stove in each half-track to heat food. They would not give our position away like open gas flame does.

Assault gun platoons should be taught the use of air bursts. We also need fuse setters. We have improvised some, but they are too slow for fire for effect.

The half-tracks have taken a beating, but they're OK.

We should have had some training in booby traps. Don't pick up things. Watch where you step. Stay in half-track when possible.

I don't think the recruit training is tough enough. The new men are too soft. The more training the better. We need harder training right now so we won't get soft.

Every man should know how to fire every gun in the battalion and be able to operate the radio. A man doesn't need to know functioning or too much nomenclature; just know how to clear jams.

COLONEL RINGSOK: Before an action, we assemble the squad and platoon leaders and give them the 'big picture.' When the platoon commanders become casualties, 30% were at El Guetter, there is no one to give them the big picture then. And it helps to know who is on your right and left and what they are doing. This class, I believe, has paid big dividends.

2ND LIEUTENANT KENNETH D. WARREN, Headquarters Company, 2nd Battalion, 6th Armored Infantry.

Some of our replacements have been riflemen only. We need men trained in the

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machine gun and in the 37-mm gun. The replacements we got in the States knew their weapons better than those we got since we've been here. We have had to train most of our mortar men. None knew the 75-mm gun.

I'm convinced that we have the finest weapons. The 37-mm gun is good. Against personnel close in use canister. The armor piercing is good for tanks at close range.

On replacement training—I don't know how you can introduce men to the shock of battle. When you are being overrun is the time training counts.

At Medjez-el-Bab where we were being overrun, no one knew what was going on.

Regarding this shock of battle, how are you going to train men to meet this? Our company was in a fire fight, and tanks which had by-passed them overran them from the rear.

Replacements need more training in arms. We have infantrymen who had never had any training in armored force tactics, and armored infantry is a lot different from regular infantry.

Men should be trained to dig in a machine gun, as well as themselves. A machine gun that can be seen will draw fire just as a vehicle will.

The enemy will shell you from his tanks and he's good with his mortars too. Recruits need general training, especially in how to place and use their weapons.

COLONEL RINGSOK: We've had to run a training center in our trains, and that's no good.

We did more damage to the vehicles in the 40 miles cross-country east of El Guettar and the 70 miles coming out of Kasserine than was done in all the other 4000 miles.

The men must be impressed with the importance of taking enough ammunition and

other supplies every time they detruck. They're too slow in detrucking. Equipment must be ready at all times to detruck. Men are too unwilling to leave the half-track—it means they have to carry their own stuff.

We have enough equipment, but it's not always in the proper place. At Medjez we had to pull a short notice attack and it turned out that the men were out in the cold rain for three days without raincoats or blankets.

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SERGEANT PUDIMAT, Company "E", 6th Armored Infantry, Sidi bou Zid, 14 April 1943.

Weapons should not be regarded with fear, but with caution. The mortar must be fired approximately 400 yards behind lines and in defilade.

I placed an 81-mm mortar approximately 20 yards in front of our lines during the Kasserine battle and wiped out a German command post and inflicted 150 casualties on the enemy. If a sound power phone was used the 81-mm mortar could be moved to various positions and communications could still be maintained.

A great deal of practice is needed in scouting and patrolling.

I have found that men make use of terrain for cover and concealment only when fired upon.

LIEUTENANT COLONEL RINGSOK: At present four officers are studying until midnight to learn armored infantry tactics. These officers were trained in 'A' Company of the Maintenance Battalion.

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CAPTAIN LAWRENCE PUGH, Company "D", 6th Armored Infantry, near Sidi bou Zid, 14 April 1943.

I believe that kitchen trucks should be in combat trains. Maintenance should be

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kept as close to the combat area as possible so as to repair vehicles. Moving vehicles back to Maintenance is very difficult. Maintenance is most effective when close to the combat area.

A scavenger truck should salvage parts of knocked out vehicles before valuable parts are ruined by personnel knocking them off with chisels and hammers. In this way vehicles could be rebuilt in the field. I suggest that one company be put in the maintenance battalion to salvage parts. In this way lots of valuable equipment could be saved.

High velocity 37-mm armor piercing ammunition is very effective on the sides of Mark IV tanks. Will pierce 2½ inches of steel at 500 yards.

Armor piercing ammunition for 75-mm howitzer assault guns very effective. Gave 20 rounds to 13th Armored Regiment and they knocked out three Mark IV tanks.

The battalion likes to be led into battle and not driven into it. The battalion commanding officer and the officers should lead. The men have confidence in them. If the men feel that they are licked from the start they give up easily.

CAPTAIN D. A. KERSTING: Recruits need much more night training before coming over. I remember spending only 4 nights out in all my night training, but here we spend 40 nights out of every 45 doing night work; night attack, night patrols, night outpost, etc. Night training should not have to be learned here when the men have to do it for record.

The organization of the unit should be known thoroughly, not only by the leaders but by the privates and by everyone else. You should know what every person does. It will also be good to know the organization of your enemy. This is in addition to identification.

Don't shoot at any plane except when attacked. There should be no shooting at night even if bombed.

All leaders should know compass reading and terrain study thoroughly.

You should always drive without lights except for blackout lights away from front lines.

Everyone should know (1) how to operate radio, (2) maintenance of vehicles.

COLONEL RINGSOK: With regard to wounded. Let the company aid men take care of them. All others should continue their mission. If they stop to take care of the wounded it decreases the fighting strength of the unit when it is needed badly.

Company aid men should be trained as other soldiers in basic arms and principles of the unit, so that in case they ever have to fight they will know something.

When tactical firing begins, the men get excited. Then is the time for officers to calm them. That can be done by simply issuing an order or directive such as 'hit the ground', 'follow'—anything to take the men's minds off the shelling and give them something to do.

There should be means of communication with supporting units, that is, peep to battalion half-track, battalion half-track to supporting units, and from supporting units to their companies. Each battalion must have a forward and a rear command post. The battalion commanding officer should be with the forward command post.

Frankness with your subordinate leaders is the biggest thing in leadership. The officer should be truthful. If he doesn't know, he should admit to the noncommissioned officers that he doesn't know all the answers and that they must work it out together. An officer can't fool an enlisted man.

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This hospital was less than 30 minutes from the front

You can't impress the organization of the battalion too much in the States. Let them learn it there rather than have to learn it here, for it is absolutely necessary that the men know the workings of a unit when leaders turn up missing in action and subordinates take their places.

In the battle, initially the officers must lead their men. If they see him going the men will follow; but when the battle starts the officer should fall back to the rear. But not too far in back—just back of the front line (5 or 10 feet) so he can direct and maneuver the troops. But initially he must lead.

Tank fire in support of infantry is much more effective than artillery, as tanks can put out pill boxes by direct fire and infantry will advance behind them, whereas artillery is not so accurate.

German machine gun nests can be easily located as they have rocks piled up around the nest to form a little mound. They are never out in the open. The German sniper is good tactically, but a poor shot. The Italian rifle is no good, you must take Kentucky windage. It is powerful and long range. The German grenade is ineffective. It makes a lot of noise but it does not have the power that ours has.

Our rocket guns and rocket grenades scare the German and Italian into surrender when fired at night against personnel. They must be fired so as to strike rocks and explode. They have a terrific explosion and we find them useful in that respect. Keep harrassing the enemy by night firing and patrols. It is awful on their morale and decreases their efficiency.

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For physical condition climbing in and out of half-tracks gives the necessary exercise and teaches how to get out, too. It is much better than a long hike. Make your men shave each day, and keep clean. Provide periods for washing and bathing and enforce it. It is vital to morale and discipline.

The meaning of counter-signs should be taught in guard duty back in the States. Also how to challenge and ask for the counter-sign in the dark should be taught.

Know your men. It is quite necessary that officers know their men as completely as possible. Know their faults, their weaknesses, their strong points, and abilities. It pays dividends to take a personal interest in them.

We have a system that has never failed to get our battalion ready to move on time. Our scheme avoids disturbing and harrassing the troops until it is time to do something. It gives plenty of time to get ready to move, and also to get the orders down to every man. We work it this way. I have a good radio in my peep. After I get my orders at Combat Command Headquarters, and as soon as I leave there, I call in to the battalion, 'Wind up the phonograph, I have a new record to play.' That is the alert, the battalion gets set to move, and the officers and all concerned in the new orders assemble at battalion headquarters and are waiting for me when I get back.

(Comment by **CAPTAIN TIPTON**)

One of the many interesting parts of our visit to COLONEL RINGSOK's battalion was the fine spirit and morale shown, the enthusiastic leadership of officers and men, their cleanliness and their military bearing. COLONEL RINGSOK has three light tanks in his reconnaissance unit. These are not in the Table of Basic Allowances, but he finds them invaluable in reconnaissance. He doesn't

go after big game with them, but uses them to fire on good targets if necessary, and in helping with the mission.

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STAFF SERGEANT FRED W. ERDWINS, Headquarters Detachment, 2nd Battalion, 6th Armored Infantry.

I have never seen a man killed in a slit trench, but I did see three men killed who did not start digging as the others did. Entrenching tools are very valuable and almost as necessary as a man's arms.

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PRIVATE BLAIR H. CONARD, 6th Armored Infantry.

In this war there is no front. The enemy may come from the rear as the enemy tanks did to my company. We saw the tanks at the rear, but thought they were our own. One half hour later they moved up and shot hell out of our half-tracks.

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SERGEANT NORMAN ANNENBERG, Battalion Headquarters, 3rd Battalion, 6th Armored Infantry, Maknassy, 5 April 1943.

At Kasserine Pass, I was with the English in the command post of their tank commander. The command post was well located in a draw between two hills. Although the command post was located between two artillery fires—the fire of the enemy on one side and the English fire on the other—none of it came in to us. This was the situation from the latter part of the morning until about 1600 hours. At this time, the English started to build fires for cooking purposes. In addition, the artillery observer and his assistant, who were directing the English fire, came on to the sky line and directed fire from there. It wasn't more than fifteen or twenty minutes before German artillery fire began to land in the command post. As a matter of

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fact, one shell landed directly in front of the artillery observer and his assistant and killed them.

About February 16th I was a member of Battalion Headquarters, 3rd Battalion, 6th Armored Infantry. Our battalion was part of Combat Command 'C'. On this day we were proceeding across country towards Sidi bou Zid for the purpose of engaging the Germans who were then attacking. At intervals during our journey we were attacked by German planes. There were never more than four planes at one time; usually, only two. Finally towards the late afternoon we neared Sidi bou Zid. The companies of the battalion thereupon commenced to go into position for purposes of the action to follow. By this time German air activity had ceased, so far as we were concerned. Just as the companies finished getting into position, however, a group of at least twenty German planes strafed and bombed us.

About February 18th Combat Command 'C', in particular, was fighting a withdrawing action at Sbeitla. All during this action, the Germans kept sending planes over for the purpose of damaging those units or parts of units which were hampering their advance. During the early part of the afternoon, the Germans commenced to approach Sbeitla in tanks. Our artillery fire, however, began effectively to hamper their approach. Within half an hour German planes had gotten after the artillery.

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LIEUTENANT WILLIAM S. NORMAN, Company "H", 3rd Battalion, 13th Armored Regiment, near Sidi bou Zid, 14 April 1943.

You won't get a Goddam thing done to the tanks unless you do it yourself—and don't delay doing it. Bring lots of brushes to clean the guns.

Our supply of gas and ammunition has been satisfactory, but the supply men never get any sleep.

The most important lesson is not to worry. Respect Jerry, but don't worry.

In platoon tactics dispersion is the most important factor, both on march and in bivouac.

In training, get recruits used to sound of artillery shells. Many men shiver and shake and are terrified of artillery fire. But remember when you hear the 'freight trains' coming, most of them aren't coming anywhere near you.

Don't use machine guns from tanks after dark. They give your position away.

At El Guettar on 7 April 1943 we were given a mission to seek out and destroy ten Jerry tanks in a wadi. Our company had sixteen tanks. On arrival we found only one German soldier and he had no arms. He had been on reconnaissance. I took him and carried him on the back of my tank.

Our secondary mission was to rally at the junction of Gabes-Kebili Road. We started with two platoons in the assaulting line. We didn't know what was ahead. I came over a hill and found a Jerry tank with a gun pointed straight at me at about 40 yards range. For a moment I thought tears were running down my legs. But the tank had been abandoned and didn't fire.

Then came the wildest ride I ever had—40 miles in six hours. We got another mission, after we joined the British 8th Army, of cutting a column on the Gum Tree Road. So the wild ride continued. They finally started putting artillery on us. Our troops were advancing, but everything was mixed up; tank destroyers, heavies, infantry, peeps, half-tracks, and the combat command commander — but most of the radios were

INTERVIEWS AT THE FRONT

out. We finally got there. We had advanced unopposed across 21 miles of desert. The battalion started with about 40 tanks; when we arrived at the objective only 8 were running. The fall-outs were mechanical failures, clutches, sprocket studs, etc., but we had not had a maintenance halt since March 13th, and this charge was on April 7th. We finally got up and shot hell out of the road. Then we groped our way back to the rallying point, out of gas, ammunition, and hungry as well.

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STAFF SERGEANT WILBUR R. WHITE, Company "H", 13th Armored Regiment.

Take more leads when firing at aircraft.

When under artillery fire, stay in your tank—it's better than any foxhole.

Remember that every antitank gun is not an 88.

At El Guettar it's rough tank country. Our objective was the base of a mountain. The first platoon was on the right and the second on the left. I was in the rear center in reserve. We had been told that enemy tanks might be between us and the objective. We reached the objective without incident, turned east, and advanced towards Gabés about 13 miles. I stopped to get the situation. The company commander assembled the platoon leaders and told us we would advance eastward until stopped. While we were stopped, some of my men brought up eight German prisoners. They said the Germans had left them. Along about 1730 three of my tanks dropped out—engine and clutch trouble. I went on with the two I had left. We went about 10 miles. It was too dark to see. We ran into—well, I don't know what, but everybody was shooting at everybody. I could hear on my radio, but could not talk. I sat there for about an hour. There was one tank I could communicate with; I got his position in relation to a wadi we had crossed before dark. He said he was near an old

monument. I remembered where that was and went back with my two tanks. When we got there there were about fifteen or twenty tanks. We formed a circle for defense and awaited orders. We waited all night. Next morning, MAJOR BLODGETT sent a peep around to tell us where the maintenance was and where to find our organizations. We got all our vehicles running and returned to El Hafey. During the night maintenance had repaired my three fall-outs.

The night before this attack started, our M3 tank threw a track. Sergeant McVey and I put it back with the tools we had on the tank. The captain complimented us because, if the tank had been left, Jerry would have shelled it when daylight came.

When full maintenance is not available, look out for certain things: battery, water, keep check on control boxes in turret. Many of our bad clutches are due to dust. If maintenance uses an air hose to blow this out with it helps.

If we had more heavy maintenance and tank carriers at El Hafey, we could have saved four tanks.

At a Pass near El Hafey we left two M3 tanks and one M4 tank disabled. The next morning we went back to destroy them with our 75-mm guns. We fired five high explosive and four armor piercing shells at the M4 tank, and finally set it on fire. One M3 tank caught fire on the second shot. British reconnaissance said that the M4 tank had never been penetrated, only gouged.

East of El Guettar we were told there were enemy vehicles between us and the objective. I saw some vehicles and opened up at 5000 yards, to see what would happen. Then on the radio the reconnaissance officer yelled to quit firing at him. We had never been told the reconnaissance was there, and we couldn't identify our own vehicles.

TANKERS IN TUNISIA

The tank commander should have a combined steel helmet and radio earphones. He has to have his head out most of the time.

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STAFF SERGEANT LEWIS SHELTON, Company "I", 13th Armored Regiment.

We didn't have enough training by platoon and company back at Knox.

Our people don't understand terrain. They think they are hidden, and then find themselves in direct fire.

At Sened we saw gun flashes in two different olive groves 1000 yards apart. We systematically fired through each grove with high explosive shells, 25 yards apart, advancing all the time, still not seeing any guns or men. The first we saw of them was men leaving a pill box and going to a half-track. This was the first we had seen of the half-track. The second shot got them. We never saw the guns until we were within 500 yards. There were trucks too, but we didn't see them either, until we were within 100 yards. They were full of ammunition. We didn't throw grenades into the foxholes, but fired on them.

Our tanks were separated from the company. We got back to the assembly point by following our own tracks.

Often we never know where the front line is, and consequently hold our fire thinking they are our own troops. I think if our boys knew where our troops were, they would be mentally set to go to work, and would at least have a half-assed idea of where to look for the enemy. At Sened we thought we were the furthest forward element. I put up machine gun nests to protect the tank. About that time some 6th Infantry came up. That was the first we had heard of them being there.

There are two things we ought to do more—(1) fire with stabilizer while moving, (2) keep zig-zagging in open country.

One evening at Kasserine they took our platoon over to the British on the Falla side of the Pass. We were told the British had sixteen Churchill tanks. These turned out to be Valentines and every one of them was knocked out. All the next day we were under artillery fire and went into the wadi. At dark Jerry sent one tank, as far as we could see, down the road. We could have circled through the low ground and hit them from the flank. Instead we retreated and were put into position on the forward slope of the hill. We were told that there would be one peep down the road and everything after that would be our meat. Instead, 40 vehicles came down the road and nobody expected any of them. We were on the skyline. Without a word of warning, Jerry opened up on us and set three of us on fire. I got away. Had we been in a low, open, dark position, we could have knocked out eleven of them. As it was, we were in a white sand patch. We didn't know the disposition of the troops who were working with us.

. . . .

1ST LIEUTENANT GEORGE DEMPSEY, Company "I", 13th Armored Regiment, near Sidi-bou Zid, 18 April 1943.

The battle flags we've been flying seem to draw fire.

I hope the supply sections understand that when a tank is knocked out, even if the crew escapes, they invariably lose all their personal equipment.

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LIEUTENANT COLONEL LOUIS A. HAMMACK, 751st Tank Battalion (M), Fondouk, 13 April 1943.

I believe there should be a definite battle formation; the infantry following the second wave of tanks and preceding the last wave. This is necessary so that the tanks may be able to knock out any machine guns that

INTERVIEWS AT THE FRONT

are missed by the leading waves, and then open fire behind the advancing infantry.

I have what is known as the regular formation, in which I have one company to support the other two companies going on the objective. The supporting company fires either direct or indirect. One company goes to the right, and one company to the left. The right company, using fire and movement by platoons, covers the whole objective, while the left company gives close, direct support by fire. The left company then crosses the objective in the opposite direction and takes position to support the other two companies on the next objective. In the meantime, as soon as the support company's fire is masked, it proceeds on the right to the second objective. When the final or main objective is taken, we rally well forward, and if no further instructions are given, we return to the reservicing position.

The formations right and left are the same in principle except when the terrain is such that two companies can initially go to the right or left. As soon as we come under fire, the companies always advance by platoons, using fire and movement.

The terrain was flat, the objective was high, and the enemy had direct observation on us during the entire advance. It was a distance of about 3½ miles.

It was impossible for the tanks to go on top of the objective. We surrounded the objective and got as far as we could, the idea being to support the infantry in their steep climb. It was some two hundred feet high, and it was rocky.

Once we attacked parallel to some very high hills to clear out some enemy emplacements. We ran into machine guns, received antitank and artillery fire, and were dive-bombed.

The dive-bomber hit one disabled tank, and we lost another tank that got stuck in a wadi. It was covered by artillery and machine gun fire, and was set afire by the enemy. In all, two tanks lost and one man wounded. What damage was done, and what amount of tanks did you lose due to mines, artillery, etc. in the last attacks?

In the first attack we lost seven; four by mines and three by antitank guns. In the second and third attacks we lost fourteen; three of those by antitank guns, and the others by artillery and mines and mechanical failures (two tanks ran together).*

Do you know if the Diesel would be a handicap in any way?

No but they should be in line.

How were your replacements?

The replacements so far have been very good. They came from the 2nd Armored Division.

On the march, what about antiaircraft defense?

We have been very fortunate to have a battery of antiaircraft attached to us, and they have shot down three or four planes. They have the 40-mm and also the .50 caliber gun. The .50 caliber gun is a good antiaircraft weapon.

You keep plenty of distance between your vehicles?

Yes.

What is that distance?

Seventy-five yards on the march. One hundred yards in bivouac.

Did your riflemen fire at planes?

Everything was fired—pistols, rifles, machine guns, and everything else.

*NOTE: The objective was finally reached by the infantry, taking 133 Germans and no Italians.

TANKERS IN TUNISIA

On the recognition of planes we have a perfect system. With the antiaircraft we have a telephone set up to their command post. They always identify the planes and before we fire the flag from my command half-track is raised.

You have people who can identify these planes?

This antiaircraft unit is perfect in this respect. They have a sergeant who has not made a mistake yet. They do argue if it is a Messerschmitt 109E or a Spitfire.

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1ST LIEUTENANT THOMAS B. RUTLEDGE,
751st Tank Battalion (M), Fondouk, 12 April
1943.

One thing that I have learned: The next time we move up, before we close up on the objective, it is a good thing to look down on the ground in front of the objective, and if you see anything that looks like the enemy or enemy guns, fire away at it with canister. We were so close that with keen observation, even two or three rounds or some machine gun fire would have downed many machine guns. I believe this would save us a lot of grief

afterwards. We know there are lots of mines, but when approaching the objective we seem to forget those machine guns. So, instead of covering the ground in front of the objective with machine gun fire, we thought only of the objective, which was on the hill.

Did you see any of these antitank guns?

Not a great deal; only after I got behind them.

How close were you then?

It could not have been more than thirty yards.

Did you hit it?

Yes, with the 75-mm gun. We had to get one out in a hurry, as I figured he may do some more damage. It may have been useless expenditure of ammunition, but we had been expending it before. At a time like this we were always taught to shoot to kill, and it being the first German I had seen, I thought to dispose of him was the main thing, and we did. We wanted to get the gun out of action. I saw it before I left, and it was burning, which satisfied me.

Did you go back to the gun the next day?

Yes, it was out of action.



The camouflaged German antitank gun put out of action by Lieutenant Rutledge

INTERVIEWS AT THE FRONT

Were you looking out the turret?

Yes.

You did not button up?

No sir, not yet. The driver was buttoned up, but three shots hit the top of the cupola. The enemy is known to try to pick off the tank commander when he is sticking out. You have to have good vision all around, but as soon as I stuck my head out, I was fired on, but I do not know where it was coming from. We saw a dug-out near the members of the enemy antiaircraft crew, and we decided the fire was from there.

Then what happened?

We put a 37-mm high explosive shell in front of the dug-out, the next round went through that hole, and it exploded. They had nice dug-outs, about five or six feet deep. I saw the position of an antitank gun when I had one of my tanks hit by them the day previous. I figured the gun was facing in the opposite direction of that one. I had in mind to go down there as I thought there may be other guns in the same place, when a call came through to go back to the rallying position. I told the driver we would be going back. I gave instructions that we might be fired on. I told him to keep zig-zagging, which he did, when the antitank guns, that I had in mind, opened up. But it was not an antitank gun which got us. We found out the next day that we had hit a mine which was covered with the antitank gun fire. It was the first time I dealt with an antitank gun, or a mine, and it was a bad guess. We rolled into a little roadway and I asked the driver if we were out of action. I knew the next minute that we were and I gave the order to abandon to the right because the gun was on the left.

As we opened the door, the machine gun fire started. I went to the front of the tank to see where it was coming from, and it was coming from both sides. We flattened out

and started crawling. I stayed behind the rest with a Tommy gun. The driver was leading. One of those guns saw us and when one man raised up it hit him in the tail, and another man was hit in the back and another in the shoulder. Immediately I ordered everyone to freeze themselves flat to the ground. We stayed there until dark.

What time was this?

It was about ten o'clock when we abandoned the tank.

What happened then?

Well, during the day I heard the machine guns behind us. They kept firing continuously. They never stopped. Then, there were two more which started firing from approximately the same position in our front. At dark we started crawling again and it took about two hours before we approached friendly troops. I was afraid that they would start firing on us, so I told one of my men to go within hearing distance and holler, 'Friendly patrol'. We could hear them now and then when they raised their voices. He did so, was recognized, told his story, came back to us, and we moved up. The man that was hit in the back could hobble OK. We carried him across our shoulders. The man that was hit in the leg could not walk, but he did crawl for those two hours. When this man was hit he just clenched his fist and said 'I am hit', and I knew he was hit.

After I got in with friendly troops, I inquired as to how close the first aid station was for the three men. I reported to the aid station so that they would know exactly who they were and from what unit they came. We walked on further and I wanted to get to a telephone. They told me to go to the British command car, but the line was not open, so I asked if we could sleep there. So we slept along side his vehicle until six o'clock in the morning.

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TANKERS IN TUNISIA

PRIVATE JAMES PASEK, Company "A", 751st Tank Battalion (M), near Fondouk, 12 April 1943.

I was the radio operator in tank number three. We started out from 'A' Company and everything was going fine. I was sitting on one of the ammunition boxes and was watching tank number two through a vision sight. We were swerving to the right and left. They started shooting. Someone then calls out, 'They've hit the tank commander of tank number two'. We kept going when suddenly our tank commander yells out, "We are in a mine field". They all thought it was an 88-mm gun that was shooting off. I picked up a rifle and went with the others until we saw our boys near the mine fields. You could hear the armor piercing shells, and you knew they were that because when they hit they did not explode. The rest of the crew went back to a shallow ditch. We thought it was best to stay with the tank until we could not do any good.

Tank number one was coming to the left; I ran out twenty feet or so to try to flag it down, and I was successful. We had tried to flag down another tank previous to that, but the tank commander probably did not see us, and they hit the mine field too.

They kept firing the armor piercing shells and when one hit a mine field near me there was a terrific explosion, that's when I was really scared. A tank came along and I said I would lead them out of the mines and I led them up to the road about a mile away. It was my idea for them to come out on the same tracks we had come in on. After this I went back to the boys, for I could not leave my crew, who were watching for the infantry and guarding the tank. I really feel proud of our crew—the best there is. My only regret is that I could not get up to that hill.

How are the radios?

Fine; I cannot complain. It's only an interphone; actually, I am a radio tender.

CORPORAL STEPHEN J. SIRACUSA, Company "B", 751st Tank Battalion (M), near Fondouk, 12 April 1943.

Are you a tank driver?

Yes, sir, I am a tank driver.

Tell me how you drive the tank so that other men may get to learn something of it.

From the start you have to keep up your motor at all times to 1500 revolutions, and never let it get lower than that, because when she gets below 1500, the tank is no good as it has no pick-up.

How do you know where to go?

The tank commander directs me.

Do you pick the ground?

Yes, I pick the ground.

Do you try to keep your front towards the enemy?

Well, we kept it towards the hills as much as we could.

Have you ever picked up any targets?

I did not until we were behind it.

What did you do then?

I stopped. You always stop when they fire.

What about stabilizers?

The stabilizers do not work on rough ground. Our stabilizer was in maintenance, and they did not fix it in time.

Did you worry about it?

No, sir.

What did you do when they started firing at you when you left the tank?

We were lying as still as we could. Every time we moved, they would open up.

Did you lie flat?

Yes.

What do you do yourself in the way of maintenance when you can't get help?

We drain the carburetor, grease the throw-out bearings and support rollers. We have

INTERVIEWS AT THE FRONT

steel tracks. The cactus juice and sand gum up the support rollers. We've burned out three of these steel tracks.

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PRIVATE RAYMOND CHRISTY, Company "C", 751st Tank Battalion (M), near Fondouk, 12 April 1943.

What do you do?

I am the tank driver of tank number one.

What happened to you?

When we started up the second time, we went through an orchard, and when we got on the south side of the orchard, we turned right and drove on the right side of the Pass a little way, and then into the Pass, then drove 50 or 75 yards and turned left. We went straight into the Pass and turned right again and across the road. We went around 50 feet when they shot us in the left track with an armor piercing shell. The lieutenant said to me, 'Let's try to get through with one track'. We drove about 50 or 60 feet when another shot hit us. I started to go out through my escape door. The turret was turned so that the gun blocked the way. When I called to the other boys to revolve the turret so I could get out, I found they were all dead. I went over and got out through the assistant driver's door, and ran back until COLONEL HAMMACK picked me up.

Was he in his M4 tank?

Yes, I stopped him. Other tanks wanted to pick me up but I motioned them to go on.

Did he take you right into the tank?

No, but I rode on it.

Was he inside the turret?

He was inside and I was on it and it kept moving. The turret cover was open.

Well, what trick would you tell other drivers about driving?

Keep moving and not in one direction; keep zig-zagging. I would say, when firing,

always stop even to shoot just one shot. Pick out a good firing position.

Do you try to get a position that covers the tank?

Yes, always.

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LIEUTENANT COLONEL McPHEETERS, Commanding 91st Field Artillery Battalion, Armored, 1st Armored Division, near Lessouda, 17 April 1943.

At Sened, when these enemy tanks broke through a sort of hysteria took hold of everyone. The tanks were knocked out but the hysteria continued. I had to halt one column. We got the retreat stopped.

In a definite prepared tank attack, the artillery should be as far forward as possible to give maximum support. As the attack progresses, keep displacing forward, one battery moving, two firing.

Keep the men in the M7's. They are better than any slit trench. Most of our casualties were from running during a shelling or a bombing. Hit the dirt even if there is no hole.

The forward observers should be where they can best see. Often it is with the infantry, but sometimes from a point of vantage some distance from the supporting unit. However, wherever he is, he must make his presence and whereabouts known to the supported unit's commander.

We do not have enough forward observers to have one every 500 yards along the front. They have to place themselves carefully.

When the drive through Maknassy bogged down, Division Artillery took over control of five battalions. Observation was difficult and the enemy was dug in.

In an attack by one of our infantry battalions, we had two observers with the battalion. We have one for the normal defensive position. The infantry designated targets simply by showing them to the observer.

TANKERS IN TUNISIA

We have fired, sensed by the tankers and infantrymen. They give the coordinates. We fire one round of smoke for them to pick up; when they get near enough we fire for effect. In this division we are lucky to have a number of officers, commanding tanks and infantry, who know artillery, i.e.—LIEUTENANT COLONEL HIGHTOWER, Field Artillery, First Armored Regiment; CROSBY and BLODGETT have learned to adjust fire.

We try to get the infantry to understand the use of defensive concentrations for use day or night. The big difficulty is that they don't know what these concentrations are for, and that they can be used to great advantage.

I arrange to have my forward observers adjust by daylight on certain vulnerable sectors. The concentration numbers are given to the infantry commander to be fired on call day or night. The new officers don't seem to understand the value of such support. For instance, on the sector north of Maknassy the infantry outpost commander was changed. The old commander failed to give the new any information of the prepared artillery fire in his sector.

The forward observers must report to the commander of the supported unit. Failure to do this has, on several occasions, made our artillery support ineffective. I jumped on the observers hard about it.

My objective would be to train every tank crew for indirect fire.

This division has made four trips up the Maknassy Valley. The enemy, with his good observation posts, can defend with very few troops. We got the high ground south of Maknassy only because someone had the initiative to do it on his own hook.

We must learn to make better use of high observation posts. I was able to do good work on the Gum Tree Road because I was the only one who had high observation posts. I

kept the observation post ahead of the advance all the way up the valley.

I think too many of our troops are scared of being shot at. There is a time to be cautious, but the reconnaissance must draw fire, it is their job.

I got so Goddam mad at this 155-mm gun battery next to my command post. Because the German 170-mm guns had fired on his battery, he wanted to move back out of range. His mission was to knock out those 170's. When he asked permission to move, GENERAL WARD said yes, he could displace forward anywhere he wanted. We moved him up another 2000 yards and silenced the 170-mm guns. However, with those big guns, because of the muzzle blast, you have to use discretion about ceasing firing when you get counter battery.

This Nebelwerfer 41 (German multi-barrel mortar) made me so damn mad. It scares the devil out of the front line troops (20 rounds in 10 seconds). I took our Piper Cub and went to 6000 feet, found him, and got in some rounds for effect. He shut up.

* * * *

A BRITISH GENERAL OFFICER OF THE WIDEST TANK EXPERIENCE, Tunisia, 16 April 1943.

In my opinion the Sherman is the finest tank in the world, better than anything else we have and also better than anything the Germans have. It will be the best tank for the next five years. The German Mark VI is definitely no good. It will go only 1000 miles on its own power; hence it must be hauled everywhere it goes; and it can't be hauled by rail because of its width. It can't be carried anywhere in Europe. The use for light tanks in the future, now that we have the Sherman, is for reconnaissance.

If peeps are sandbagged the legs and feet, which are usually hit by mine explosions, can be protected from mines.

INTERVIEWS AT THE FRONT

Tanks should be run only one mile faster than their lowest economical speed in order to save the clutch.

The British mark their tanks by regiments, by painting in large black letters on the backs of their Shermans the names of cities, etc. Painting the name in letters just as big as possible on the stern flat works well.

Self-sealing gasoline tanks for tanks are nice, but they are not vital. It is the ammunition, not the gasoline, that burns. German tanks burn too if ammunition is hit. I think that the German aims to hit our ammunition. In one battalion 15 tanks were penetrated; 11 of them burned, 10 because of ammunition. In these 15 tanks there were only 15 casualties. I estimate that casualties in destroyed tanks are between 1 and 2 per tank, but closer to 1. In another battle 15 tanks were penetrated; 7 burned, all but 1 by ammunition fires.

We must get away from the idea that tanks can work alone. Tanks can take terrain but can't hold it. The tank is, in my opinion an assault weapon—not an indirect firing weapon. However, in a regiment of tanks in attack, 1/3 of them should be used for neutralizing fire.

It takes three months to train tactically a tank unit.

A good drill is to have tanks shoot at each other with small caliber weapons. Try to hit the ammunition compartment. The only good way to fire Shermans is covering each other and firing from hull down positions. It is important to continually work ammunition towards the gun—take every opportunity to refill ready clips and the ammunition rack in turret.

As to buttoning up tanks in combat, the commander should not be foolhardy but he must look around. A tin hat is necessary when the commander exposes his head.

To pick up a casualty, drive over the man, pull up the escape plates, have the assistant driver reach down with his feet and roll the wounded man face down, and then pull him in shoulders first.

A good drill in combat practice is to bang the tank with a hammer and say the tank is burning. I used this signal to rule out tanks and train the crews to get out.

In battle the mention of 'withdrawal' is fatal.

The Germans' 50-mm antitank guns are more damaging than the 88-mm, because they are harder to find and so many more of them.

Smoke is indispensable when caught under antitank fire; and is especially useful when working with infantry, to point out objectives such as antitank guns; to screen their movements; and to cover them while clearing mines. It is also useful for recovery of vehicles. Keep on your own side of the smoke.

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CAPTAIN HENRY C. TIPTON, Parachute Infantry, Aide to BRIGADIER GENERAL T. J. CAMP, Krerouf, 10 April 1943. Log of advance by Combat Command "A" of the 1st Armored Division.

LIEUTENANT COLONEL HIGHTOWER of the Staff of Combat Command 'A' of the 1st Armored Division gave the word 'go' for Combat Command 'A' at 1235. The Combat Command was marching from various initial points to force Rebaou Pass south of Faid Pass, sweep the valley east of the mountains to the north with the objective of Krerouf; and the further mission to make contact with the 34th Division near Fondouk.

BRIGADIER GENERAL McQUILLAN, in command, moved in his tank followed by his scout car, and directed the attack by radio. He left Combat Command 'A' bivouac west of Sidi bou Zid at 1310.

TANKERS IN TUNISIA

GENERAL CAMP followed in his jeep. LIEUTENANT T. E. HILLIARD and I took turns driving him because the driver was killed last week when the jeep got bombed and shot up. We helped each other keep in the track of GENERAL McQUILLAN'S tank and scout car so as to avoid mines. We had sand bags on the floor of the jeep. The attack went well and GENERAL McQUILLAN quickly forged to the front of the column, checking the readiness of the units to fall in as he passed. The start was timed so as to go through the mine field as soon as it was cleared by the engineers.

We met an artillery outfit at 1425 halted at the side of the road; they said they were waiting for the advance guard. GENERAL McQUILLAN pushed them ahead and he outdistanced us. Near the Pass of Rebaou at the

mine field the column was halted. GENERAL CAMP walked ahead and found reconnaissance elements halted; they said they thought the road was blocked. At this same time COLONEL SUTHERLAND, of GENERAL McQUILLAN'S staff was ordering the same elements to resume its march. These people, sitting in the road doing nothing, was an example of what one vehicle can do to a column of troops. It was holding up the entire Combat Command and the road was absolutely clear in front. The trouble was that three or four empty peeps of the mine-sweeping detachment had parked on the shoulders of the road. You could get between them, but it sort of looked like the road was blocked.

We went through the Pass at 1525, had covered 18 miles in two hours and fifteen minutes. I saw one vehicle disabled by an



Contact near Fondouk, 10 April 1943, between a peep of the 34th Infantry Division and a scout car of Combat Command "A" of the 1st Armored Division

INTERVIEWS AT THE FRONT

antitank mine. We caught up to GENERAL McQUILLAN and reached the road west from Faid at 1615. This was 25 miles from the start. GENERAL McQUILLAN called up his reconnaissance and directed full speed advance on the objective. His reconnaissance still lagged and he goaded them on by taking the lead himself, but soon outdistanced them and reached his objective, Krerouf, at 1730, 39½ miles from the start. This speed was based, in part, on the fact that Arabs were grazing their camels along the road. We knew that the camels were valuable and that the Arabs probably wouldn't put them where there was going to be any shooting. We took it easy and put our guns to safe when there were camels close by.

On the main road on the way up there was a fork in the road, and we asked a friendly native who was standing there where the Germans were. With a shout of laughter he said, 'The Germans! Whoosh!' and he accompanied his 'Whoosh' with a wave of his arms up the road over the mountains to the northeast, indicating that the Germans had gone in a hurry.

Krerouf was where two unimproved roads crossed each other; it was marked by a road sign. GENERAL McQUILLAN radioed that he had reached his objective and changed to his scout car from his tank and GENERAL CAMP went into the scout car with him. He started on to contact the 34th Division near Fondouk. HILLIARD and I followed in the jeep, as the get-away men of the patrol. The tank slowed down a little and wouldn't push fast enough, so GENERAL McQUILLAN

ran his scout car ahead of it and led the way for a while. After that he let the tank take the lead again and the sergeant really made that tank run. We contacted the outpost of the 34th Division 17 miles further north, near Fondouk, at 1830. We had then made 56½ miles from the start. The outpost was surprised when the tank bore down on them. GENERAL McQUILLAN radioed back the contact. The outpost was living high on German supplies.

On the way we had passed all kinds of abandoned German equipment and often had to run around grenades and other stuff in the road. We went back to Krerouf and on the way there came a request over the radio for confirmation of reaching Krerouf. Apparently no one believed we could have gotten there so quickly. We stopped for an Italian motorcycle that was in perfect condition except for three broken spokes. An engineer colonel was with us and he had us tie a tow rope on it and jerk it around a little to be sure there were no booby traps. We loaded the motorcycle in the jeep and when we got back to camp GENERAL McQUILLAN'S aide started running around on it.

A few loads of Germans who had been cut off by our advance were being collected, and in the blackout a truck loaded with prisoners ran into and completely wrecked our peep that was carrying our baggage up with the rear echelon of the Command Post. The driver wasn't hurt.

This tactical advance was conspicuous for its lightning speed and determination.

* * * *

TANKERS IN TUNISIA



*General Camp, some of the Africa Corps prisoners
and General McQuillan - Krerouf, 11 April 1943*

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German Tactical Doctrine, 1942

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FOREWORD

FREDERICK THE GREAT, as the result of his experiences in the Seven Years' War, is credited with establishing the first General Staff in the history of military forces. This Staff was created to handle administrative details, thus releasing more time to the commanders for tactical considerations. It was not, however, until 1810 that Frederick's successors established a school to train officers for General Staff duty. Because successful military results were achieved, France, Great Britain, the United States, Japan, and other countries based the formation of their General Staffs upon the model set by Germany.

Beginning with Scharnhorst, such distinguished leaders and strategists as Moltke (the elder) and von Schlieffen were closely associated with the development of the General Staff School, which operated continuously from 1810 until the outbreak of World War I. Subsequent to that war the Versailles Treaty forbade the continuance of the school, and it was not until 1933 that the *Kriegsakademie*, as the Germans call it, was officially reopened in the Berlin location that it was occupying at the outbreak of World War II.

During the years from 1935 to 1939, the United States was allowed to send four individual officers to take the course. From their illuminating reports it is possible to learn the trend of German methods and teachings up to Hitler's attack on Poland. Our observers unanimously agreed that the main body of doctrine taught at the

Kriegsakademie—the body of doctrine that underlies the German warfare of today—is set forth in *Truppenführung*, the German tactical bible so very similar in matter and precept to our own FM 100-5, *Field Service Regulations, Operations*.

The following partial résumé of doctrine¹ taught at the *Kriegsakademie* is actually a practical adaptation of relevant parts of *Truppenführung*. It will be noted that this résumé (ignoring the factor of translation) is written almost exactly as a German would instruct Germans. This faithfulness to the tone of the original lectures has been made possible because of the extremely adequate reports which were made by the U. S. officer-students.

Throughout, striking similarities will be observed between German tactical doctrine and that set down in pertinent manuals of the U. S. Army. U. S. officers, however, should not be misled by the similarities to overlook the differences that also exist. With regard to one of the basic similarities in doctrine, it has been pointed out by one of our *Kriegsakademie* graduates that "Owing to the phlegmatic nature of the German individual, initiative and aggressive action have to be forced on the lower leaders and staff, rank and file, whereas we possess these characteristics as a natural heritage."

¹ The Military Intelligence Service has published the following bulletins which describe various aspects of German military methods: "The German Armored Division," *Information Bulletin*, No. 18, June 15, 1942; "German Methods of Warfare in the Libyan Desert," *Information Bulletin*, No. 20, July 5, 1942; "The German Armored Army," *Special Series*, No. 4, October 17, 1942; "The Development of German Defensive Tactics in Cyrenaica—1941," *Special Series*, No. 5, October 19, 1942; "Artillery in the Desert," *Special Series*, No. 6, November 25, 1942. Information about specific organizations and weapons may be found in TM 30-450, *Handbook on German Military Forces*.

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Section I. POST OF THE COMMANDER

The personal influence of the commander upon his troops is of the greatest significance. He must be located where he can most effectively lead. On the march he should be as far forward as security permits, and his location should be definitely known by the members of his staff so that all reports may reach him promptly. In the attack his command post should be located as far forward as possible, yet protected from hostile fire so as to insure undisturbed operation; for tactical reasons, the post is placed near the main effort, facilitating control at the most important point of the battlefield. The movement of the command post is influenced by the location of existing wire lines, and the divisional signal officer is kept constantly informed so that communication requirements may be better anticipated. In a delaying action, the commander remains in the forward position until he is convinced that his order for withdrawal is being successfully carried out; then, with his artillery commander, he goes back to the new position. In very difficult or dangerous situations, often present while withdrawals are being executed, the commander will remain with his troops.

Section II. DUTIES OF THE STAFF

The commander should not be troubled with details. To insure frictionless performances, there are definite assignments to staff positions and duties. Each staff maintains its prescribed strength. The tactical staff remains with the command echelon, whereas the supply and administration staff remains well to the rear, in the vicinity of the trains.

2

Section III. ESTIMATE OF THE TERRAIN

Proper utilization of modern implements of war (artillery, airplanes, gas, tanks, etc.) can only be accomplished through their careful adaptation to the terrain. The commander himself can obtain only a general picture of the terrain; he has, however, many supplementary means by which he can learn the true condition of the area in which his command is employed: for example, reconnaissance, air photographs, maps, sketches, and questioning of inhabitants. In judging terrain for specific purposes, you¹ must bear in mind the plan of the commander and the immediate task—to determine how that plan will be influenced (aided or hindered) by the terrain.

1. ROADS AND ROUTES

Use the best roads available as routes for supply trains; gain protection against air observation, but avoid defiles and narrow valleys. For combat trains, remember that cover from ground observation is also required. How are the roads constructed, and how will bad weather influence them? What are the bad or impossible stretches, and what is the possibility of avoiding or repairing them?

¹ The form of the material, here and at many other points, is governed by the fact that it was presented as lectures at the *Kriegsakademie*.

What are the widths? ² defiles and excavated passages? bridges? ³ fords? ⁴ ferries? ⁵ steep grades? ⁶

2. RAILROADS

Differentiate between standard gage (1.435 meters, or 4 feet 8½ inches) and narrow gage (1.20 meters, or 3 feet 11¼ inches, to 0.6 meter, or 1 foot 11½ inches). Differentiate also between field line, cable line, electric, and steam. How many rails are there, and does room for addition exist alongside the rails? After a small amount of work on the bridges, tracks can usually be adapted for use as marching routes for foot and mounted troops, as well as for motor vehicles.

3. TERRAIN FOR THE ATTACK

(a) Where will the enemy resist the attack? Where are his advance outposts, main position, switch positions? (b) How has he disposed his forces—infantry, artillery, reserve? (c) Where is a position of readiness (*Bereitstellung*), and how can the terrain be best utilized for advance to it? Is there concealment from air observation? Until what point will the attacking force be concealed from hostile ground observation? (d) Where are covered approaches for infantry toward the hostile position? Are attack objectives so conspicuous and so located that concentrated artillery fire may be directed upon them?

² For motor vehicles at least 2.5 meters, or 8 feet 4½ inches, and for passing at least 5 meters, or 16 feet 9 inches.

³ Construction material, capacity, destruction and repair possibilities.

⁴ Current speeds, beds, depths (for infantry up to 1 meter, or 3 feet 3.4 inches, for machine guns and heavy infantry weapons up to 0.6 meter, or 1 foot 11.6 inches, and for armored cars up to 0.9 meter or 2 feet 11.4 inches).

⁵ Capacity and time required for crossing.

⁶ Usually negotiable by motor vehicles if the ratio is not higher than 1 to 7.

Where are the best positions for artillery and observation posts? Where is the terrain most favorable for tanks? Where does the terrain favor the enemy's counterattack? (e) And, lastly, what kind of attack is most favored by the terrain—penetration, envelopment, or frontal attack?

4. TERRAIN FOR THE DEFENSIVE ACTION

a. General

A defensive position is frequently selected through examination of maps. Immediately thereafter, officers are sent on terrain reconnaissance. General Staff, artillery, and engineer officers reconnoiter for their respective purposes or weapons; later, a coordinated defense plan is built up from their information.

b. Questions To Be Considered

Such questions as the following arise:

(a) What should be the locations of the main line of resistance, the flank support, the outpost line, and the advance positions? (b) Where can artillery and heavy infantry weapons, as well as their required observation posts, be located to bring the enemy under fire at long ranges? (c) How can the enemy be subjected to frontal and flanking fire immediately in front of the main line of resistance, and where can a counterblow be effectively delivered? (d) What obstacles must be constructed to canalize the attack of the enemy, including his tanks, and to cause him to advance where heavily concentrated fire can be delivered? (e) Where will the reserves be located to obtain cover and also to facilitate counterattacks? (f) Should it be necessary to limit the enemy's penetra-

tion, and how can the defensive be established in a position to the rear?

5. TERRAIN FOR THE DELAYING ACTION

Where is an effective first line of defense? Where are lines of defense to the rear? Where is favorable ground for an outpost line? Where are covered avenues of withdrawal? Where is observation for supporting weapons? Where are natural obstacles and terrain features which can be converted into effective obstacles? Where is terrain which permits long-range observation and firing?

6. TERRAIN FOR THE BIVOUAC

Before the troops arrive, reconnoiter bivouac areas and routes leading thereto. Avoid large assemblages of personnel. The smaller the groups, the easier to conceal in villages, wooded areas, or other suitable locations. Maintain the tactical integrity of units in bivouac. If it is necessary to bivouac by day in open terrain, increase the distance and intervals to minimize the effect of hostile bombing. For tactical purposes, bivouac requirements include: Adequate room; security and screening forces which occupy commanding terrain and are sufficiently strong to permit time and space for the main force to maneuver according to the situation; and routes connecting the various groups and leading to potential defensive areas. Bivouac requirements for troops demand dry ground and land (preferably uncultivated) which is lightly wooded, protected against wind, and convenient to a supply of water, straw, and wood. The proximity of villages is desirable.

Section IV. CONCEALMENT

Troops must use every opportunity and means to deny information to the enemy. Otherwise the essential element in the attack, *surprise*, is lost. Concealment is most effective when the enemy *requires a long time* to discover that he has been deceived.

7. PROTECTION AGAINST GROUND RECONNAISSANCE

a. Hostile Observation

Hostile observers and staffs can see great distances from high points (observation posts) with field glasses and telescopes; therefore, (a) when troop movements are contemplated, study the map carefully to insure cover against possible hostile observation; (b) conceal movements, positions, and installations by a screen of security forces to the front and flanks.

b. Offensive Concealment

Security in all directions must be considered. Concealment may be either offensive or defensive. If offensive, cavalry and other highly mobile combat units are launched against the hostile reconnaissance forces to drive them back. This method is effective, but occasionally hostile patrols are able to infiltrate or go around the attacking force.

c. Defensive Concealment

Defensive concealment is particularly effective when the terrain contributes natural obstacles such as a river, a chain of lakes, a swamp, or some similar area. The stronger the natural obstacles, the weaker the force employed to protect the avenues of approach, and also the stronger the force that can be held as mobile reserve. Reconnaissance units are sent far forward, operating energetically and according to opportunity against the hostile reconnaissance force.

d. False Appearances

In situations where it is desired to deceive the enemy and impart the impression of great strength, circulate false rumors, execute false marches, and send troops against hostile reconnaissance forces with instructions to fire a great deal of ammunition rapidly, to tie up the hostile communications net, to disturb radio transmission, and to organize deceptive transmission on radio or wire.

8. PROTECTION AGAINST AIR RECONNAISSANCE

Strong activity on the part of the hostile air force requires careful consideration for the concealment of troops and installations, particularly when antiaircraft means are lacking or very limited. The fact that photographs reveal every detail must not be overlooked. Artificial means of concealment, such as camouflage, smoke, or nets, are effective; but it is more important to survey carefully the surrounding area. Avoid constructions and artificial works, sharp color contrasts, and lights. Realize, on the other hand, that measures for concealment

hinder the troops, render more difficult, freedom of movement and distribution of orders, and through night marches and detours cause loss of time and decrease the capacity to fight.

9. CONCEALMENT IN REST AREAS

Select rest areas in wooded locations or in several villages. Place horses, tanks, vehicles, etc., under trees or in stalls or courts, but avoid regular parking or parade-ground distribution. Regulate traffic in the area, keeping the main roads and intersections free.

10. CONCEALMENT OF TROOP MOVEMENTS

a. Loading and Unloading

In rail movements it is practically impossible to conceal loading and unloading areas from hostile air reconnaissance. When possible, march the troops by night to a village near the loading station, permit them to rest, and then move them on in smaller groups to the village where the loading station is located. Load rapidly and vacate the vicinity promptly.

b. Road Movements

In road movements, the concealment given by darkness is most effective. Arrange the departure of troops from bivouac at the beginning of darkness, with arrival in the new area before daybreak. When marching by day, select routes leading through woods, villages, or other partially covered areas. The shadows of trees along the roads offer excellent means for concealing columns, including vehicles. Bridge construction cannot be concealed, but equipment can be so disposed prior to the

actual construction that there is little or no tell-tale indication of the preparations.

11. CONCEALMENT IN BATTLE

Carry out development and deployment, or either, under the concealment of darkness. If the situation requires execution, by daylight, seek covered areas. Utilize camouflage to conceal the positions of guns, of headquarters, and of observation posts.

Section V. COMBAT INTELLIGENCE

The commander must continually, day and night, conduct reconnaissance and utilize intelligence means to seek information clarifying the enemy situation. As soon as possible, he will forward information and important reports to the next higher commander. Once contact with the enemy is gained, steps should be taken not to lose contact. In higher commands, and sometimes with the lower units, a special officer (intelligence officer) will be detailed to handle all intelligence matters. Such an officer works in coordination with all the commanders of attached intelligence units and information services, and keeps them constantly informed of the situation.

12. THE PREPARATION OF INTELLIGENCE REPORTS

Keep in mind the following rules governing the preparation of reports: (a) Determine beforehand what reports must be sent in code and also what means of signal communications are to be used. (b) Differentiate between what one has *personally* seen and what another has remarked or reported. (c) Avoid euphemistic phrases and exaggerations. (d) State strength, time, and place exactly. (e) Include information on the condition of the terrain. (f) Send in pertinent information yourself, never assuming that another unit has already sent it in. (g) In *very urgent cases*, send a report not only to the next higher commander but also direct to the commander-

in-chief. (h) From time to time, submit a complete assembly of reports; frequently a sketch will suffice.

13. WHAT TO REPORT

In battle, utilize pauses to send in reports on enemy movements, your own situation, the ammunition supply, the condition of the terrain, and your own impressions. Make suggestions for the seizing of favorable opportunities. Reports giving such information as exists just before darkness sets in are especially valuable. After a battle, report immediately what enemy troops oppose your force, what the enemy is doing, what the condition of your own troops is, where your troops are located, and what the status of the ammunition supply is.

14. CONTACT AND COORDINATION BETWEEN FRIENDLY UNITS

Liaison between neighboring units, and between higher and next lower units, is accomplished through a mutual exchange of reports and a prompt communication of friendly intentions. Large units utilize liaison officers for this purpose, each unit sending one of its officers to the other and holding him responsible for the exchange of information. Such officers keep their commanders informed of the situation with reference to the enemy, all developments of the situation, and the intentions of the other commander. The duties of a liaison officer demand tactical knowledge, intelligence, and tact.

15. TRANSMISSION OF ORDERS AND REPORTS

Several communication means should always be available to a commander. Where technical communication

means are uncertain or cannot be maintained, then courier service⁷ is established. Very important orders or reports are generally sent by officer messengers in motorcycles or cars. If delivery is uncertain, several means of transmission are used, as well as different routes, to insure the prompt arrival of the information at its destination.

Every commander is required to know the routes of communication and the messenger route. All units assist in the uninterrupted transmission of reports and messages. Higher commanders and commanders of reconnaissance and security units are authorized to examine the messages which they contact en route, noting on the message that they have done so, the hour, and the date.

16. ADVANCE MESSAGE CENTERS

To expedite the receipt of information, advance message centers are established, particularly in the area or sector where communications will be numerous. Such message centers should be easily located, protected from hostile fire, and definitely connected with the rearward message center. Under certain circumstances (for example, on the front of a cavalry corps), advance message centers and message assembly points may be established at considerable distances from the main headquarters, in order to simplify and expedite the transmission of information between the reconnaissance units and the main headquarters.

⁷ Runners, mounted men, bicyclists, or motorcycleists.

17. INFORMATION THROUGH SPECIAL MEANS

The air intelligence service observes hostile air activity and provides information relative to the air situation, and from this one can obtain a fairly accurate conception of the enemy's intentions. The signal communication intelligence service observes all hostile communications (radio, telephone, telegraph, etc.) through goniometric intercept, listening posts, wire tapping, observers, and other means. The routine interrogation of prisoners of war yields miscellaneous information. Captured documents may include orders, maps, messages, notebooks, newspapers, photographs, and films. Scrutiny of the hostile press and publications is maintained.

18. IMPORTANT PRINCIPLES OF RECONNAISSANCE

Do not dissipate reconnaissance strength. Superiority of means is very important for successful reconnaissance; but superiority in mobility and clever employment tend to offset numerical inferiority. It will frequently be necessary to fight for information. Advanced hostile security and reconnaissance forces must be penetrated or thrown back to make contact possible with the hostile main force. In this connection, it is often advisable to occupy important points quickly with motorized forces. When there is great inferiority to the enemy, fighting should be avoided, and an endeavor should be made to penetrate the enemy screen or go around it.

The commander who specifies what information is to be obtained should coordinate all his subordinate reconnaissance means. Efficient reconnaissance is not obtained through employment of large numbers of recon-

noitering units, but by the careful direction and instruction of these units as to what the commander wishes to know. Definite missions and their relative urgency must be indicated, and the means of sending information to the rear, including definitely regulated radio traffic, must be insured.

19. STRATEGIC RECONNAISSANCE

Strategic, or operative, reconnaissance endeavors to build up a general picture of the overall situation, thus aiding the commander in chief in making the decisions which have important influence on the *entire campaign*.

Missions may include observation of hostile mobilizations, assemblies, initial march directions, railroad movements, boat movements, supply echelons, construction of fortifications, air activities, locations, strengths, movements of motorized and mechanized forces, and, particularly, open flanks. Such missions are performed by air reconnaissance units, motorized reconnaissance battalions, and army cavalry units. The three must supplement each other and be carefully coordinated to that end.

20. TACTICAL RECONNAISSANCE

Tactical reconnaissance is concerned with the movements of the enemy in closer proximity: his movements, bivouac areas, organization, breadth and depth of disposition, supply service, construction of defensive works, air activity, and location of airfields and antiaircraft. Especially important is timely report of the location of motorized or mechanized forces.

For air reconnaissance, the commander utilizes the airplane squadron which is placed at his disposal for such

purpose by the air force. For ground reconnaissance, he utilizes independent motorized reconnaissance battalions, motorized reconnaissance battalions of the cavalry, mounted reconnaissance battalions of the cavalry, and reconnaissance battalions of the infantry divisions.

21. RECONNAISSANCE BATTALIONS

Definite sectors are generally assigned to reconnaissance battalions. Within the corps, boundaries between divisions are designated, and on open flanks the boundary is designated between the flank reconnaissance area of the division and that of the corps. Reconnaissance units avoid fighting unless it is absolutely required by the situation in the accomplishment of their missions. If a reconnaissance unit be given a security mission, the unit should be reinforced by other units: for example, by machine gun, light artillery, antitank, and engineer troops.

If a reconnaissance battalion is directly in front of the division and in contact with the enemy, it should be ordered either: (a) to move off to a side and continue reconnaissance in that area, or (b) to await relief from troops coming up from the rear, or (c) to fall back upon the troops in the rear. In the absence of any orders, under the aforesaid circumstances the reconnaissance battalion should fall back upon the troops in the rear. On an open flank, reconnaissance battalions are echeloned forward.

22. MOTORIZED RECONNAISSANCE BATTALIONS

The important advantage is speed. Motorized reconnaissance battalions can reconnoiter by day and march on by night, and are restricted only by limitations of the

motor vehicles, terrain, weather, roads, fuel supply, and signal communication. They maintain connection with mounted reconnaissance units by radio. Advancing forward by bounds—the nearer the enemy, the shorter the bounds—they remain as long as possible on roads. In hostile territory, different routes for the return are selected, and important points along the road, or important places, are secured. Rest during the night is obtained by avoiding main roads and villages, and by halting under available cover in isolated areas. Contact with the enemy, however, must be maintained.

The width of a sector should not be over 50 kilometers (31 miles). The depth is limited by fuel supply. Motor vehicles in modern reconnaissance units have a radius of action of between 200 to 250 kilometers (125 to 155 miles) without replenishment.

Scouting groups will generally be organized and dispatched by the commander of a battalion. Such groups include armored scout cars, motorcycles, and radio equipment. Along the more important roads and those leading to the decisive areas or points, patrols should be stronger, but too large a patrol increases the difficulty of concealment from the enemy. Armored car patrols within scouting groups will be given written orders pertaining to route, destination, and information desired; they advance by bounds, with distance and speed sometimes prescribed; generally, however, they precede the division at about 1 hour (approximately 40 kilometers, or 25 miles). Motorcycles are used to fill in gaps and intervals, thereby thickening the reconnaissance net. The remainder of the motorized reconnaissance battalion serves as a reserve and as a receiving and assembly point for reports.

23. RECONNAISSANCE BATTALION OF THE INFANTRY DIVISION

The reconnaissance battalion of the infantry division is employed as a unit, even if the division is advancing over a broad front in several columns. The advance is made by bounds somewhat shorter than those of the motorized reconnaissance battalion. Scout groups are sent out under the direction of the battalion commander. The battalion can reconnoiter an area approximately 10 kilometers (6 miles) in width, and seldom is sent more than 30 or 40 kilometers (25 to 30 miles) forward. The strength of the scout groups (sometimes up to that of a platoon with light machine guns) is, however, determined by the situation and the mission. Patrols sent out from the scout groups remain on the roads as long as possible, advancing by bounds from observation point to observation point.

Reconnaissance battalions of interior divisions are usually withdrawn to the rear after the battle actually begins. If, however, the division is operating over a broad front or in difficult terrain, the battalion may be reinforced, and utilized to fill in a gap or to seize an important terrain feature. Communications must be carefully provided. Extra signal equipment and personnel may be attached in exceptional cases.

24. BATTLE RECONNAISSANCE

The purpose of battle reconnaissance is to reconnoiter the enemy's front, flanks, and rear to establish definitely the location of his flanks, artillery, heavy infantry weapons, and reserves. Such reconnaissance locates our

own front line and often provides close-in security and terrain reconnaissance.⁸ Security is necessary at all times, but reconnaissance must not be neglected to accomplish security. Battle reconnaissance is established usually at the opening phases of the development or deployment. The advance of the infantry in the attack reveals very quickly the location of hostile infantry and artillery; also, fire from our artillery upon hostile infantry will generally result in the hostile artillery delivering counterfire and thus revealing its location.

There are both air and ground means available for performing battle reconnaissance. Some of the specific means of battle reconnaissance are: (a) *Infantry patrols*, sometimes reinforced with light machine guns, heavy machine guns, light mortars, or antitank guns. (b) *Engineer patrols*, particularly valuable in approaching a fortified area, a defile, or a river. (c) *Artillery patrols*, consisting usually of an officer and a few mounted men assigned to reconnoiter routes of approach, observation posts, and fire positions. (d) *Observation battalion (artillery)*, skilled in locating targets by sound and flash, and in evaluating aerial photographs.⁹ (e) *Captive balloons*, supplementing the preceding means and permitting a general view over the hostile front.

⁸ Our observation posts and other friendly personnel, who are reconnoitering for our own artillery, heavy infantry weapon, and antitank positions, can gain much helpful information from units of the reconnaissance battalion. Sometimes they actually accompany the battalion to get early information about the terrain, potential targets, and gun positions.

⁹ It assists our own artillery in firing on concealed targets by transmitting weather data. By accurate surveying principles, it establishes the location net for the batteries. The net is not restricted to the division sector, but sometimes extends 6 to 10 kilometers (as much as 6 miles).

Section VI. PRINCIPLES OF COMMUNICATION

The higher unit is responsible for the establishment and maintenance of communication with the next lower unit. Wire connection with neighboring units is always established to the unit on the right. This rule does not release the commanders of responsibility, however, to maintain contact with units to their left.

Of special importance is the connection between artillery and infantry. If an artillery unit is attached to an infantry unit, then the *infantry* is responsible for the connection; if the artillery is supporting an infantry unit, but not attached to it, then the *artillery* is responsible for the connection. If, however, the artillery, through some special circumstances, is unable to establish the connection, then the infantry must undertake the responsibility. Connection with heavy infantry weapons is the responsibility of the infantry commander concerned.

25. OPERATION OF SIGNAL COMMUNICATION TROOPS

The commander issues orders for the employment of his communication units ordinarily after receiving the recommendations of the communication officer. It is most essential that the commander punctually give the communication officer a complete picture of the situation, including the commander's intentions. The communication means of a command post are assembled in a message

center. The proper functioning of communication is dependent upon its useful employment on the part of the commander and upon the technical training of personnel.

26. ORDER OF THE DIVISION COMMUNICATION OFFICER

The order of the division communication officer should contain: (a) The enemy situation, our own troops, the plan of the commander; (b) the mission of the signal battalion; (c) specific orders for the signal communication companies and supply train; (d) when applicable, instructions relative to secrecy, replacement, utilization of commercial nets, and system maintenance.

In the advance march, the division communication battalion builds and maintains an axis of signal communication (wire lines) along the route upon which the division commander and his headquarters are advancing. In friendly territory, the existing commercial net is utilized to a maximum; in enemy territory, heavy field cable is generally installed overhead. When contact with the enemy has been established by the division, wire communication must be maintained at all costs with the corps and must also be supplemented by radio and other means. Establishment of lateral connections within the division and between divisions is also very important in coordinating the tactical effort.

Within the division, all command posts and observation posts should be connected according to their relative importance. The division signal battalion will establish lines to the infantry regiments, artillery commander, and the artillery units operating under the artillery commander, as well as lateral connection to adjoining di-

visions. When there is a deficiency of means, the establishment of the aforementioned artillery connection has priority. The division signal officer will coordinate the establishment of the communication net and supervise its construction by his own signal troops and the communication troops of the various units. In a rapidly advancing attack, in pursuit, or in withdrawals or retreat, he will restrict the amount of installation.

27. COMMUNICATION IN THE DEFENSE

In the defense a very extensive communication net is established. Its construction is governed by the situation, and by the time, matériel, and personnel available. Several means of communication between all important defensive installations are provided. Wire communication is carried by buried cables. Special communication nets (such as infantry, artillery, antiaircraft) are established. Alarms for gas and air attacks are installed. Technical means to intercept hostile messages are intensified.

28. VARIOUS MEANS OF COMMUNICATION

When new troops are attached to a command, additional communication requirements are introduced; so reserve communication personnel should always be held out. The operation of communication troops must not be interfered with in any manner by other units. The various means of communication can be characterized as follows:

(a) *Telephone*.—Installation of the telephone requires time and matériel. Wire lines are sensitive to such disturbances as fire, wind, snow, frost, and storms. The

enemy can easily listen in on conversations, particularly over single-wire connections; in the danger zone, therefore, double lines and heavy insulated wires are used.

(b) *Telegraph*.—The telegraph is simple in operation and installation, and very often cannot be easily intercepted. The Morse code is utilized.

(c) *Automobile, mounted messenger, bicyclist, motorcyclist, runner*.—In a war of movement, these means are often the most reliable. They are used without hesitancy when technical means are not available. Speeds of transmission vary.¹⁰

(d) *Radio*.—When wire connections fail or are not functioning steadily, the radio is indispensable. Electric storms, static, other radio transmission on similar wave lengths, mountains, and other interferences minimize effective range of hearing. In practice, radio is valuable only if messages are short; transmissions should therefore be in telegram form, omitting all unessential words.

(e) *Blinker*.—This is an important signal means in battle when wire lines are destroyed. It cannot be used for great distances, and is greatly restricted by fog, mist, bright sunshine, or proximity of enemy observation. Blinker messages must be very short, since 20 words require about 10 minutes for transmission.

(f) *Rockets, Very lights, flares*.—These serve as signals whose meaning has been prearranged and is thoroughly understood by the troops concerned. Very pistols and pyrotechnic equipment are carried habitually on light

¹⁰ Messenger on horse, 1 kilometer ($\frac{5}{8}$ ths mile) in 5 to 7 minutes; automobile or motorcycle, 30 to 40 kilometers (25 to 31 miles) per hour—on good roads considerably faster; bicyclist, 15 to 20 kilometers (12 to 15 miles) per hour.

telephone carts and also in all combat trains. Ability to see these signal lights is greatly influenced by the terrain. Also, there is always the chance of confusion with enemy signal lights.

(g) *Signal flags and panels.*—Prearranged signals with these means enable ground troops to send short messages, particularly in communicating with airplanes and balloons.

(h) *Alarms.*—Horns, sirens, bells, and gongs are used for gas or hostile airplane warning.

(i) *Signal gun.*—This small mortar, which projects a message container, is useful in position warfare.

(j) *Courier pigeons.*—Although requiring at least 3 days to orient, courier pigeons are useful under heavy fire, for they are sensitive to gas, and terrain does not influence them. They fly about 1 kilometer (5/8ths mile) in a minute. They do not fly in darkness, rain, or storm, and with snow it is difficult for them to orient themselves.

(k) *Message dogs.*—Expert and affectionate care by the men in charge of message dogs results in most satisfactory returns. Such dogs can be used under heavy fire, and can remember and find locations on a battlefield in a radius of about 2 kilometers (1¼ miles). They will efficiently follow an artificially made track (scent) up to 6 kilometers (about 4 miles).

(l) *Listening-in apparatus.*—This apparatus is established to determine the location of hostile activity in planting mines, and to listen in on hostile communications.

(m) *Airplanes.*—An airplane may be used to connect a division headquarters with its foremost elements or neighbor units. In such cases, no other reconnaissance mission should be given the plane. It is important to

establish the location of the foremost line of infantry and of the hostile line; the infantry troops on prearranged signal will display panels to assist the plane on the mission. Planes may be used for artillery fire direction, and for maintaining connection between division, cavalry division, and corps or army headquarters. They are particularly adapted to distributing quickly important orders or delivering reports to units a considerable distance away.

(n) *Captive balloons.*—Balloons observe artillery fire, give prearranged signals indicating the time of the day, the signal to open fire, etc. Their communication means include flags, panels, blinkers, and telephones. Weather conditions, heavy-wooded terrain, and mountainous country restrict their usefulness.

Section VII. ESTIMATE OF THE SITUATION

You must thoroughly work yourself into the situation. Place upon the situation map the location of your own troops and put down the information that you have about the enemy. This information is built up by reports from various sources, as suggested above under the heading "Combat Intelligence." Information must be evaluated objectively; one must be extremely careful not to interpret what is received as one would like it to be, or as one hoped it would be. A large part of the information received in war is contradictory, a still greater part is false, and by far the greatest part is very uncertain.

29. GUIDING PRINCIPLES

Carefully read the orders received from the next higher commander, and consider all information received. In considering the situation, the following principles govern: The first and most important principle is to utilize to the maximum the available means. Any moderation in this regard is a deterring factor in attaining the ultimate goal. Second, concentrate as much of your force as possible where you plan or believe the principal blow (the main effort) will fall, and expose yourself disadvantageously at other points, in order to be more certain of success at the point of the main effort. The success of the main effort more than compensates for any minor losses sustained. Third, lose no time. Unless special

advantages accrue by delay, it is very important that you execute your plans as quickly as possible; through speedy action many measures of the enemy are nullified in their initial stages. Finally, you must weigh each situation independently, restricting yourself only to a consideration of the essentials. The following questions may here occur:

Mission.—What is my mission? Does it require decisive action or delaying action? Must I fight an independent action or will I be influenced by the movements or action of other troops?

Terrain.—What is the condition of terrain between my troops and the enemy? Which routes lead toward the enemy? Where does the terrain permit approaches covered from air or land observation for an attack on the enemy position? When my mission requires defense, where does the terrain offer favorable defensive positions? What possibilities are therefore available for the fulfillment of my mission?

Enemy.—What can the enemy do to counter my plans? Where is the enemy now located?¹¹ Are there any bases for his strength and organization? What can he do, making correct tactical suppositions?¹² Are there any indications that the enemy has acted incorrectly? Do I know anything about the ability or personality of the commander or the condition of his troops? How will the terrain influence the enemy's action? How can I best fulfill my mission with the most damage to the enemy?

¹¹ Always favor the enemy in computing the distances possibly covered by the enemy since his position was last reported.

¹² Always assume that he will carry out his plan most disadvantageously to you.

Own troops.—Where are my own troops? Which are immediately available? Which troops can be later drawn in? And when? Are special transportation means such as a railroad or motor trucks at my disposal? What can I expect from my troops considering their past performance? How is the supply situation, especially with regard to ammunition? Is support from other organizations possible? Which of the present possible solutions will give the greatest success?

30. CHANGING THE MISSION

As a result of all these considerations, is the accomplishment of my mission no longer possible? (When, owing to unavoidable circumstances or unpredictable events, it is impossible to carry out a mission, then and then only may I change my mission, and I must then assume full responsibility for the change. I must select a substitute mission to assist effectively the general scheme of maneuver. I must notify at once the next higher commander in case I decide that it is impossible to carry out my assigned mission.)

31. SEIZING THE INITIATIVE

In general, when confronted by a vague situation and difficult circumstances, as is often the case in war—*be active*. Seize and maintain the initiative. Do not expect or await hints or suggestions from the enemy relative to your next move.

Section VIII. THE DECISION

The decision must indicate a clear objective to be attained by the coordinated and aggressive use of available means. The strong will of the leader must dominate at all times; often the stronger will compels victory. Never let anxiety over personal security interfere or influence in any manner the real task, which is the annihilation of the enemy. Calmly weigh the situation, thinking quickly but overlooking nothing essential. Insure that all assistants clearly understand your plans. Nervousness on your part is quickly reflected by subordinates.

Never hold a council of war. Complication and confusion are frequently introduced, and generally only an incomplete decision results. One can think through a situation much better and reach a definite decision by *independently* estimating the situation.¹³

Once a decision is made, do not deviate, except for excellent reasons. In this connection, however, one can bring about disaster by obstinately clinging to the initial decision when justifiable grounds are present for a change. The true art of leadership is the ability to recognize when a new decision is required by the developments or changes in the situation. The commander should be resolute but not obstinate.

¹³ The division commander will generally hear the suggestions and proposals of his chief of staff.

Section IX. FIELD ORDERS

Publishing orders is an art that can be learned only by continual practice. Prompt distribution of faultless orders furthers the confidence of the troops in the leader and often has decisive influence in achieving success in combat. Conversely, power in the attack or strength to resist in the defense can be greatly reduced by faulty orders.

Commanders of divisions or larger units generally use written orders. Simple instructions and brief missions may be communicated orally or through the communications net, but the text should be simultaneously recorded. Commanders of units smaller than a division generally use oral orders, but again, the text must be recorded in writing. While higher commanders usually make reference to points or areas on maps, commanders of small units point out or make such designations actually on the terrain. Although oral discussions with subordinates may contribute to clarity, the leader should not become dependent upon such discussions. Decisions and orders remain the direct responsibility of the leader himself.

32. GENERAL RULES

The following rules embrace accepted fundamentals and help to gain uniformity: (a) Do not issue orders until your plan of action is definitely established. (b) Distribute the order early enough to allow the lower echelons time for further dissemination and full compliance.

(c) Create conditions that are conducive to clearness and conciseness, leaving nothing to mutual agreements. (d) Place yourself mentally in the shoes of the subordinates receiving the order. (e) State only what subordinates must know for the proper performance of their tasks. (f) Always state definitely whether the combat is to be attack, delaying action, or defense, and whether the troops must remain "prepared for action" or whether they "may rest." (g) Issue affirmative statements, avoiding ambiguous or vague expressions and statements of exaggeration.¹⁴ (h) Include a brief commendation of a unit for the execution of a difficult or unusual task, particularly when troops are ordered to withdraw, to retire, or to pursue under circumstances difficult for the troops to comprehend. (i) Use prescribed abbreviations. (j) Embody pertinent information for each subject, unit, or weapon in a separate paragraph, underlining key words or phrases. (k) Number all orders successively, also the paragraphs within the order.

33. WARNING ORDERS (VORBEFEHLE)

Warning orders, usually transmitted orally, by telephone, or by radio, are issued to troops to give advance information about the will of the commander. The information contained therein is influenced by existing circumstances—the time available, the situation with respect to the enemy and our own troops, etc.—but in general will include such items as the plan of the commander, arrangements for reconnaissance and security, time and place of departures, march destination, bivouacs, halts, and changes of direction. Warning orders must

¹⁴ A statement of conjecture or expectation must be definitely stated as such.

be followed as soon as practicable by a complete order or an individual order.

34. COMPLETE OPERATIONS ORDERS (GESAMTBEFEHLE)

Complete operations orders present a full survey of the situation with respect to the enemy and our troops, the plan of the commander, the role each unit will play, and pertinent information for the troops. The usual arrangement follows:

Enemy.—Pertinent information of the enemy, including strength, dispositions, condition, losses sustained, defeats suffered, and the commander's expectation of what the enemy may do.

Own troops.—A brief orientation involving the next higher units, neighboring units, and special supporting units.

General plan.—A clear and concise expression of the plan of the commander (not repetition of the plan of the next higher commander), to ensure that subordinates fully understand his intentions.

Detailed plan.—An announcement of the specific details relating to such matters as reconnaissance, missions, supply and evacuation, communication, and the command post.¹⁵

¹⁵ As to *reconnaissance*, the detailed plan mentions the enemy information desired, the areas to be reconnoitered and by whom and when, the time and place where resulting reports are to be sent, and the sequence of reconnaissances according to their urgency. As to *missions*, what each unit with indicated attachments or detachments must fulfill is clearly stated. In respect to *supply and evacuation*, the definite functioning of agencies in relation to the combat elements is specified. As regards *communication*, the axis of communication for the unit publishing the order is indicated, and special instructions, such as those pertaining to the use of the radio or existing commercial nets, are included. As for the *command post*, the location of the commander's headquarters and the time when it opens or closes, etc., are given.

35. SEPARATE ORDERS (EINZELBEFEHLE)

Separate orders (*Einzelbefehle*) are issued when circumstances render it impractical or unnecessary to issue a complete operations order (*Gesamtbefehl*). Such circumstances include situations wherein individual units must be given specific or special instructions, or where the time available does not permit the issuance of a complete operations order. The separate order (*Einzelbefehl*) contains the necessary information to insure coordination of effort; and later the publication of the complete field order will include such information, briefly stated, as was sent out previously in individual orders.

36. SPECIAL INSTRUCTIONS (BESONDERE ANORDNUNGEN)

Special instructions supplement operations orders with information principally concerning ammunition, communication, equipment, food supply, transportation, medical and veterinary service, construction, and civil population. In general, special instructions are written and are issued direct to the units or agencies that they concern.

Section X. MARCHES

All arrangements pertaining to a march should be based upon the premise that the mass of the force must arrive at the new destination with the *minimum effort* and the *maximum secrecy*. When contact with the enemy is imminent, the march formation should favor easy and rapid development for combat. When contact is unlikely, the comfort of the command is the important consideration. In view of modern air developments, movements under cover of darkness will be the rule rather than the exception. There will be circumstances requiring day marches, however; or they may be safely undertaken when the weather precludes hostile air activity.

37. MARCHING IN MULTIPLE COLUMNS

The command should be marched in multiple columns, using all available routes, thereby saving the strength of the troops, affording better protection against air attacks, and maintaining the command in such formation as to facilitate development for combat. The following considerations, however, prevail: (a) Organization in depth permits freedom of maneuver. (b) Echelonment of some columns on the open flank affords protection or facilitates later envelopment of the hostile flank when the enemy is fixed in the front. (c) The strength of columns and the location of stronger columns will be determined by the whereabouts of the enemy and by the tactical plan, as

influenced by the terrain. (d) If the situation is initially too vague to determine such dispositions, then several weak columns should be marched into aggressive action against the enemy to clarify the situation; the mass of the force may then follow in one or more columns. (e) The width of the advance should not be so broad as to preclude the building up of a main effort when contact with the enemy is made. (f) Zones of advance with boundaries should be indicated. (g) And, lastly, transmission of orders and reports must be carefully organized.

38. MARCHING IN SINGLE COLUMN

The division sometimes cannot avoid marching in a single column. The great disadvantage is the extraordinary length, which precludes assembling for a coordinated effort in 1 day. An advantage of the single column over multiple columns is greater security and flexibility for changing direction.

39. PROTECTION AGAINST AIR ATTACKS

The movements of large forces are protected by anti-aircraft precautions, particularly at initial points, river crossings, and defiles. Antiaircraft batteries advancing by bounds are set out in advance to front and flanks to provide protection at these critical points. The commander must insure that anti-aircraft units have priority on roads. The danger from air attacks during daylight is greatly reduced by the following appropriate methods:

Increasing the depth of march columns—At the command *Fliegermarschtiefe!* (air defense depth), the troop units, horse-drawn elements, and other vehicles double the distances normally maintained on the march. Simul-

taneously it is indicated whether security forces, such as flank or advance guards, maintain, increase, or decrease distances. Arrangements are made for air defense depth, if circumstances require such precaution, at the beginning of the march; or rest periods may be used to increase or decrease distances. With short march columns, extension or retraction are also accomplished during the march.

Increasing the breadth of march columns.—At the command *Fliegermarschbreite!* (air defense breadth), the troops spread out, using both sides of a highway or even expanding into the adjacent fields. The formation invariably imposes march difficulties upon the troops and is avoided whenever possible. When troops are already marching in air defense depth, it is seldom necessary to require the additional precaution of marching in air defense breadth.

Dividing a column.—Very long columns marching along a single route are broken up into several short groups with between 1- and 3-kilometer ($\frac{1}{2}$ - to 2-mile) intervals.

Disposing of the motorized units.—The motorized units of the infantry division, except the reconnaissance battalion or units employed on security missions, are divided into groups and follow the various columns, advancing by bounds. If the situation permits, they are organized into a motorized column and marched on a special road. Motor vehicles are also marched in the intervals between the advance guard and the main body, and between units of the main body.

Averting hostile planes.—Upon the approach of hostile planes, air guards promptly sound the warning, using pre-arranged signals. Marching troops throw themselves down on, or off to the sides of, the road. Motor vehicles

halt, and their drivers set the brakes. Mounted troops clear the road and continue the march under available cover. Antiaircraft weapons immediately fire upon the hostile planes, but riflemen do not fire unless a plane comes within range. Frequently the troops are put in readiness to withstand a simultaneous air and gas attack. At night, if flares are employed by the hostile fliers, foot soldiers throw themselves to the ground off the roadside. Everyone else and all vehicles remain absolutely motionless while antiaircraft artillery provides defense.

40. NIGHT MARCHES

Although night marches initially tax the strength of troops, this disadvantage is minimized after troops become adjusted to resting in day bivouacs and eating regularly on a changed schedule. Night marches have decided advantages: they deny altogether or restrict materially hostile ground and air reconnaissance, and by keeping the enemy ignorant, they contribute to surprise; also, night marches bring troops into position for battle with fewer losses and consequently higher morale.

In spite of the fact that main highways are often illuminated with flares by hostile aviators, it is frequently necessary to utilize highways for marches. If many alternative parallel routes are available, the principal highways are avoided, or utilized by motor elements only.

The hour of assembly at the beginning of the march should come after dark in order to preclude observation by hostile planes. Troops are formed as for a day march without extension of distance or expansion of width for air defense; but the security forces are drawn in somewhat

closer, and distances between units are slightly increased to insure sufficient buffer room. Double connecting files, sent by the principal unit to the subordinate unit, or from the rear unit to the forward unit, are liberally used to maintain contact. The order of march is similar to the arrangement for a day march. If the tactical situation permits, foot troops precede the mounted troops.

On good roads and by starlight or moonlight, the rate of march is practically the same as that of a day march. On poor roads or in heavy darkness, the rate decreases to 3 kilometers (just under 2 miles) per hour and even less. Bicycle troops and motorized units also march appreciably slower by night than by day. It is advisable to arrange short rests—about 10 minutes in every hour; long rest periods tend to make the troops sleepy.

The alert commander does not march his troops directly into bivouac if daylight is about to arrive. He halts them in an available covered area and arranges to have them divided into small groups before the troops march on to bivouac or other destination.

41. DAY MARCHES

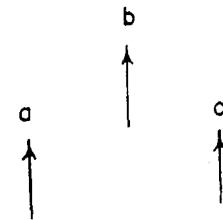
When contact with the enemy is at all possible, the commander must march his command during the day with "preparedness for combat" as the foremost consideration. When contact with the enemy is not imminent, the commander can divide his command and march the various units on several routes. When time is not pressing, the movement also can be carried out in small groups over long periods of time. In any case, the first consideration in a day march is tactical; but the possibilities of cover should not be overlooked. The stronger

columns should be marched over the routes offering the most cover, while the weaker can be sent over the more open routes. The time of departure on a day march is influenced by the situation, the weather, the season, the length of the intended march, the condition of the troops, and other factors. It is desirable to march from an old bivouac area under cover of darkness and reach a new one by daylight.

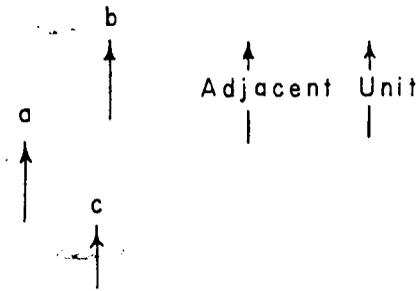
42. ORGANIZATION FOR MARCHING

Infantry marches in columns of three men abreast, cavalry marches in columns of two abreast (exceptionally four), and motor vehicles travel in single columns. In general the right side of the road is used; but when organizations are mixed, the infantry should be permitted to march on the more comfortable side for walking. Within the infantry division, the commander must organize his troops for the march so that he can bring all of them to bear against the enemy in a concerted attack in a single day. In order to accomplish this, it may be necessary to march in two, three, or four columns, with each column providing its own security. Examples are illustrated by the following diagrams:

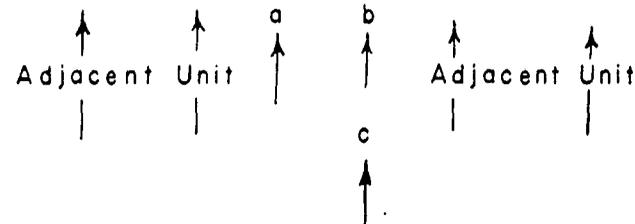
Example 1 (Where the division is marching in columns a, b, and c, and there are no adjacent units)



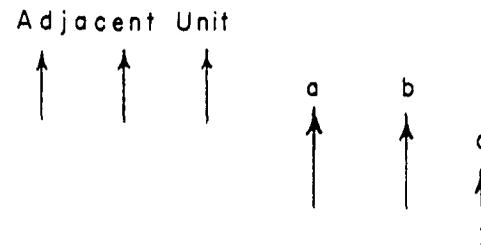
Example 2 (Where the division is marching with its left flank open)



Example 3 (Where the division is marching as an interior unit)



Example 4 (Where there is a containing force and the division is marching as an enveloping force)



43. CONNECTION AND COMMUNICATION

The commander of a larger unit is responsible for connection with the next lower; the smaller units must cooperate, however, when difficulties arise. In terrain, or under circumstances, where visibility is restricted, arrangements for continuous connection are intensified. On a march in several columns, communication between the columns is maintained through the most appropriate available means.¹⁶

44. RATES OF MARCH

Since it is important to provide conditions which permit an even rate of march, the mixing of different sorts of troops should be avoided as much as possible.¹⁷ On good roads and under favorable conditions the following average speeds can be accomplished:¹⁸

	<i>Per hour</i>
Foot troops.....	5 km (3 mi)
Foot troops (small units).....	6 km (3½ mi)
Mounted troops (trot and walk).....	7 km (4 mi)
Mounted troops (trot).....	10 km (6 mi)
Bicyclists.....	12 km (7½ mi)
Motorcyclists.....	40 km (25 mi)
Large organizations with all weapons:	
(1) Including rest periods.....	4 km (2½ mi)
(2) Under stress, without rest periods.....	5 km (3 mi)
Motorized units.....	30 km (18 mi)

¹⁶ Airplanes (troops expose panels upon signal from the air observer), radio (when secrecy does not preclude its use), ray lamps, liaison officers (through the messenger system), wire telephone and telegraph (when contact with the enemy is imminent), blinker (frequently), and signal flags (seldom).

¹⁷ Pack animals are one disturbing factor in maintaining an even rate of march.

¹⁸ For foot troops under ordinary conditions the distance prescribed as a "buffer" between companies, or similar units, is 10 paces; for mounted troops and trains, 15 paces. Such distances do not apply, of course, when air defense depth has been ordered.

Intense heat, poor roads, snow, ice, absence of bridges, and other local conditions greatly influence the march rate and the travel distance accomplished. The rate for foot troops on a cross-country or mountainous march decreases from the normal hourly rate by as much as 2 or 3 kilometers.

When great distances must be covered rapidly, motor and rail transportation can be used to expedite marches; for distances under 150 kilometers (93 miles) the use of motor transportation is recommended. When circumstances require foot or mounted troops to make forced marches, every effort is made to assist the accomplishment. *Strict march discipline is preserved, and severe measures are meted out against malingerers.* The men are told why the particular march is being made, and arrangements are made for rests where refreshments such as hot coffee or tea will be served. Their packs are carried, if possible, in trains.

45. MARCH RESTS

The commander should indicate in the march order all the necessary information concerning the duration and other conditions of the march. An officer should be sent forward to reconnoiter suitable areas for rests. Arrangements should be made for a short halt, not longer than 15 minutes, to begin after the troops have marched about 2 kilometers (1¼ miles) so that equipment and clothing may be comfortably readjusted on the men and animals. The troops remain near the road during such short periods, spreading out only a sufficient distance to secure cover from hostile air observation. When a long march is made, halts are ordered about every 2 hours. Rest periods are

utilized for eating, drinking, feeding animals, and checking vehicles. The stopping places should be near water and not too restricted. In summer a rest should be prescribed during the hottest time of the day. During long rest periods the troops are arranged in groups; and when hostile airplanes approach, the air guards sound the warning and the troops take cover, remaining motionless.

46. MARCH OUTPOSTS

The security of a force in a rest area is obtained by careful preparation within the area and by sending out security forces instructed to conduct reconnaissances, these cautions being exercised in order to prevent the enemy from obtaining information about the main force, and in order to protect the main force from surprise and give it time to prepare for combat. According to the degree of danger, if far from the enemy, simpler precautions may be taken; but since the effect of distance has been greatly reduced by motorization and air operations, the following principles of outposting should apply:

(a) Employ the minimum number of troops consistent with the situation. (b) Exploit the natural protective features of the terrain, particularly if the enemy is liable to employ armored vehicles; always establish road blocks. (c) By day, maintain observers in points of vantage for distant viewing of the surrounding terrain. (d) By night, maintain listening points and patrols on or near all possible avenues of approach. (e) Provide protection for the flanks and rear. (f) Establish air guards and a warning system.

Section XI. VARIOUS TYPES OF BATTLE

The most important types of battle are the attack, the defense, and the withdrawal, or retreat. A combination of these types occurs simultaneously or successively in the course of every major campaign. The commander and the General Staff Officer must master the fundamental principles involved in these various forms of tactical maneuver. Resolute application of these principles may penetrate, at least will help to neutralize, the ever-present "fog of war."

Section XII. THE ATTACK

The attack may be launched (a) from one direction against front, flank, or rear; (b) from several directions simultaneously; (c) after penetration, into a new direction.

47. FORMS OF ATTACK

The *frontal attack* is the most frequent form of attack, but mechanized and motorized weapons will decrease this frequency. It requires superiority in strength and produces decisive results only when the hostile front is penetrated.

The *enveloping attack* (envelopment) is the most effective form of maneuver, and if aggressively employed deep in the hostile flank or rear, it can result in a most decisive victory, or even annihilation of the enemy. An envelopment of both flanks presumes marked superiority in means. Wide envelopments are more effective than close-in. Among the factors that contribute to successful envelopments are deception, concentration of strength at the critical point, available reserves, mobility, and simplicity of maneuver. As to *surprise*, the enemy must not be given the time necessary to take countermeasures. As to *mass*, strength must be concentrated on the flank of the envelopment so that hostile extension of the line can be overrun or circumvented, and hostile defensive moves quickly and effectively frustrated. As to *fixing the enemy*,

the hostile forces in the front must be contained simultaneously with the enveloping attack.¹⁹

The *penetration* is an attack where the maneuver is intended to split or separate the hostile line of resistance. The following considerations contribute to success: selection of a favorable point (a weak part of the enemy position, or favorable terrain); surprise (such as feints at other points, or secrecy in concentration of strength); breadth of penetration (preferable a base as wide as the depth of the penetration or wider); depth in organization (to exploit breaking through, and to check hostile counter-attacks); rapid and full exploitation of the break-through.

The *limited objective attack* is a form of maneuver intended to win important terrain features, to contain the enemy frontally, or to stop the hostile advance. Organization in depth is not required.

48. CONSIDERATIONS FOR AN ATTACK

Some important general considerations for an attack are the following: (a) Obtain unity of command and action; avoid piecemeal attacks. (b) Establish a main effort. (c) Assign narrow zones of action. (d) Reinforce fire by additional artillery and heavy infantry weapons. (e) Coordinate and intensify the fire of all weapons. (f) Make timely employment of tanks and reserves. (g) Exploit successes quickly and fully even though the location of the main effort may properly have to be

¹⁹ This may be accomplished by point attack (which is both effective, and economical in troops), by frontal attack (which involves employment of considerable force and thereby reduces the troops available for the main effort), and by attack with limited objective (which requires a smaller force and releases more troops for the main effort).

changed.²⁰ (h) Recognize the crisis in a battle and react appropriately.

Be alert to every advantage, to each success no matter how small, to any mistakes made by the enemy—and exploit these to the fullest degree. If the attack appears definitely stopped by strong hostile resistance at a certain point, further success may be better accomplished by injecting fresh troops, by concentrating fires on a different area, or by changing the disposition of troops.

49. MECHANICS OF ATTACK

The width of a zone of action is dependent upon terrain and mission. A battalion of infantry with both flanks protected is assigned a zone of action 400 to 1,000 meters (roughly 440 to 1,100 yards) wide. An infantry division in a meeting engagement where terrain is favorable for employment of supporting weapons, is assigned a zone of action 4,000 to 5,000 meters (4,400 to 5,500 yards) wide; but an infantry division having both flanks protected and making the main effort against a strong hostile position is assigned a zone of action of 3,000 meters (3,281 yards).

A definite objective or direction must be indicated for the attack. Although zones of action are prescribed, they need not be completely filled with troops. For divisions and larger units, these zones are selected from the map; for the smaller units, they are determined by inspection of the terrain itself. The boundaries are extended deep enough into hostile territory to preclude mixing of units for the duration of the day's operation. Strongpoints and

²⁰ For example, in passing an obstacle—river or mountain chain—the main effort may be switched during the progress of the operation because of a break-through in an unexpected point.

difficult terrain must be included within a unit's zone of action and not located on its boundary line. Frequently only the designation of an objective is required in order to maintain direction and to preclude mixing of organizations.

Do not include too much detail in the attack order and thus restrict initiative. The mission must be clear—*what to do, but not how to do it.*

The important task of all weapons is *to enable the infantry to close with the enemy and to drive deep into his position in order to crush all resistance or to annihilate him.* This end can be accomplished only if the hostile automatic weapons and artillery are neutralized or destroyed. Coordination between infantry and artillery must at all times and in all situations be carefully arranged.

When tanks and infantry are operating together, they both should be initially assigned the same objective, namely, the hostile artillery. Tanks can often attack from a different direction. The coordination of other weapons of the division attacking with tanks is based on the activities of the latter. The division commander is responsible for such coordination. Artillery supports the tank attack by firing upon antitank weapons, blinding hostile observation, and neutralizing villages and edges of woods. Artillery fire must be carefully observed and controlled to preclude firing upon friendly tanks and advancing troops. Engineer troops remove tank obstacles and assist tank units forward. The air force provides connection between the fast-moving tank units, the division, and the artillery. Combat aviation may be employed to neutralize antitank weapons.

Antiaircraft troops protect the deployment of troops,

positions of readiness, artillery positions, and battle reconnaissance planes. The main effort must receive the bulk of antiaircraft protection. Gas may be used against artillery and reserves, and in connection with road blocks or blockades on an open flank. The communications net will be based upon the plan of maneuver; separate nets for artillery and infantry will be established, the artillery net having priority.

50. ATTACKING A POSITION

The plan of attack will be determined by the situation, the morale of the enemy, and the extent of his defensive works. Approach to the hostile position may be possible only under cover of darkness. If the position cannot be turned or enveloped, then a penetration must be made through some point in the front. The employment of inadequate force and means leads to severe reverses.

Careful plans for the attack must include the necessary information about the enemy and the terrain.²¹ Thorough reconnaissance must be conducted by the officers of all arms, but reconnaissance parties must be kept restricted in size. Air reconnaissance is of particular value. Observation and listening posts must be established. Limited-objective attacks, strong combat patrols, and similar methods may be necessary to gain the information desired.

The location of the main effort will be determined by friendly intentions, the situation, the defensive strength

²¹ The following points should be clarified: Where are the enemy's advanced positions, outpost lines, main line of resistance, switch positions, reserves, and observation posts? Where does the terrain favor the approach and the attack? Where has the enemy employed gas and obstacles?

of the hostile position, the covered approaches, and the observation for supporting weapons, particularly the artillery. In selecting a place for a penetration or breakthrough, consider the following points:

(a) Find out how the attack can be further developed after the initial break-through. (b) Insure sufficient room for maneuver. (c) Avoid natural strongpoints or envelop them. (d) Locate favorable terrain for the employment of tanks. (e) Capture points or areas that will give good observation deep into hostile positions. (f) Designate close or far-distant objectives according to the size of the attacking unit: if the final objective cannot be reached in one advance, designate intermediate objectives involving in some cases limited-objective attacks.

51. ARTILLERY EMPLOYMENT

Under the protection of advance infantry units, the artillery will be brought forward. Prompt reconnaissance of the terrain must be carefully made by artillery officers in small groups. If possible, positions for the batteries should be so placed that the artillery mission may be carried out without change of locations. Ammunition supply, observation, hostile position, communications, alternate positions, and range must all be considered, and any necessary preparations carried out in advance. The distribution of the artillery will be determined by its mission. Units will usually be employed intact; it may, however, be necessary to detach batteries, particularly the heavy artillery. In very narrow division sectors, for example, heavy howitzer batteries may be taken away from divisions to operate against distant targets under corps.

The initial mission of the artillery may include any or all of the following: firing upon important targets in the battlefield, drawing the fire of hostile artillery, engaging in counterbattery work against hostile artillery and anti-aircraft batteries as early as possible, and firing upon large hostile group movements at maximum ranges and as promptly as possible.

52. INFANTRY POSITION OF READINESS (BEREITSTELLUNG)

The following considerations for an infantry "position of readiness" may be listed as follows:

(a) Avoid too close proximity to the enemy position in cases where no cover is available to friendly troops. (b) If the enemy has previously offered strong resistance in the fighting, if there is reason to avoid premature entrance into the effective hostile defensive area, or if the enemy situation in the main battle position is not clarified, have the troops partially developed before they are conducted forward in their respective zones of action. (c) Avoid hostile air and ground obstruction by prohibiting large assemblies in restricted areas, by exploiting all ground folds and available cover, and by approaching immediately prior to the jump-off as close to the hostile position as cover permits. (d) Select the infantry jump-off position as close as possible to the hostile position in order to permit the artillery to push well forward and carry out its mission without changing location.²² (e) Establish local security

²² When the terrain and available cover do not permit the close approach of the infantry, the artillery must be echeloned to the rear and prepared to support the infantry advance on the enemy position.

with infantry detachments. (f) Gain sufficient depth by drawing out and retaining reserves to the rear. (g) If the forces going into the position of readiness are scheduled to make a close-in envelopment, insure that the position is a sufficient distance off to the side to preclude the enveloping force advancing into and mixing with other friendly troops on the flank, when the attack is launched.

53. INFANTRY ACTION UP TO THE FIRST ASSAULT

The infantry action up to the first assault is carried out under the support of artillery and heavy infantry weapons. If exceptionally strong artillery support is available, the infantry can more freely advance against the enemy position; if the artillery support is not strong, however, then the infantry must advance cautiously. In the latter case, moving forward under cover of darkness or of smoke, the infantry takes advantage of cover to avoid hostile observation and of defiladed ground to avoid hostile fire.

The infantry attack begins with the advance of the light weapons under cover of the fire of artillery and heavy infantry weapons. Part of the latter should be pushed forward with the initial echelons to insure continual close support. Riflemen work forward through the use of fire and movement. Local fire superiority must be exploited to the fullest degree to capture ground. Those units or parts of units which cannot advance farther should dig in and hold tenaciously the ground already won. When weak points in the hostile position are found, they should be attacked aggressively and with reserves. Thus a push forward can be made. Against consolidated and extensive defensive works on the other hand, the infantry may struggle for days, working slowly

forward. Trenches and terrain may be won, lost, and rewon during the course of the action.

54. ARTILLERY SUPPORT OF THE INFANTRY ADVANCE

The effectiveness of counterbattery missions directed by the artillery commander depends upon observation and available ammunition. Neutralization was often accomplished in World War I by a simultaneous concentration of several batteries using gas shells. Initially many batteries may be concealed in a firing position awaiting the opportunity to surprise the enemy. When new hostile batteries are discovered or additional enemy forces²³ are located, then concentrated fire may be delivered upon them with these batteries. This method is much more economical in ammunition than continual fire of all artillery against apparent but not definitely identified targets.

As the situation develops and clarifies, artillery fire can be switched from the manifestly less important targets to the more important areas. The infantry will sometimes be unavoidably delayed in its advance by reason of changes in the infantry-artillery plan of coordination. There will be situations in which many hostile batteries will not be located until friendly infantry has pushed forward and drawn fire.

55. INTERMITTENT ADVANCE OF THE RESERVES

At the disposal of the commander, the reserves follow beyond range of hostile fire. When the terrain permits,

²³ Artillery engages the hostile infantry which is fighting on the flank or in front of friendly infantry.

their advance should be made by bounds from cover to cover.

56. BREAK-THROUGH

a. Penetration of the Hostile Position

The timing of the assault is determined either by the forward echelons or by the commander himself. No hard and fast rule can be applied. Should the foremost units recognize the opportunity to push through, they must take full and quick advantage, calling upon supporting weapons for intensified fire to support their assault. When the infantry is observed advancing rapidly on the hostile position, this increased support may under certain circumstances occur automatically. Should the commander order the assault—avoiding an elaborate plan—he must quickly concentrate his strength at the point of penetration.

b. Time of Attack

Daybreak is often considered the most favorable time to gain surprise for the attack. War experience indicates, however, that daybreak is the time of highest alertness, and it is better to change continually the hour of attack. The time of attack should usually be postponed if the artillery has not completed all of its preparations. An attack against a position must be supported by artillery which is fully prepared to carry out its missions. In order to penetrate a stubbornly defended main line of resistance, concentrations of fire by all weapons must be arranged.

c. Enemy Withdrawals

If the enemy withdraws to rearward positions (a move generally accomplished at night), the following action

should be taken: (a) Maintain close contact with the hostile infantry. (b) Promptly reconnoiter the new hostile positions. (c) Move the artillery well forward. (d) Prepare for hostile counterattacks. (e) On the following day, push rapidly forward with all force; compel the enemy to stand and fight, to take flight, or to suffer destruction.

57. ACTION RECOMMENDED FOR CERTAIN SPECIAL CASES

If the enemy has had only a short time in which to prepare his defensive position, if the morale of the enemy is shaken, or if the possibility of surprise is introduced, the preparations for attacking a position may be shortened to limited reconnaissance, more rapid development and preparation by the artillery, and employment of tanks and smoke screens.

If the enemy resorts to delaying action, the response should be to break through his line at one point and exploit the break with strong force, and to press closely upon the withdrawing hostile troops.

If the enemy falls behind the cover of a very strong position, the direction or location of the main effort should be changed. Knowledge of the terrain will permit advance planning in this maneuver. More artillery, tanks, and engineer troops should be moved well forward, and minimum requirements should be established in the communication system. If the enemy succeeds in falling back upon an entirely new and very strong defensive position, a regrouping of the attacking forces and new plans may be required.

If the attack continues until nightfall without producing decisive results, the regrouping of the command should be carried on under cover of darkness. The day's battle experience may indicate a new point for the main effort, and the order for attack should be issued just as early as possible. Reconnaissance must be energetic and continued, for the enemy will also make changes in his disposition during darkness. Night attacks are useful in determining hostile intentions and movements, in seizing favorable positions for the following day's jump-off, and in obtaining observation. Harassing fire by the artillery and air night-bombing attacks should be scheduled. Artillery support may not be possible at dawn of the following day, unless the exact enemy positions have been located. Only then can the artillery deliver unobserved supporting fires. Sufficient light for artillery observations should be awaited in preference to sending the infantry forward unsupported. Artillery on other fronts may be fired for deceptive purposes during the interval of waiting.

Passing over to the defense from the attack may be a necessary prelude to holding captured ground, or may be ordered by higher authority. Troops in either case are reorganized, and unnecessary forces withdrawn. Artillery must protect the relief of friendly infantry by heavy concentrations and counterbattery fire.

58. MEETING ENGAGEMENT

a. Speed and Surprise

In a meeting engagement, it is possible (though improbable with modern far-reaching reconnaissance and intelligence means) that the first information of the

presence of the enemy will be received through actual contact. Initially the situation is vague and the security of both forces uncertain. A meeting engagement must not be permitted to develop into a wild rush upon the hostile position; a coordinated plan must be carried out calmly, but so accelerated as to carry out the following considerations: (a) Seize the initiative and fix the hostile force insofar as the situation permits. (b) Expedite preparations for the attack, quickly occupying ground favorable for observation, development, and advance, and for supporting weapons. (c) Intensify reconnaissance, ground and air, to determine promptly the enemy's dispositions, strength, intentions, and weaknesses. (d) Surprise the enemy, principally by rapidity of movement and by screening your troops and movements prior to entrance into battle.

b. Time and Space

The advance guard of each march column must provide time and space for development by the main body. An energetic advance under cover of the advance guard artillery often seizes important terrain features to the front and flanks, and fixes the hostile force. By extending over a broad front with its infantry and artillery, the advance guard can deceive the enemy relative to strength and movements.

c. Coordination

In a meeting engagement in open terrain and when the enemy has excellent observation, it is necessary to develop and prepare for combat much earlier than otherwise. The location of the main effort is promptly communicated to the various columns, and they deploy in keeping with

the general plan in order to insure coordination of effort. The prompt employment of additional artillery support should be coordinated with the general scheme of maneuver.

d. Methods

In attacking during a meeting engagement, alternative methods exist for utilizing the main body: (a) prompt employment as the units of the march columns reach the immediate combat area; (b) development, and occupation of a position of readiness from which the attack will be launched. In the first case, the units will be issued individual orders as they arrive.²⁴ All unit commanders must insure coordination between their infantry and supporting weapons. In the second case, the attack will be conducted similarly to an attack against an enemy in position. It will not be advantageous to push through an attack immediately if the terrain is difficult or if the employment of the mass of the force on the same day is no longer possible. The action of neighboring units must also be taken into consideration.

59. PURSUIT

The absolute disregard of all factors except the annihilation of the hostile force will govern the conduct of the pursuit. The most important principles involved are to harass continually the hostile force in front and on the flanks, and to block the avenues of retreat. It is most important that the intention of the enemy to withdraw

²⁴ The situation may so develop that the immediate employment of units as they arrive will not be necessary. The remainder will then be first moved into positions of readiness.

be promptly recognized.²⁵ When such recognition becomes definite, the commander will immediately employ all available force and spare no effort in order to annihilate the enemy. Premature pursuit can result disastrously; on the other hand, if the withdrawing enemy is permitted *time* in which to break off combat, an opportunity for decisive victory may be lost; the commander must therefore carefully consider the situation and evaluate the information prior to committing his troops to the pursuit. Commanders of subordinate units in the forward echelon push energetically forward when the enemy gives way. The presence of higher commanders in these forward units spurs the troops to greater effort.

Some of the important considerations for conducting successful pursuits are: (a) *Employ air force* units against large bodies of hostile retreating troops; use reconnaissance planes to determine direction of withdrawal and use diving attacks with machine guns and bombs upon troops and matériel in marching columns, especially in defiles and against bridges. (b) *Employ artillery* in harassing missions. Let part of the long-range artillery pound vigorously on potential avenues of withdrawal, roads, etc., and keep the bulk of the artillery leap-frogging rapidly, pressing close behind the friendly infantry to render support. (c) *Employ infantry* in pushing rapidly forward literally on the heels of the withdrawing enemy; assign distant objectives in the direction of the withdrawal; have the heavy infantry weapons follow closely the forward echelon; and give the enemy no time to organ-

²⁵ Clues may be derived from airplane reports of rearward movements of trains, supply, echelons, and reserves; from reports from friendly troops; and from patrolling, particularly at night, and miscellaneous signal interceptions.

ize a defense. (d) *Employ engineers* to repair roads in the rear of the pursuing forces, to remove obstacles, and to neutralize gassed areas.

While the frontal attack is vigorously carried out, enveloping forces of great mobility²⁶ will operate from flank and rear against the hostile retreating columns. Defiles, bridges, and favorable observation deep in rear of the enemy will be seized, and avenues of retreat cut off. If the enemy succeeds in organizing a delaying position, a coordinated attack must be promptly arranged and launched.

Commanders must insure a continual flow of supplies for the rapidly advancing units. In pursuit, matters of supply and evacuation require particularly careful supervision.

Pursuing troops must maintain contact with the enemy, and must report back frequently to headquarters their own locations. If the pursuit continues into the night, infantry units push forward along the roads. Artillery continues long-range harassing fire, while individual batteries follow the infantry in close proximity for rendering immediate support.²⁷

²⁶ Motorized infantry, mounted troops, motorized engineers, and antitank and antiaircraft units.

²⁷ Artillery firing at night under such conditions is, of course, map firing.

Section XIII. THE DEFENSE

The important considerations of defense are combined in *utilization of terrain* and *coordination of fire*. The natural defensive characteristics of the terrain should be improved, and camouflage should be used freely. A fully coordinated use of all available weapons must be arranged; strength should be conserved by keeping the losses in personnel and matériel down to the very minimum; and exact dispositions, strength, and intentions should be denied to the enemy as long as possible. A well-organized defense capable of quickly and effectively reverting to the attack, with cunning and deception enshrouding the movements and dispositions, will offset hostile numerical superiority.

60. FAVORABLE TERRAIN FOR DEFENSE

The defender has an advantage in that he selects the terrain for his battle. Rarely will all of the following terrain requirements for defense exist in a single combat area, but certain of them will be present, and the commander may improvise the others: (a) good observation for artillery and other supporting weapons; (b) protection against hostile observation; (c) natural obstacles against tank attacks; (d) natural protection for flanks; (e) possibility for launching counterattacks.

61. OTHER CONSIDERATIONS

a. Defense or Delaying Action?

The mission must clearly indicate the form of defense contemplated: defense (*Verteidigung*), meaning that the position will be held under all circumstances; or delaying action (*Hinhaltender Widerstand*). Fire may be opened either at maximum effective ranges, if the ammunition is ample, or at closer ranges, in order to effect surprise.

b. Preparation of Defense Area

When the hostile situation has not been clarified (especially if the direction of the enemy's attack is unknown), the mass of the defending force should be retained in a position of readiness. When information relative to hostile formations, main effort, strength, etc., becomes available, then the troops may be moved into defensive positions which have been previously reconnoitered and prepared according to the time available and the situation. Occasionally only a skeleton position will be occupied with artillery protected by small units of infantry, while the mass is held back centrally located so that it can quickly occupy positions upon the approach of the enemy.

c. Maneuvers

Advanced positions and outposts delay him and give time for the occupation and preparation of favorable defense terrain. Reserves are used for flank protection, for counterattacks, and for blocking penetrations. Fire power must never be weakened by holding out unnecessarily large reserves. If, after contact with the enemy, the situation requires defensive maneuver, the position is

quickly organized as the troops deploy, and if the terrain is not particularly favorable, the troops are drawn back to better defensive terrain.

62. GENERAL PRINCIPLES OF DEFENSE

Some of the general principles of defense can be summarized as follows: (a) The purpose of the defense is to nullify the hostile attack. (b) The position selected is held to the last; the commander may under certain circumstances, however, restrict the time. (c) The defensive position selected must compel the enemy either to attack, relinquish the advance, or attempt to avoid combat.²⁸ (d) Hostile envelopments are countered by extending or refusing the flank (or flanks), or by echelonment of reserves. (e) If the enemy attempts to march around in order to avoid the position entirely, then he should be attacked.

63. ORGANIZATION OF DEFENSE AREAS

a. Defense in Depth

The main battle position is organized in depth to accomplish dense all-around fires and effectively limit hostile penetrations. Local withdrawals before superior hostile fire may be authorized by the regimental commander to his battalion commanders, or, in special cases, by the latter to their subordinates; local withdrawals must not, however, permit the loss of connection between units in the line or hostile penetration into the main battle zone. In terrain not too unfavorable for the defense, units

²⁸ This can be accomplished if the position cannot be entirely avoided or enveloped by the enemy.

occupy fronts double the width of those assigned for the attack. These islands of resistance are so organized as to permit all-around defense, with weapons so sighted as to cover all possible avenues of approach at maximum ranges.

The defensive zone is organized in depth, with the main line of resistance in front of the terrain that is favorable for observation posts for the artillery and heavy supporting weapons. The higher commander selects the general defensive line on the map and assigns sectors to units. Subordinate commanders carefully reconnoiter the terrain and select the locations for their troops and various types of weapons.

b. Cover and Obstacles

Cover for machine-gun emplacements, observation posts, and accompanying weapons is provided. Obstacles are constructed to supplement the natural defensive characteristics of the terrain. Priorities of defensive works are governed by the rule that "effectiveness of fire takes priority over cover." The normal order of tasks is the following:²⁹ (a) clearing fields of fire and establishing distances to increase the efficiency of fire; (b) camouflaging installations and erecting dummy establishments; (c) constructing splinter cover for observation posts; (d) constructing machine-gun emplacements; (e) erecting barbed wire or other obstacles; (f) excavating dug-outs, switch positions, or planned communication routes.

64. RESERVES, RELIEFS, AND REAR POSITIONS

Local reserves are used to fill in gaps in the line, to counterattack against a local penetration, and to relieve

²⁹ Several of these tasks, such as camouflaging, may be undertaken concurrently with other tasks.

troops in the front line. General reserves are used to protect a flank, to counterattack against a serious penetration, to counterattack when the situation indicates a return to offensive tactics, and to relieve organizations in the line.

A relief is only effected after a long period of defense, and under cover of darkness. Infantry and artillery are never relieved simultaneously. The relief order directs when and where the relief is to report, the routes to be used by the relieving force and the troops relieved; and the time when the new commander is definitely to assume responsibility for the sector.

Only necessary under exceptional circumstances, rear positions must be located sufficiently back from the main line of resistance to require the enemy artillery to move forward. A rear position will be ordered occupied by the commander when the former position can be held only with unjustifiable losses and when consideration for adjacent units does not forbid.

65. ACTUAL OPERATION OF THE DEFENSE

a. Main Line of Resistance

All fires along the main line of resistance and in the principal defensive zone are carefully coordinated to insure that all areas, particularly the potential avenues of approach, are covered by strong concentrations. Artillery and infantry are coordinated to permit a rapid switch from one area to another; and fire plans are prepared to limit penetrations and to block envelopments.

Defensive preparations are secured from hostile observation by active reconnaissance and by a screening force, both of which operate under the same commander.

Generous use of obstacles, natural and constructed, is made. The advanced troops are under direct control of the commander; after fighting in delaying action before superior enemy forces, they withdraw to rearward positions as prearranged by him.

b. Advance Position

The advance position, usually located within the sphere of operation of friendly long-range artillery in the main battle position, is occupied to prevent the early seizure of important terrain features by the enemy. Camouflage and dummy works are used freely. The advance position increases the effectiveness and the time of employment of long-range artillery by protecting advanced, artillery observation posts; also, such a position deceives the enemy relative to the dispositions and organization for defense, and causes him to deploy prematurely. Friendly troops must withdraw before the enemy can overrun the position. In withdrawing, prearranged routes will be indicated to insure that the fire of weapons located in the next position to the rear (outpost line of resistance) is not masked.

c. Outpost Position

The outpost position, located within the sphere of operation of the light artillery batteries in the main position, is selected to provide time for troops manning the main defensive position to prepare for action, to supplement observation, and to deceive the attacker relative to dispositions. Troops from infantry units immediately to the rear generally occupy this line and are withdrawn by signal according to prearranged plan so that fields before the main line of resistance are not obstructed. Artillery delays the hostile approach by the use of harassing fires

controlled by radio reports from advanced observation posts. To increase radius of action, a few light batteries may be advanced forward to locations between the outpost line and the advance position.

66. ARTILLERY IN THE DEFENSE

a. Control by Artillery Commander

The commander of the whole defensive force determines the proportion of artillery to be held in direct support and the proportion to be attached to infantry units. Artillery is kept as far as possible under the control of the artillery commander, who under all circumstances retains control of the mass of the division artillery. If the situation permits and there is an ample ammunition supply, heavy fires may be delivered at long ranges.

b. Tactics

In the initial stages of a defensive action, artillery may sometimes be kept silent to facilitate deception; otherwise, it will be employed to draw hostile artillery fire, to deliver counterbattery fires, or to bring down harassing fires on the approaching hostile infantry. In the advanced stages of a defensive action, the bulk of the artillery is used to deliver concentrations on hostile positions of readiness, and particularly on hostile heavy infantry weapons; the remainder is used to deliver counterbattery fire. And in the final stage—when the hostile force is on the point of launching its assault—the artillery delivers preparations and barrages upon the hostile assault.

c. Barrage

Should the enemy make a surprise attack at night or in a fog, a barrage of all weapons is delivered immediately in

front of the main line of resistance. Definite restrictions relative to coverage and duration of fire are issued.³⁰ As a rule, heavy artillery does not participate.

67. INFANTRY IN THE DEFENSE

With part of their heavy weapons, the infantry opens fire upon the approaching enemy at good distance; if friendly artillery support is weak, at maximum ranges. Firing positions are located in advance of the main line of resistance or in the forward part of the defensive area. As the enemy draws closer, he is engaged by the fire of all the defending heavy weapons, and finally by the fire of all available weapons. The infantry fills up gaps in the line, recapturing any sections temporarily lost.

68. HOSTILE PENETRATIONS

Where small groups of the enemy have broken through, the groups should be destroyed immediately. Box barrages placed in their rear will preclude their withdrawal. When a successful break-through of large proportions has been accomplished by the enemy, the commander of the defensive force will decide whether the position will be shifted or the lost ground regained by counterattack. If he decides to counterattack, the fires of all weapons are carefully coordinated, a limited objective is assigned, and air and tank support is provided.

69. THE COUNTERATTACK

It is most important that the psychological moment be recognized for the counterblow. The commander is ever

³⁰ In this connection a light howitzer battery (105-mm) can cover about 160 meters (175 yards); a light battalion, about 500 meters (550 yards).

alert for indications.³¹ The counterattack plan resembles a limited-objective attack in which artillery support, boundaries, and objectives are specified. Any objective selected must be a decisive terrain feature.

70. WITHDRAWAL TO A REARWARD POSITION

Advance orders are issued to effect a withdrawal, thus ensuring coordination. Contact with adjacent units is maintained. The movement to the rear is effected under cover of darkness.³² Activity on the original position will be simulated to deceive the enemy. Firing by part of the infantry and artillery will be continued from the forward position to give the enemy the impression that it is still being strongly defended. The hostile advance upon the new (renewed) position will be delayed by the fire of artillery and heavy weapons, supplemented by means of poison gas and obstacles.

³¹ Hostile repulses, heavy losses, enemy errors, morale of the enemy, or morale of friendly troops.

³² Daylight withdrawals are only attempted under cover of fog, artificial or natural, or over terrain of very restricted visibility, when the situation definitely indicates that it will be dangerous to wait until darkness.

Section XIV. THE DELAYING ACTION

The purpose of a delaying action is to effect maximum delay to the enemy without committing the friendly force to decisive action. It is employed to avoid breaking before superior hostile force; to gain time or to improve the situation with reference to observation, cover, and field of fire; and to maneuver the enemy into a position in which he may be more effectively attacked. If a transition from defense to delaying action is imperative, the first position selected should be at least 6 miles to the rear. A fully coordinated attack by the enemy can be checked by causing him to displace his artillery and to reorganize generally before he launches a new attack.

The characteristic organization for delaying action includes the following considerations: (a) Successive defensive lines are selected with sufficient intervals to cause displacement of the enemy's artillery. (b) Positions selected should permit distant observation and effective use of long-range weapons, and have cover in the rear to facilitate withdrawal. (c) Natural obstacles are fully exploited and supplemented by constructed obstacles and by the use of poison gas. (d) The bulk of the artillery, along with the long-range artillery, is held under the artillery commander for long-range interdiction and counterbattery missions. (e) Resistance in the forward position is continued until the next rearward position is occupied and fully prepared to carry on the defense. (f) Units are deployed over very broad fronts and

with no depth.³³ (g) Small reserves are retained. (h) Reserves are utilized to cover the withdrawal particularly by daylight (according to the situation and terrain, they may be located off to a flank or on a commanding piece of terrain, which facilitates the protection of the units withdrawing). (i) When the situation permits, withdrawals are always made under cover of darkness; sometimes, even at the risk of being involved in serious action requiring a strong defense, the situation should be held until darkness.

³³ In favorable terrain a unit may occupy a sector twice as wide as is normal for defense. In heavily wooded areas or where visibility is restricted, the sectors are narrower.

Section XV. RETREAT-RETIREMENT

In a retreat-retirement, contact with the enemy is broken off for the purpose of seeking more favorable terrain or conditions for the resumption of offensive action. A commander may be forced by the trend of circumstances to retire, or he may, of his own free will, elect to retire. Only the greatest emergency is considered to justify retreat. Local reverses should not be taken seriously. No second-in-command upon receipt of unfavorable information is authorized to order a retreat. If the situation indicates the necessity, he must report to a higher commander and state his intentions to retire with the reasons therefor.

A retreat should be effected under cover of darkness, with the greatest secrecy. If troops are told the purpose—to improve their future chance of success—their morale will not be adversely affected. Fresh troops if available should be given the mission of rear and flank guards to protect the assembly and movement of the command. If the enemy is employing motorized or mechanized troops, special provision will have to be made to protect the flanks with antitank weapons and road blocks.

Section XVI. THE EMPLOYMENT OF FIELD ARTILLERY

The division artillery commander is a special advisor to the division commander on artillery employment, replacement, and ammunition; he is also commander of the artillery regiment, which includes the medium howitzer battalion, the sound-and-flash battalion, and such artillery as may be attached. He orders artillery concentrations, counterbattery, and harrassing fire in cooperation with the general scheme of maneuver and in support of the infantry.

The artillery battalion is the fire unit. The battalion commander indicates definitely to his batteries such matters as the following: targets, aiming points, amounts of ammunition to be fired, time for opening fire, location of positions, ammunition supply, routes, types of fire, and kinds of ammunition. Firing data are obtained for the battalion by ranging shots, map computations, operations of the observation battalion (sound-and-flash), and references furnished by friendly troops. In very wide sectors or when operating in terrain of restricted visibility, it may be necessary for certain batteries to obtain firing data individually according to their tactical missions.

71. ORGANIZATION

Part of the artillery, usually the light howitzers, has the principal mission of providing direct support to the infantry. The remainder is employed in counterbattery,

harassing fires and preparations, concentrations, and interdictions. Close connection with the sound-and-flash battalion is maintained. Disposition must be kept flexible to permit quick shifting of battery positions, missions, and targets. The employment in general is determined by these considerations: (a) number and kinds of guns available; (b) combat plans of the command as a whole; (c) terrain and weather; (d) hostile artillery; (e) ammunition available.

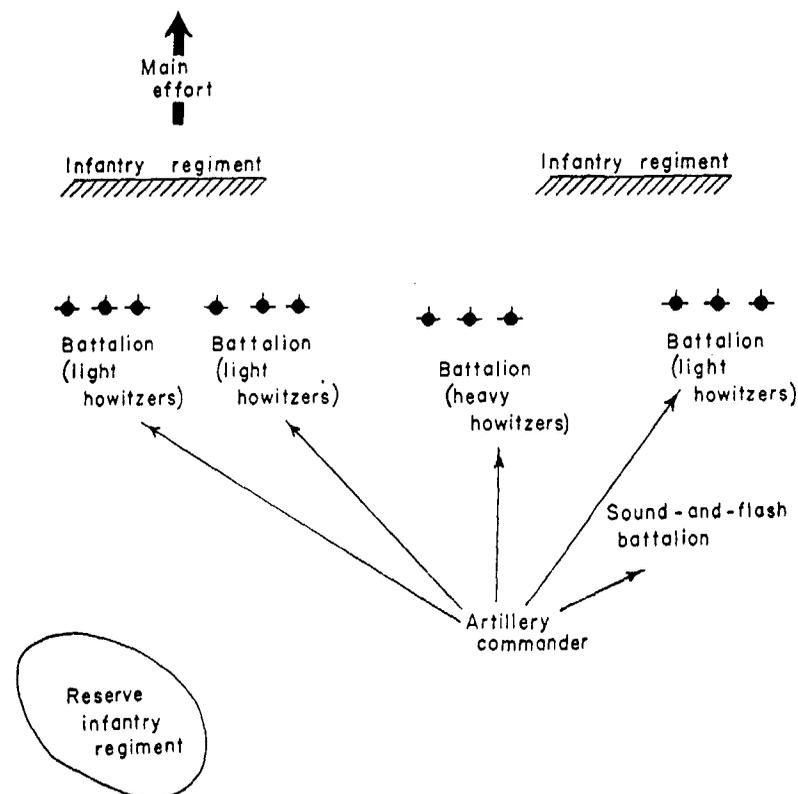


Figure 1. Artillery in a division attack.

72. LOCATION IN THE ATTACK

In general, in the attack the artillery is located immediately in rear of the infantry line, just beyond range of hostile small-arms fire. Figure 1 shows a typical arrangement, with the observation battalion (sound-and-flash) operating directly under the artillery commander.

If reconnaissance and combat intelligence have given definite information about hostile dispositions, then a preparation may be fired, continuing 10 to 30 minutes, and depending upon the ammunition available, the surprise effect, and the situation. In the case where practically no information on the enemy is available, the artillery preparation is omitted; the infantry launches the attack, drawing fire from hostile heavy weapons and artillery, upon which, once located, the friendly artillery can thereafter fire.

73. LOCATION IN THE DEFENSE

Artillery in the defense is organized the same way as in the attack. The only difference in dispositions is that the direct support weapons (light howitzers) are located slightly farther to the rear, and the general support guns (medium howitzers) are in a central location where they can interdict at long ranges to force an early deployment of approaching enemy formations.

74. COOPERATION WITH INFANTRY

Time and space must be carefully coordinated by both the infantry and the artillery. It is essential that the artillery observers be at all times alert, not only to locate targets and hostile forces but to follow closely the movements of friendly troops, particularly the infantry. To

3. The 2d and 3d Inf Divs will march upon CASSEL at 0400, with the heads of their main bodies crossing the line: VOLKMARSEN—WOLFHAGEN—IPPINGHAUSEN and the northernmost column of the 2d Inf. Div. over FHRINGEN — OBERELSUNGEN — DÜRNBERG.

The rear guards evacuate their present positions at 0300 and withdraw to the line: VOLKMARSEN—WOLFHAGEN—NAUMBERG. This line will be held at least until 13.4, 1400.

4. The 1st Inf Div withdraws upon HANN MUNDEN. It will cover the wing and flank of the I Corps Boundary between 1st and 2d Divs: BILLENSHAUSEN — RHODEN — BREUNA — EHRSTEN — SPEELE — WEDEMUNDEN (all to 1st Div).

5. Corps Commander goes at 0300 to DÜRNBERG, in the course of the morning to ESCHERODA. Reports to DÜRNBERG after 0500.

Sent by Officer
in passenger car.

x
Lt General

2. EXAMPLE B COMPLETE COMBAT ORDER (CORPS)

III ARMY CORPS	CORPS HEADQUARTERS
GENERAL STAFF SECTION—	FRIEDRICHRODA
Operations No. 3	21.4., 1900

CORPS ORDER FOR THE ATTACK ON 24.4

1. In the *hostile positions* along the Corps front there have been no essential changes noted and enemy will continue to defend his position. Improvement of fieldworks continues. Aerial photographs of the front taken on the

morning 20.4. will be distributed today to all units down to include battalions. In the sector GR VARGULA ALTGURNA along the UMSTRUTT RIVER, work on a rearward defensive position has been noted.

2. The *I Army Corps* attacks at X hour on 24.4. in its present combat zone and destroys the hostile force south of the UMSTRUTT. Strong forces will follow the Corps in the 2d line available to exploit a break-through.

Attack Objective of the Corps on 24.4:

High ground northeast and north of ASCHARA—WIEGLEBEN—STEIN B—north edge GR HARTH.

3. *Reconnaissance.*—a. Reconnaissance Echelon (H) 3 (Air) reconnoiter the Corps Combat Zone to include the UMSTRUTT RIVER during 22.4 and 23.4. Observe particularly for special hostile arrangements of dispositions. On 23.4 especially reconnoiter to locate hostile reserves, tank barriers, tank defense weapons, and tank units.

From daybreak 24.4 on are attached to:

7th Division 1 Airplane

8th Division 3 Airplanes

Planes available and prepared to fly missions beginning 24.4., 0430, from landing field FRIEDRICHRODA. Drop and pick-up field maintained until 24.4., 0430, as follows:

by 7 Div at ALS B

by 8 Div southwest HAIN B

b. Battle reconnaissance by the divisions: through continual surveillance of the battlefield day and night, from 22.4 until 24.4, establish the location of changes involving hostile observation posts, antitank defense, MLR, artillery positions, road blocks and barriers,

reserves. For reasons of deception the activity of patrols will not be increased.

4. *Organization and Combat Zones for the Attack:*

Right: 9th Div

Middle: 7th Div

Attached:

Corps Arty Btry 39

Hv Arty Btry 35 (only until 24.4, X+2 hours)

Left: 8th Div

Attached:

Tk Brig 12

Army Arty Regt 101

Smoke Bn 102

Boundaries

between 9th and 7th Divs: east edge ROCHHEIM—west edge ASCHARA—east edge ECKARTSLEBEN—east edge ILLEBEN—275.

between 7th and 8th Divs: east edge BRUHEIM—west edge GRUMBACH (STEIN B to 7th Div)—west edge UFHOVEN—west edge THAMSBRÜCK.

between 8th Div and I Army Corps: east edge GROSSENBEHRINGEN—west slope 367—west part of GR. HARTH—west edge ALTERSTEDT—east edge GROSSENGÖTTERN.

5. *Conduct of Attack.—a. General.*

After an artillery preparation of 45 minutes, which will cover the approach of the infantry to the line: NESSE—BIEBER, the infantry along the entire Corps front will

attack, crossing over the NESSE—BIEBER line at X hour. Simultaneously in the 8th Div combat zone the landing waves of the Tank Brigade will cross the same line.

As 1st Attack Objective, the Corps and the neighboring divisions of the I and II Corps, will win the line: 334 (northeast from MOLSCHLEBEN)—ESCHENBERGEN—292 (north from HAUSEN)—309 (northeast from WESTHAUSEN)—north edge of WANGENHEIM—278 (west from WANGENHEIM)—LOH B—TUNGEDAER HEIGHTS—LEICH B—edge of wood northwest GROSSEN—BEHRINGEN—WARTEN B.

The Tank Brigade will drive its attack through to include the hostile artillery positions in the area: TUNGEDA—REICHENBACH—OSTERBEHRÜNGEN—LOH B. Continuation of the attack after reaching 1st Objective only upon order of the Corps.

b. Coordination of Time.

X—45 until X—40 minutes: Surprise fire by all artillery to disturb hostile communications, reserves, and headquarters. Infantry and Tank Brigade begin to move into attack positions.

X—40 until X—20 minutes: Counterbattery fire by all artillery.

X—20 until X hour: Artillery fire upon hostile forward defensive positions. Smoking of B-STELLEN.³ The 3d Div will smoke particularly the forest edge north of GROSSBEHRINGEN.

X hour

Infantry and initial waves of Tank Brigade cross the line: NESSE—BIEBER B. Transfer of artillery fire to the

³ Observation posts.

hostile artillery positions rearward corresponding to the advance of the infantry attack. Simultaneously a box barrage around the point of penetration fired by the artillery of the I and II Corps.

Early advance of positions of the mass of the light artillery to Hill 309 (9th Div)—278 (7th Div)—LOH B—THÜNGEDAER—LORCH B (8th Div) will be arranged and carried out.

The Tank Brigade will, after reaching the 1st Objective and capturing the hostile artillery south of GR HARTH, assemble in the area BRÜHEIM-FRIEDRICHWERTH awaiting further orders of the Corps Commander.

6. The Corps Artillery beginning with the artillery preparation will maintain fire, by the 150-mm artillery, upon the road: GRAFENTONNA—LANGESALZA—GROSSENGÖTTERN.

7. *Corps Antiaircraft Artillery—Part of Army AA Art Regt 104 and Army Pursuit Squadron:* protect the preparation for the attack—defend the assembly areas from hostile air observation and air attack. Special protection of the tank assembly ordered in paragraph 5b will be provided.

8. *Corps Reserves.*

29th Inf

Corps AT Bn

Corps Engr Bn

The 29th Inf will reconnoiter for covered approaches to and possible assembly areas in the area: FROTTSTEDT.

9. The Divisions will utilize to the fullest extent cover and camouflage in preparation for the attack.

Divisions will submit their attack and fire plans to the Corps Commander not later than 23.4, 1200.

X hour will be announced at 23.4, 2300.

10. *The Corps Command Post* will remain at FRIEDRICHRODA until 24.4 (X-30 when it will be established at HAIN B).

Distribution

“A”

B

General of Infantry

3. EXAMPLE C SEPARATE ORDER (ARMY)

ARMY COMMANDER

ARMY HQ

GENERAL STAFF SECTION I

ALTENBURG, 1.12., 1500

NUMBER —

To RES INF REGT 19

1. Res Inf Regt 19 (with 1st Bn Res Arty Regt 7, 1st Co Res Engr Bn 7 attached) is attached to the X Army Corps (Hq at WITTCHENDORF). It is expected that Res Inf Regt 19 will be employed on the west flank of the X Army Corps in the vicinity of SCHLEITZ.

2. Reinfd Res Inf Regt 19 will be transported in trucks (Trk Bn II) via SCHKÖLEN—EISENBERG—HERMSDORF to AUMA. March to begin from HAUMBURG not later than 2.12., 0000.

The Commander of the Truck Battalion II will report at 1630 in NAUMBURG to the Commander of the Res Inf Regt 19. The loading of troops into trucks in the bivouac area is not possible before 2200.

After the troops are unloaded in the new area, the Trk Bn II will march immediately to ZETZ.

3. The Commander of Res Inf Regt 19 will report at the COURT HOUSE in AUMA at 1.12., 0200, where he will receive further orders through the Commander of the X Corps.

(by Radio)

For the Commander-in-Chief

4. EXAMPLE D

SPECIAL INSTRUCTIONS (DIVISION ADMINISTRATIVE ORDER)

1ST DIVISION DIVISION COMMAND POST
 GENERAL STAFF SECTION FRIEDENSTADT 8.10., 1930
 IB
 NUMBER —

SPECIAL INSTRUCTIONS FOR SUPPLY

(to Division Order Number— General Staff Section Ia,
 8.10., 1930)

1. *Ammunition.*—The supply of ammunition for the rear guards will be provided from the balances now in hands of troops and from the additional amounts to be delivered not later than 2200 to each regiment as follows:

75,000 rifle cartridges
 1,000 hand grenades
 130 flares
 60 signal light cartridges
 680 light infantry mortar shells
 330 37-mm shells

The supply of ammunition for the artillery will be handled by the existing supply installations. Supply of ammunition for the Division Reconnaissance Battalion will be handled by 1st Infantry Regiment.

As reserve for the rear guards, ammunition will be left back in the present ammunition distributing point under guard, as follows:

100,000 armor-piercing cartridges
 200 light infantry mortar shells

300 37-mm shells

600 105-mm light howitzer shells

The commander of the rear guard is responsible for the proper distribution of this reserve ammunition.

Place and time for issue of ammunition to the troops marching to the rear will be indicated later.

2. *Rations.*—Rations and reduced iron rations for the rear guards will be left behind under guard as follows:

For rear guards in east sector: INGERSLIEBEN CHURCH.

For remaining rear guards: GROSSRETTBACH CHURCH.

These rations will be collected by the rear-guard troops on 9.10., 0400.

Rations for remaining troops for 9.10. will be delivered to the bivouacs of March Groups A, B, and C, by means of supply column (animal-drawn) before 9.10., 0600. These supply columns will then remain with the march groups.

3. *Medical Service (Men).*

Collecting point (severely wounded) at FRIEDENSTADT.

Collecting point (lightly wounded) at GAMSTADT.

These collecting stations will be closed at 2100. The Med Co and Mtr Amb Plat (less section remaining with rear guard) will march to GRÄFENRODA via KLEIMRETTBACH—BITTSTADT—GRAWINKEL.

Collecting point for wounded will be established in GOSSEL to open not later than 9.10., 0700.

The F Hosp will remain in ARNSTADT until 9.10., 0400, and will then be marched to SUHL. Wounded

17

The German Armored Division (Extract), 1942

NOTICE

1. Information Bulletins, which have replaced Tentative Lessons Bulletins, have a dual purpose: (1) To provide all officers with reasonably confirmed information from official and other reliable sources, and (2) to serve as material for lectures to troops.

2. Nondivisional units are being supplied with copies on a basis similar to the approved distribution for divisional commands, as follows:

Inf. Div.	Cav. Div.	Armd. Div.
Div. Hq..... 8	Div. Hq..... 4	Div. Hq..... 11
Rcn. Troop..... 1	Ord. Co..... 1	Rcn. Bn..... 1
Sig. Co..... 1	Sig. Troop..... 1	Engr. Bn..... 1
Engr. Bn..... 1	Rcn. Sq..... 1	Med. Bn..... 1
Med. Bn..... 1	Engr. Sq..... 1	Maint. Bn..... 1
QM Bn..... 1	Med. Sq..... 1	Supply Bn..... 1
Hq. Inf. Regt., 1 ea. 3	QM Sq..... 1	Div. Train Hq..... 1
Inf. Bn., 1 ea..... 9	Hq. Cav. Brig., 2 ea. 4	Armd. Regt., 4 ea. 8
Hq. Div. Arty..... 1	Cav. Regt., 4 ea. 16	FA Bn., 1 ea..... 3
FA Bn., 1 ea..... 4	Hq. Div. Arty..... 1	Inf. Regt..... 4
— FA Bn., 1 ea..... 3	—	—
30	34	32

Distribution to air units is being made by the A-2 of Army Air Forces. An additional distribution is being made to the armored forces, tank destroyer battalions, and antitank units.

3. Each command should circulate available copies among its officers. Reproduction within the military service is permitted provided (1) the source is stated, (2) the classification is not changed, and (3) the information is safeguarded. Attention is invited to paragraph 10a, AR 380-3 which is quoted in part as follows: "A document . . . will be classified and . . . marked *restricted* when information contained therein is for official use only, or when its disclosure should be . . . denied the general public."

4. Suggestions for future bulletins are invited. Any correspondence relating to Information Bulletins may be addressed directly to the Dissemination Branch, Military Intelligence Service, War Department, Washington, D. C.

Foreword

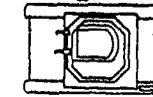
This bulletin is a translation of a captured German training manual on *The German Armored Division*, which was published in December 1940. At that time the number of German armored divisions was being increased and their organization changed. Comments by German commanders in Libya as late as October 1941 indicate, however, that the principles expressed in this manual have proved satisfactory with little or no modification.

The charts that follow have been added to the original German manuscript. They have been compiled from G-2 sources.

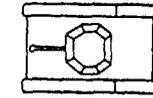
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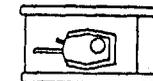
GERMAN TANKS



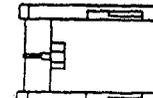
MARK I TANK
 Length: 12 ft. 6 in.
 Width: 8 ft.
 Height: 5 ft. 7 in.



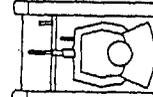
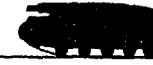
TANK HUNTER
 47-mm antitank gun
 mounted in chassis
 of Mark I tank



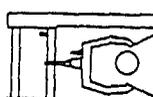
MARK II TANK
 Length: 15 ft. 4 in.
 Width: 7 ft. 2 in.
 Height: 6 ft. 5 in.



ASSAULT GUN
 75-mm gun mounted in
 chassis of Mark III
 tank



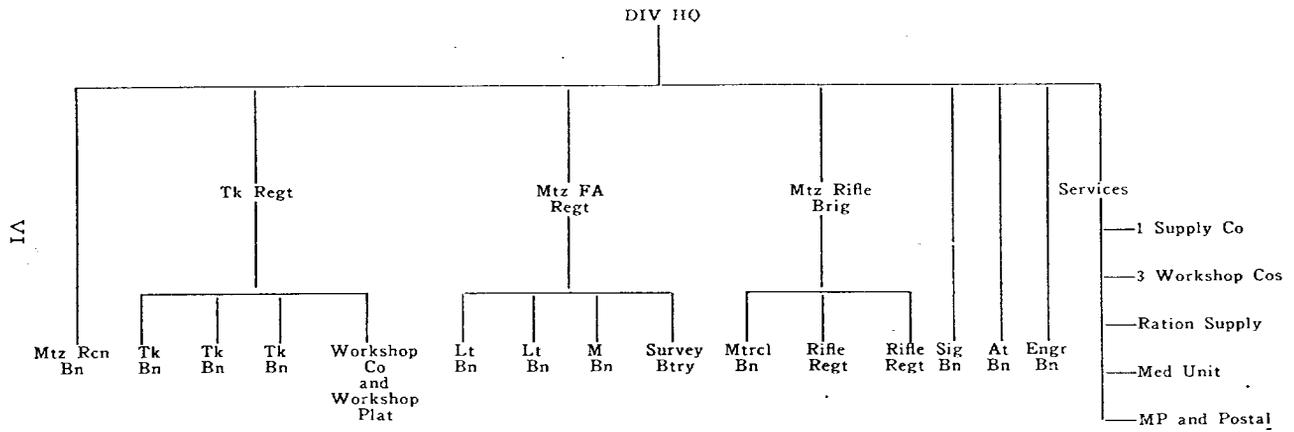
MARK III TANK
 Length: 17 ft. 8 in.
 Width: 9 ft. 9 in.
 Height: 7 ft. 9 in.



MARK IV TANK
 Length: 19 ft. 2 in.
 Width: 9 ft. 5 in.
 Height: 8 ft. 7 in.

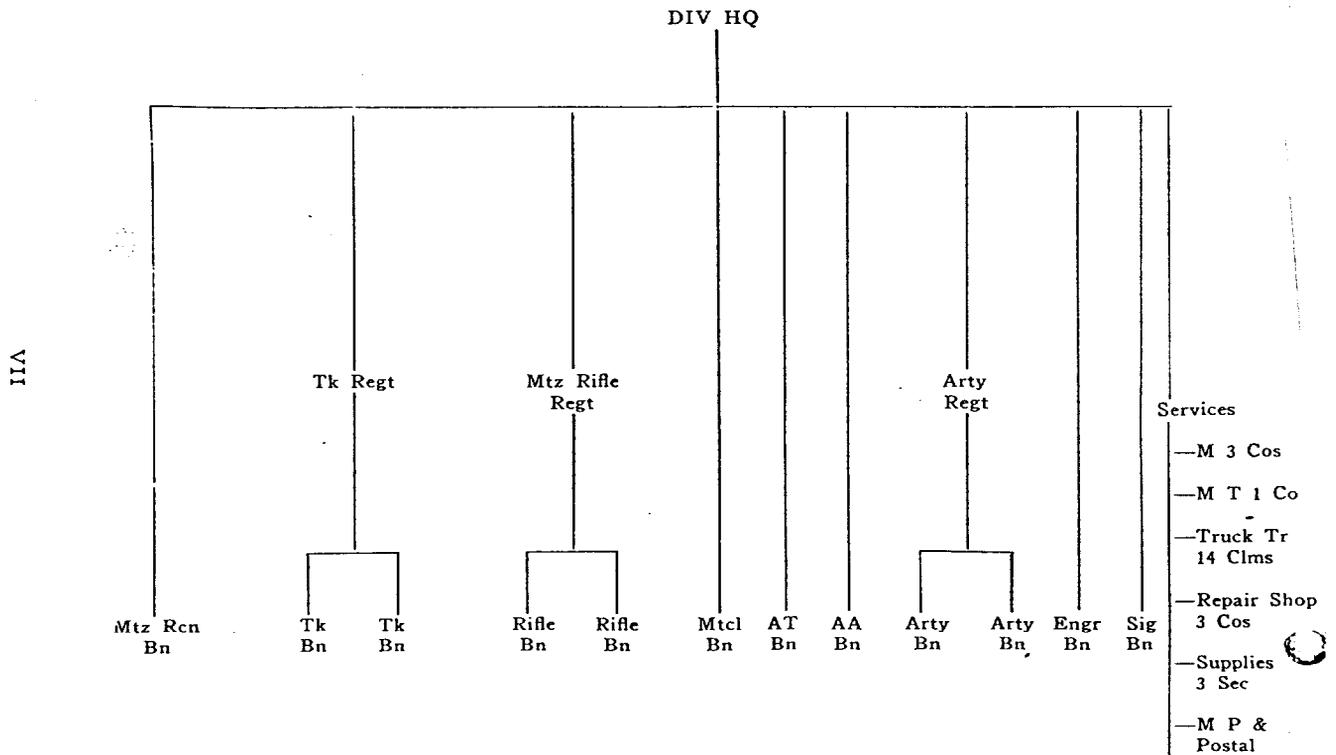


ARMORED DIVISION (STANDARD)

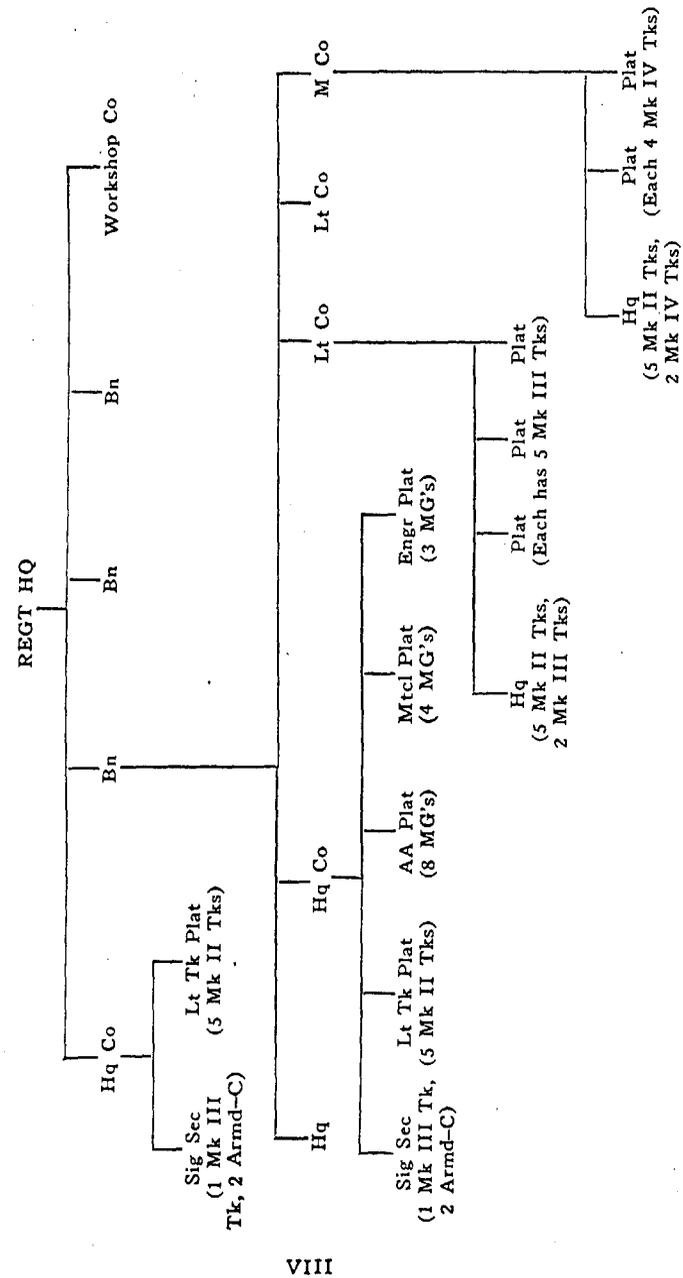


NOTE.—When engaged in operations, an armored division may have some of the following attached: assault artillery battalion, antitank battalion with self-propelled mounts, motorized anti-aircraft battalion, mixed anti-aircraft battery. It should be borne in mind that the organization of the armored division is very flexible, and is changed in accord with matériel available, the terrain, and the equipment of the enemy.

ARMORED DIVISION (LIBYAN)



TANK REGIMENT OF ARMORED DIVISION



THE GERMAN ARMORED DIVISION

Chapter 1

CHARACTERISTICS AND ORGANIZATION

1. The armored division is intended for strategic roles. It combines great fire power with high mobility, and its armor and speed restrict the effectiveness of enemy weapons.

2. Its strength lies in attack. It is especially suited for surprise appearances on the battlefield, rapid concentration of considerable fighting power, obtaining quick decisions by break-throughs, deep penetrations on wide fronts, and the destruction of the enemy. The attack of the armored division has a serious effect on the enemy's morale.

3. The nature of the terrain is a decisive factor for successful employment of the armored division. Full use of its speed can be insured by choice of good roads with bridges of adequate capacity, and by their being kept clear of other troops. Speed across country depends upon weather, formation of the ground, nature of the soil, and density of vegetation. It is slower than on roads. The full striking power of the armored division can best be developed in attack over rolling country with few features. Marshy, wooded, and rough country allows movement off the road only for short stretches, with reduced mobility. It may exclude the employment of tanks.

4. The components of an armored division are so proportioned that the detachment of individual units, especially of tanks, or their attachment to other units, restricts the fitness of the division for employment in strategic roles.

5. The main striking force of the division lies in its tank brigade. Its offensive infantry element is the motorized infantry brigade. In addition the armored division comprises motorized reconnaissance elements, motorized artillery, antitank units, armored signal units, antiaircraft machine-gun troops, and supply and maintenance services. In active campaigns an observation squadron (serves also for artillery observation) and a light antiaircraft battalion are attached to the division.

Chapter 2

ROLE OF THE ARMORED DIVISION

6. The armored division normally fights in the framework of the armored corps, but is also suited to carry out independent operations, in which case reinforcement with motorized infantry and artillery is usually necessary.

7. Its supreme role is to obtain decision in battle. Within the framework of the armored corps it can carry out the following tasks:

- a. Break through an enemy protective screen to make early contact with the enemy's main force;
- b. Obtain early possession of topographical features and sectors of decisive importance for further fighting;
- c. Gain surprise in an attack on the advancing enemy to frustrate his plans and take the initiative from him;
- d. Attack an enemy incompletely prepared for defense;
- e. Attack on a narrow front against a prepared enemy;
- f. Restore momentum to an attack which has come to a standstill;
- g. Break through on a wide front against a demoralized enemy;
- h. Exploit success and complete the destruction of the enemy by deep penetration or flank attack;
- i. Pursue a defeated enemy;
- j. Carry out strategic envelopment;
- k. Attack to destroy enemy tank units;
- l. Cooperate with parachute and air-borne troops.

8. The armored division acting independently can carry out the following strategic tasks:

- a. Reconnaissance in force in cooperation with strategic aerial reconnaissance;
- b. Early occupation of sectors important for further operations, of politically and economically important localities, and of industrial installations;

c. Delaying the enemy advance, providing a protective screen, or acting as a flank guard to a larger unit.

9. The armored division is equally suitable for breaking through a prepared position when the position is strengthened by isolated permanent fortifications. The cooperation of medium artillery and bombardment aviation then becomes necessary.

In an attack on a prepared position, the speed and mobility of an armored division cannot be exploited. There is a danger that tanks may be exposed to such heavy casualties against a prepared defense that the further employment of the division becomes impossible.

Armored divisions are therefore only to be used for breaking through a permanent front if infantry divisions are not available, if the delay in bringing them forward may result in losing an opportunity to exploit the success with armored divisions well forward, or if the enemy is already demoralized. The armored division must then be reinforced by motorized infantry, artillery, and motorized engineers, weapons capable of assaulting concrete works, and smoke troops. They must also be supported by bombardment aviation.

10. The armored division can attack across a river. The necessary amount of reinforcement by other arms, especially engineers, depends on the strength of the enemy and his defense, and on the width of the river.

11. The role of the armored division in a protective task is generally offensive. It carries out counterattacks to relieve parts of the front under heavy pressure, breaks up enemy tank attacks by surprise thrusts, is employed against the flanks of an enemy who has broken through, or attacks the enemy from the flanks or rear while he is held frontally.

If the armored division has to take part in a defensive operation, which will be exceptional, every effort must be made to relieve it as quickly as possible by infantry units.

12. The armored division can also be used independently to screen the withdrawal of large units. This task is usually carried out offensively.

Chapter 3

EMPLOYMENT OF THE ARMORED DIVISION

13. The speed and mobility of the armored division demand of all commanders boldness, powers of rapid decision, and ability to convert decisions into brief commands.

14. The strength of the armored division lies in concentrating the force of the tank brigade. This is the normal practice. It is the task of the commander to see that all arms of the division are used to support the tank attack. Individual arms must be mutually supporting, and each must be prepared to exploit the success of the other.

15. Task forces can be formed temporarily for specific missions:

a. In the attack, when the division is advancing on a broad front over several roads against a weaker enemy, or in traversing wooded or mountainous country;

b. In a rapid pursuit when the division has to anticipate the enemy in occupying important points, road junctions, potential bottlenecks, etc.;

c. In a withdrawal, to cover disengagement from the enemy.

Task forces are employed in accordance with the same principles that apply to the armored division as a whole. The division commander can influence the battle by employing reserves of all arms. Task forces, however, must be provided at the outset with all means necessary for the task allotted. The division commander must make every effort to reconcentrate all parts of the division under his direct command.

16. The object of the armored division in battle is destruction of the enemy, either by break-through or envelopment. The mobility of the armored division enables it to avoid a frontal engagement and to maneuver to the enemy's rear.

Foresight in choice of the terrain over which an anticipated engagement is to take place is of great importance. This terrain should be thoroughly covered by air reconnaissance. The art of

command lies in ability to choose the exact moment for deployment for battle so that the object may be achieved with maximum speed and minimum losses.

The armored division must be deployed in depth. When deep penetration is made, long flanks are frequently exposed. Anxiety on this cause must not, however, be allowed to hamper bold action nor divert the division from the decisive direction. Advance measures must be taken to screen the flanks and defend against air attack.

17. In battle the full striking force of the division must be used unsparingly. The more decisive the role of the division in the operation, the more important this becomes. The greater the forces that can be concentrated at one point, the greater will be the success and the smaller the losses.

18. The tank's ability to surprise by its speed and mobility must be fully exploited. Aids to this are the screening of movements, camouflage of bivouacs, and prevention of enemy air reconnaissance.

19. Accurate knowledge of the topography must be obtained by detailed study of maps and aerial photographs before orders are issued.

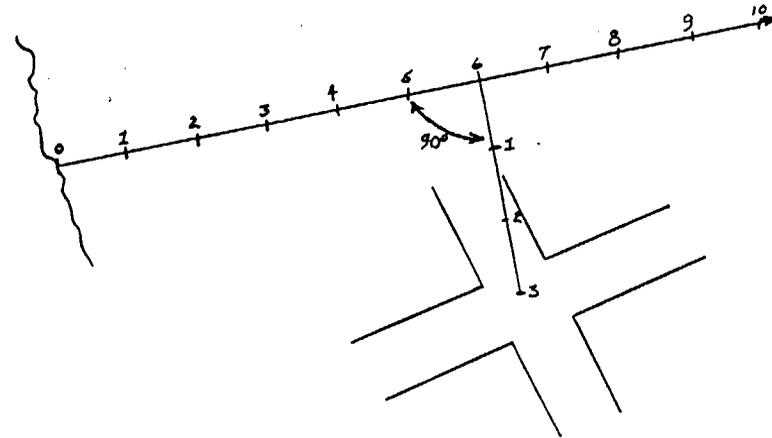
Subordinate commanders must be kept constantly informed of the current situation and the division commander's ultimate intention, in order to be able to adjust themselves to rapid changes in the situation which are often encountered as a result of the speed of movement, and in order to act in accord with the commander's general plan when unexpected difficulties and obstacles are encountered.

The cooperation of all parts of the division must be worked out in the greatest detail possible by the division commander. In order to avoid delays, frequent use will be made in the armored division of short warning orders. A thrust line (see note) will be given to the division during the attack in order that fresh directions of attack and objectives may be radioed in the clear. Important information gained by reconnaissance can also be communicated quickly and safely by this means.

Note.—The thrust line (*Stosslinie*) method is much used by the Germans for sending map references in the clear. It consists of a line drawn upon a

The situation and necessity for rapid action may compel the division commander to intervene temporarily in the command of lower units by setting new objectives for the tanks or the motorized infantry regiments.

20. Commanders of all units must establish themselves with an advance headquarters well forward, and must be in a position to survey the battlefield frequently in time to issue their orders map which theoretically may run in any direction but actually usually extends in the proposed direction of advance or down the axis of a reconnaissance unit.



The line, which begins at a fixed point and continues indefinitely in the required direction, is usually divided into centimeters for convenience. To give a map reference a perpendicular is dropped from the reference point to the thrust line. Measurements are then taken from the point of origin to the point where the perpendicular cuts the thrust line, then along the perpendicular to the reference point. Since the point may lie on either side of the thrust line, the second figure must be prefaced by either "right" or "left" or as one looks toward the enemy.

A typical reference would be "6 right 3." The figures are always in centimeters; therefore the actual distance on the ground will vary with the scale of the map used. The scale may start with an arbitrary figure, have dummy figures interspersed, or start with the number of the thrust line when there are several in a given area. These devices make the code difficult to break rapidly.

Instruments have been found consisting of a transparent ruler graduated in millimeters, with a shorter ruler similarly graduated fixed to slide up and down at right angles to the long ruler. Operators with practice can give references very quickly.

early and note changes in the situation.¹ This applies especially to the division commander.² On the move he will usually have his headquarters with the commander of the advance guard. In action he will choose a position from which he can most quickly and directly influence the conduct of the battle.

A tactical headquarters group will remain as long as possible with the division commander. Terrain, enemy activity, liaison with superior headquarters, and necessity for insuring unified command may, however, lead to separation. Even so, the tactical group must make every effort to be well forward. The division commander communicates with his tactical group by radio or messenger. He must keep constantly in touch with his tactical group in order to keep abreast of the situation as a whole.

It may be desirable to specify in division orders the route to be followed by the tactical group and the proposed location of the command post. Higher headquarters and units protecting flanks must have early notice of these points.

It must be made clear in orders which units are to establish message-dropping grounds.

21. Signal communications must be established early so that information and orders may be transmitted quickly to meet changes in the situation. As the radio method of communication employed by the armored division betrays the latter's presence to the enemy, radio silence must be maintained, especially by tank units, until the moment operations commence. Orders must therefore be communicated as long as possible by means of messengers, telephones, and, over long distances, by aircraft.

¹ See par. 140, FM 100-5, FSR.

² In this connection, note the following excerpt from "Panzer across the Meuse," in *The Field Artillery Journal* (April 1941):

"Of interest is General Guderian's method of exercising command in the field. His headquarters is divided into two echelons. The rear one (headed by the Chief of Staff) contains the larger part of the staff, and remains in fairly quiet places to study situation maps, work on orders, and to act as a clearing house for the flow of information to and from the front. The forward echelon of headquarters is led by the general himself (he is the 'outside' man) in a small cross-country car. Apparently Guderian sits in the front seat of this vehicle, which he frequently drives himself. With him are two staff officers and an adjutant. Following are two aides in motorcycles with side cars; then two or three messengers on solo motorcycles; and finally the armored wireless truck, or CP—an open armored vehicle equipped with radios, map tables, etc. Guderian used this car throughout the Polish campaign. With this small circus he spends his time up at the very front, circulating back and forth between his subordinate units."

After battle begins, orders are issued chiefly by radio. It is essential to proper functioning of the armored division that radio communication should function perfectly, since it controls not only communications within the division, but also between the division and neighboring formations, and between air and ground reconnaissance forces.

Radio must be safeguarded. All messages regarding future intentions which allow the enemy sufficient time to take counter-measures must be camouflaged in accordance with regulations. Messages and orders which call for immediate action are sufficiently camouflaged by use of the thrust line and code names.

22. If there is likelihood of cooperation of fighter and bombardment aviation with the armored division, contact must be made beforehand with commanders of the units involved, and details thoroughly worked out.

An air liaison officer must be allotted to headquarters of an armored division. He must have an air signal section to maintain constant touch with flying units. Timing and targets must be worked out in advance in cooperation with dive-bomber and bomber units. Commanders of air units must have early information of the movement of the armored division. Targets must be clearly laid down in order of priority.

Those elements of the division which are to receive aerial support in the attack must know the objectives to be attacked and the time, number, and duration of attacks to be made.

23. Cooperation of the armored division with parachute and air-borne troops must be coordinated as regards time and plans. Each must know the task of the other. The armored division must endeavor to establish contact with air-borne troops by swift attack. Radio communication must be established between the armored division and commanders of the parachute or air-borne troops.

Chapter 4

COMPONENTS OF THE ARMORED DIVISION

Section I

TANK BRIGADE

24. Because of its large number of guns and machine guns of various calibers, its speed of going into action and its maneuverability, the tank brigade can concentrate a heavy volume of fire on all targets. Its cross-country performance and armor enable it to exploit this fire power against the enemy at most effective ranges.

25. The success of the tank brigade depends upon its employment in mass formation and the concentration of the largest possible number of tanks to gain surprise in deep thrusts against the enemy's weak spots.

26. In all situations the success of the tank brigade is primarily dependent upon the personal leadership of the commander.

27. He carries out the reconnaissance of ground on which the conduct of the tank battle depends. On the basis of the division order, his knowledge of the terrain, and reconnaissance, he lays down the detailed order of battle for his brigade, its main line of attack, and its frontage and depth.

The tank brigade can be employed either in frontal or flank attack, and in several waves. The method depends upon the task, the terrain, the degree of resistance expected from the enemy, and the depth of the enemy's defensive zone. In general, flank attack is preferred.

When the situation is uncertain or the attack made over dead ground, it may be desirable to employ at first only a few elements, holding the remainder of the force in close reserve. The first wave of tanks must be given sufficient tanks with heavy caliber guns to insure that the enemy's antitank defense is quickly and surely neutralized.

28. On the basis of division orders, the brigade commander lays down the method of cooperation between tank regiments and supporting arms. During the battle he gives orders either verbally or by radio to the artillery regimental or battery commander accompanying him.

29. During the attack the brigade commander keeps the division constantly informed of the progress of the attack and of the objectives gained. On reaching objectives he decides whether the regiments are to be organized to pursue the attack or to reassemble under division orders.

30. During the attack the brigade commander directs his unit by means of radio. He has for this purpose the brigade signal platoon, which is detached from the division armored signal battalion. The nature of the task, the situation, and the allotment of other arms will from time to time necessitate change in the use of radio communications. Normally, the brigade commander will maintain radio contact with the division, his regiments, and the artillery. It may also be necessary, however, to establish radio communications with the motorized infantry and air force reconnaissance units, as well as with antitank troops. The brigade commander must make an early decision as to what communications are absolutely essential and whether an additional allotment is required from the division.

Radio communications from reconnaissance aviation working with the tanks may, if necessary, be supplemented by message dropping.

31. If task forces are formed, the commander of the tank brigade will normally command one of them.

Section II

MOTORIZED INFANTRY BRIGADE

32. The main effort of the armored division falls upon the motorized infantry brigade when the nature of the ground and tank obstacles prevent use of the tank brigade, and when it is essential to exploit the speed of the motorized infantry.

33. Equipment of the motorized infantry brigade with armored transport vehicles enables it to follow the tank brigade in vehicles over the battlefield, and to fight in close cooperation with the tanks.

The motorized infantry fights on foot. It can, however, engage an inferior or demoralized enemy without dismounting. These two methods supplement each other. Transport vehicle crews must therefore be kept close at hand while the infantry is fighting dismounted. In those cases where the motorized infantry brigade is not equipped with armored transport vehicles, it must dismount as soon as it comes within range of enemy infantry fire.

The motorized infantry brigade moves more quickly than the tank brigade on roads and tracks.

34. Equipment of the motorized infantry brigade with a large number of automatic weapons enables it to hold a broad front, even against an enemy of considerable strength.

35. The motorcycle battalion is an especially rapid and adaptable force. It is particularly fitted to anticipate the enemy in rapidly occupying important areas, to engage a weak enemy, to follow closely behind a tank attack, especially at night, in order to provide the tank brigade with necessary infantry protection, to reinforce the reconnaissance unit, to undertake wide and deep enveloping movements, to perform protective roles, and to act as a reserve.

36. The motorized infantry brigade has a signal platoon which is detached from the division armored signal battalion. On the move and when advancing deployed in vehicles, communications will be chiefly by radio. When attacking deployed on foot, wire communication becomes necessary.

37. If task forces are formed, the commander of the motorized infantry brigade will normally command one of them.

Section III

ARTILLERY REGIMENT

38. In keeping with the mobility of the armored division, the artillery must be employed in a mobile and elastic manner. Its equipment and speed in going into action enable it to give continued and effective support to the swiftly moving attack of the division. Its armor and its mobility on self-propelled mounts permit part of the artillery to follow the tanks, even within range of enemy infantry weapons, and to go into action from positions where fire by direct laying is possible. Armored command and

observation vehicles enable the officer observing and directing the artillery fire to accompany the tank attack and to cooperate closely with the commander of the tank brigade.

39. The relatively small size of the artillery component makes it necessary that it be allotted only a few tasks of major importance. Fire of the artillery must be strictly concentrated upon such targets as cannot be engaged by the tanks.

In an attack against an enemy organized for defense, every effort must be made to reinforce the division artillery, particularly with medium batteries. Artillery reinforcements obtained from the GHQ pool, by their equipment and training, are not so well fitted for direct support of the tank attack as is the division artillery. Their primary role should be to engage targets in the enemy's rear and flanks after the first penetration has been made.

Smoke troops can give effective assistance to artillery.¹

40. Artillery spotting planes and the armored observation battery report enemy gun positions and provide the commander with valuable supplementary information. They can undertake tasks of registering and spotting for their own artillery.

Spotting posts of the armored observation battery lying outside the division's sector must be given protection.

Section IV

ANTITANK BATTALION²

41. As a result of its speed, mobility, cross-country performance, and protection against tanks, the antitank battalion can attack enemy tanks. It unites mobility and fire power in battle. Its object is to engage and destroy enemy tanks by surprise attack from an unexpected direction with concentrated fire.

¹ Smoke troops are probably attached to the armored divisions only on special missions. The smoke company is believed to consist of about 120 officers and enlisted men and 24 vehicles. In addition each company has eight 81-mm mortars, and it is possible that 100-mm mortars may be introduced.

² The antitank battalion comprises headquarters, signal section, three antitank companies, and probably one antiaircraft company. An antitank company consists of headquarters, signal section, and three platoons. Each platoon consists of four sections each armed with one 37-mm AT gun, and one section armed with two light machine guns. The 37-mm AT guns are now being replaced in many units by 50-mm AT guns. The antiaircraft company is believed to consist of twelve 20-mm superheavy AA and AT machine guns.

42. In addition to engaging enemy tanks, the antitank unit has the task of neutralizing enemy antitank defenses, thereby supporting its own tanks.

43. Antitank units, especially when supporting motorized infantry, can also use HE shell to neutralize especially troublesome enemy defense areas. Heavy antitank units can engage loopholes of permanent defenses and of fortified houses.

44. Antitank units will normally be employed in companies. In an attack against strong enemy tank forces, every endeavor should be made to employ the battalion in a mass formation. In engaging loopholes and enemy defense areas, antitank units will be employed by platoons or with single guns.

Section V

ARMORED ENGINEER BATTALION³

45. The armored engineer battalion is able to follow tanks everywhere on the battlefield. In cases where not all the battalion vehicles are armored or capable of moving across country, only the armored engineer company of the battalion can be used in direct support of the tank brigade.

46. The task of the armored engineers is to provide the armored division on the march and in battle with the necessary facilities for movement. These include:

- a. Seeking out and removing obstacles in the line of advance;
- b. Clearing lanes through mine fields;
- c. Marking mined areas;
- d. Constructing crossings and bridges with improvised or standard equipment capable of carrying all vehicles of the armored division.

In addition, armored engineers cooperate especially in the attack against permanent defenses.

³ The armored engineer battalion consists of headquarters, 3 light motorized companies (possibly only 2 in some cases), 1 motorized heavy bridge column, and 1 supply park. The motorized companies have 4 officers and 183 enlisted men each, and are armed with 9 light machine guns, 153 rifles, and 34 pistols. The heavy bridge column comprises all the equipment and personnel necessary for construction of a bridge of 28-ton capacity. It has 6 officers, 184 enlisted men, and is armed with 1 light machine gun, 153 rifles, and 36 pistols. The supply park has 2 officers and 48 enlisted men, and is armed with 1 light machine gun, 36 rifles, and 14 pistols. The personnel and engineer equipment is moved in passenger cars, trucks, tractor trailers, and motorcycles.

47. The large number of engineer tasks necessitates economy of employment. The engineer force must not split up into small detachments. All other tasks must be subordinated to the main function of insuring a clear passage for advance of the tank brigade; therefore every endeavor must be made to employ the armored engineers before the tank attack begins.

48. The tank brigade, the motorized infantry brigade, and the reconnaissance unit each has its own engineer platoon. The nature of the task, the situation, and the terrain may in some cases necessitate its reinforcement by parts of the armored engineer battalion.

Section VI

ARMORED SIGNAL BATTALION⁴

49. In keeping with the mobility of the armored division, the armored signal battalion is well equipped with radio and telephone equipment. Cross-country armored signal vehicles can accompany the tank attack wherever it goes and supply the communication necessary for its command.

50. The chief signal officer of the division must be kept informed of the current situation, plans, and employment of troops in order for him to make suitable arrangements for communications.

51. Radio communications must be insured by employment of sufficiently powerful sets in point-to-point traffic. In event of a rapidly moving attack by the armored division, the chief signal officer must have at his disposal a reserve of radio equipment.

52. Telephone communications, especially to superior headquarters, must be maintained as long as possible. It is important to cooperate with the corps signal unit in pushing forward a main artery as rapidly and as far as possible.

Existing civilian telephone lines are to be used when possible. In rapidly moving operations over wide areas, the division commander decides if and when wire communications are to be established.

⁴ The signal battalion of an armored division consists of headquarters, an armored radio company, an armored signal company, and a light combat train.

Section VII

LIGHT ANTI-AIRCRAFT BATTALION

53. The units of the armored division are vulnerable to attack by enemy aircraft. It is normally not possible to give protection to all parts of the armored division. If army anti-aircraft units and heavy air force anti-aircraft units are attached to the division, the employment of all anti-aircraft fire power must be unified.

54. The scanty proportion of fire power forces the command to limit tasks of the light anti-aircraft battalion, and to concentrate them at especially threatened localities.

55. In cases where the anti-tank battalion does not possess guns effective against tanks at longer ranges, heavy anti-aircraft units or single guns will be used in anti-tank defense and assault of fixed defenses, according to the principles in paragraphs 42 to 44.

Chapter 5
RECONNAISSANCE
Section I
GENERAL

56. The rapid movement of an armored division over wide areas demands forethought in directing and executing reconnaissance. Reconnaissance will be carried out by the air force reconnaissance squadron (attached to the armored division) and the motorized reconnaissance units, augmented by information collected by the armored observation troop.

57. Tasks given to the various reconnaissance units must supplement each other. In view of the small allotment of reconnaissance forces, supplementary tasks must be allotted for more detailed reconnaissance in a decisive direction only. Aerial and ground reconnaissance units must maintain close liaison.

Section II
AIR RECONNAISSANCE

58. The armored division can obtain its information about the enemy most rapidly from the air reconnaissance squadron.

59. This air reconnaissance squadron covers objectives 30 miles in front of the foremost parts of the division. At greater distances the army reconnaissance squadron of the armored corps is responsible. The limits of reconnaissance on the flanks are determined by the presence or absence of one's own troops, and the distances at which they are located.

60. The air force commander with the armored corps can take control of the armored division reconnaissance squadron, if direction of reconnaissance by the armored corps becomes necessary.

61. In tactical reconnaissance the squadron can be employed in the following special missions:

- a. Watching railways and roads, especially for movements of tanks, antitank and motorized forces;
- b. Reporting serious obstacles and barriers, and areas suitable for defense against tanks;
- c. Reporting the nature of the terrain in the line of the division's advance.

It is of special importance to determine whether there are enemy forces concentrated to move against the flanks of the division.

62. Aerial photography must be planned in advance, as it provides valuable data for employment of the division.

63. In air reconnaissance during battle, watching over the tank brigade is of special importance when the latter is operating in advance of the other units of the division. Early confirmation of the positions of enemy antitank guns, the concentration of enemy tanks, tank obstacles, and ground suitable for tanks is important. The objectives reached by one's own tanks also should be reported.

64. Reconnaissance aircraft can give advance warning of approaching enemy aircraft.

Section III
MOTORIZED RECONNAISSANCE BATTALION¹

65. The division puts the motorized reconnaissance battalion well in front when it needs to supplement air reconnaissance

¹ The motorized reconnaissance battalion of an armored division consists of headquarters, a motorized signal corps platoon, 2 armored car companies, 1 motorcycle company, 1 heavy weapons company, and a light ammunition column. The motorized reconnaissance battalion has 12 heavy armored cars and 42 light armored cars and is armed with 63 light machine guns, 6 heavy machine guns, 12 20-mm machine guns, 3 37-mm antitank guns, 2 75-mm cavalry howitzers, 3 81-mm mortars, and 3 50-mm light mortars. The armored car companies consist of 6 heavy armored cars and 21 light and superlight armored cars, and their armament consists of 24 light machine guns, 1 heavy machine gun, and 6 20-mm machine guns. The motorcycle company has 8 solo motorcycles, 41 motorcycles with side cars, and 10 light trucks, and is armed with 9 light machine guns, 4 heavy machine guns, and 3 50-mm light howitzers. The heavy weapons company has 6 light machine guns, 3 37-mm antitank guns, 2 75-mm cavalry howitzers, and 3 81-mm mortars.

quickly, and when a clear picture of the enemy's dispositions can be obtained only by fighting. The reconnaissance battalion is fitted for this because of its equipment with armored vehicles and numerous automatic weapons. To carry out reconnaissance in battle against a stronger enemy, it must be reinforced.

66. The motorized reconnaissance battalion is fast, and has a wide radius of action. It can be employed for distances up to 60 miles. The frontage on which reconnaissance is carried out will generally be decided by the armored corps. In independent employment of the division, conditioning factors are estimated strength of the enemy, number of areas to be reconnoitered, road conditions, and nature of the terrain. It may extend to 35 miles, and frequently even more on open flanks.

67. The abundance of reconnaissance tasks makes it necessary for the command to concentrate on the essential. Apart from tasks which any reconnaissance unit may be called upon to carry out, the motorized battalion must also give early information of enemy antitank defenses, and by reconnaissance of the terrain prepare the way for movement of the armored division.

68. As soon as battle begins, the motorized reconnaissance battalion must receive orders as to whether it is to continue its reconnaissance activity, hold temporarily important features, withdraw through the division, clear the front, or carry out reconnaissance on the flank. Because of the nature of its composition, the motorized reconnaissance battalion is not suited for defensive missions. For example, an open flank may be watched over by long-range reconnaissance but must be protected by other troops.

Section IV

UNIT COMBAT RECONNAISSANCE

69. Combat reconnaissance must be initiated as soon as the division is deployed. It is supplemented by reconnaissance platoons of regiments, by the armored observation troop, and by reconnaissance patrols on foot.

70. In combat reconnaissance, the location of enemy anti-tank weapons by all arms of the armored division is of special importance.

71. In cases where the tank brigade and the motorized infantry brigade are not equipped with tanks for battle reconnaissance, motorcyclists, infantry in armored transport vehicles, and bicyclists will carry out the reconnaissance.

Section V

COOPERATION BETWEEN AIR AND GROUND RECONNAISSANCE

72. Cooperation between air and ground methods of transmitting reconnaissance reports must be laid down by the division. Air reconnaissance will frequently show the motorized reconnaissance unit the direction in which reconnaissance must be developed. The motorized reconnaissance unit must have direct radio communication with the reconnaissance aircraft. If this is not possible, it will tune in to the reports of the reconnaissance plane.

73. In order to screen radio traffic, the reconnaissance unit will, as far as possible, communicate its reports to a station already known to the enemy. The division will listen in to messages.

74. Reconnaissance pilots can report either by means of radio, message dropping, or verbally on landing. The most rapid means is by radio, or by message dropping during flight. Radio communication is to be preferred as it offers the advantages of allowing queries to be made from the ground and new tasks to be communicated to the observer.

As far as radio equipment permits, units of the division should listen to the air observer.

Chapter 6

MOVEMENT

Section I

GENERAL

75. On good roads free of traffic, the following speeds are possible: full-track vehicles—day 12 mph, night 7.5 mph; half-track vehicles—day 18 mph, night 9 mph; motorcycles—day 24 mph, night 12 mph.

In 24 hours the division can move 90 to 120 miles with full-track vehicles, and 150 to 210 miles with other vehicles.

76. Distances covered by the armored division and its freshness for the battle are influenced to a decisive degree by the terrain and the road network. Movement of the armored division is appreciably influenced by unfavorable weather conditions. This must be taken into account when missions are assigned.

77. Early and continuous reconnaissance of roads to be used in the advance is necessary to insure speed of movement. Engineer reconnaissance of roads must be combined with that of the reconnaissance units. Valuable assistance can be obtained from visual reconnaissance and aerial photographs. This road reconnaissance will be carried out by reconnaissance detachments under the command of officers. Normally they will be assigned their tasks by the commanders of the march columns. Frequently they will have engineers attached so that any obstacles can be speedily removed. These detachments may also be called upon to carry out reconnaissance of rest and assembly areas.

The advance of the division must not be delayed by waiting for fresh reports as long as the division can withdraw in case of necessity.

78. Movement and traffic control will be carried out in accord-

ance with the principles laid down in *Movement and Traffic Control*.

79. The speed with which all troops of the division can catch up permits large intervals between individual units and groups within the march columns, provided the division is allotted roads with no time limit. In this case, unified control of the march columns is unnecessary. Individual units form at the times allotted them, and are in turn given the order to move. By this means the commander maintains control over movements of the division. If the foremost elements of the columns are held up, units behind are not necessarily held up in their turn. The different speeds of movement in the division are compensated for. Complete march columns may also be formed without previous assembly.

Large intervals between individual columns necessitate strict traffic control in order to prevent other troops from mingling in the movement of the division. If the higher command lays down definite times during which the division is to use certain roads, intervals between individual march columns must be so regulated that the roads are cleared within the time allotted.

80. If sufficient roads are available, the advance will normally be made in several columns, but if there is a possibility of contact with the enemy, the lateral interval between march columns must be such as to allow the division to concentrate swiftly for unified employment.

81. The intention of surprising the enemy, as well as the threat of air attack, frequently makes night marches necessary. The division will lay down the degree of lighting necessary.

Speed in night marches depends upon visibility. When no lights are used for driving, speed must be dictated by considerations of safety. Road reconnaissance and clear signposting are indispensable in night marches.

82. Liaison between the division commander and his tactical group and the march columns, march groups or individual units on the move must be insured by liaison officers, messengers, and radio. Radio sections detached for this purpose listen in, even during periods of radio silence.

It is desirable to establish points along the main route of advance with which units moving on other roads can establish timely liaison. Liaison over long distances can be established

by means of aircraft. They can also be employed to cover the movement of the division and report the points reached by individual columns. Within the march columns and march groups liaison will be maintained by messengers.

83. Halts of 20 minutes should be made every 2 hours, or when necessary. Unified divisional control of timing for the individual march columns and march groups is essential. Within a march column no commander may halt independently, even for a short time, as each halt extends itself to the rear and causes undesirable blockages and increased gasoline consumption.

A rest is essential under normal conditions after a 4- to 5-hour movement. It conserves the gasoline supply and can be used to give the drivers food and rest. It should last for at least 3 hours.

Rest areas must be reconnoitered in advance. They must permit a rapid resumption of the advance. Rest areas for troops on wheeled vehicles and motorcycle troops are generally close to the road; for tracked vehicles they are some distance from the road.

84. Long marches make the same demands on vehicles of the division as does battle itself. After 4 or 5 days' operations it is essential, in order to maintain efficiency of the armored division, that time be allotted for recovery and overhaul. If the situation or military necessity forbid this, the commander must accept the fact that parts of the division will be temporarily unfit for service.

Frequently a rest of several hours will be sufficient to repair damaged vehicles. Troops must be informed of the duration of the rest period.

Section II

MARCH ORGANIZATION

85. With the rapidly changing situation of the armored division, there is no hard and fast rule for march organization. The command must adjust march organization to suit a wide variety of demands.

86. If combat is not expected during the march, wheeled, half- and fully-tracked vehicles move together.

87. If contact with the enemy is expected during the march, the controlling factors are the task, enemy resistance to be expected, and the terrain.

88. At the same time, care must be taken to see that units are allowed to overtake march columns only if the advance elements of the column are halted in order to leave the road clear and all traffic from the other direction is held up.

89. If the situation indicates that contact with the enemy will require immediate employment of the tank brigade, the latter must be placed well forward in the columns. If, on the other hand, it can be seen from the situation or the nature of the ground that tanks cannot be used on first contact with the enemy, then the motorized infantry will lead. The tanks will follow, be given a separate route, or will be kept in readiness off the road.

If the situation requires the division to be employed in task forces, movement will be carried out in mixed march groups. Their composition will be dictated by requirements of the impending battle. An attempt should be made, even within mixed march groups, to assign separate roads to tanks and to other arms. This must, of course, depend upon the tactical situation and a suitable road system which allows advance on a broad front.

If important sectors are to be occupied in advance of the enemy or during pursuit, special mobile advance detachments may be formed. They hurry on without regard to maintaining contact with the division behind them. Their composition must be such that they can quickly break any expected enemy resistance and brush aside obstacles. Engineers must be allotted to these detachments.

It may be advisable to place the reconnaissance forces and the advance units temporarily under the same command. This must be ordered by the division.

90. The artillery must be well forward so that it will be prepared for action.

Engineers are to be assigned to all march columns if special tasks do not require the concentration of engineer forces.

91. Combat vehicles of all units will be divided into vehicles which the troops require during action and those which are not apt to be required immediately. The first group moves with units, the second will follow either under control of commanders of the

march columns or under unified control of the division according to the division commander's decision.

Section III

SECURITY ON THE MOVE

92. The armored division protects itself against a ground enemy by early initiation of ground and air reconnaissance.

93. If early contact with the enemy is expected, the advance will be covered by an advance guard. If the advance is made along more than one road, each march column will be allotted an advance guard.

Strength and composition of the advanced guard are dictated by the situation, terrain visibility, and strength of the march column. If the tank brigade follows immediately behind the advance guard, the fighting strength of the latter may be kept relatively small. In suitable country, the tank brigade, or part of it, may take over the duties of advance guard in order to destroy enemy resistance immediately. If considerable antitank opposition, road blocks, or natural obstacles are apt to be encountered, the advance guard should be composed predominantly of motorized infantry. In most cases artillery, engineers, and antitank units must be allotted.

94. Areas which have been reported clear of the enemy will be covered by the advance guard in one bound, except for short halts, in order to enable the division to advance without hindrance. If enemy activity is likely, the advance guard may be ordered to proceed by bounds. This must not interfere with forward movement of the division.

The interval between the advance guard and units following will vary according to the strength of the formation and probability of enemy activity. It may be as much as 1 hour.

If the advance of the division is delayed by road blocks in great depth or by the enemy rearguard, it may be desirable to separate those parts of the division which are not immediately required for removal of obstacles or enemy resistance, and to allow them to rest off the road until the advance can be resumed smoothly. This avoids traffic jams and lessens wear and tear on both troops and engines.

95. March columns guard against threats to the flanks by reconnaissance. When necessary, forces must be sent along parallel roads to protect the main group, or must be pushed out to the flanks of the main route of advance.

96. Antitank defense during movement will be provided by incorporating antitank detachments in columns which are inadequately equipped with antitank weapons. The companies of antitank battalions will, for this purpose, be placed under command of those groups to which they are to be assigned on deployment.

97. For antiaircraft defense, light antiaircraft machine-gun units will usually be assigned to each march column. At bottlenecks and when the columns are halted, antiaircraft machine-gun units must be employed *en masse*. Frequently antiaircraft troops or antiaircraft machine-gun companies must be sent ahead with the advance guard in order to provide early antiaircraft defense at threatened points. Antiaircraft units can be employed leapfrog fashion during the advance only if halts of considerable length are made to enable them to push forward again.

Protection from daylight air attack demands full use of cover and dispersion. The advance must be continued despite enemy air attack. If this is impossible, the commander will order vehicles to seek cover off the road with troops dismounted.

All troops and all suitable weapons will be employed in antiaircraft defense. If road conditions permit, machine gunners will open fire against low-flying aircraft independently, at the same time warning other troops. Efforts must be made to obtain fighter aircraft protection.

By night the advance will be halted only if enemy aircraft directly attack the troops.

98. The possibility of gas-spray attack from aircraft must always be borne in mind. Orders must be issued before the advance, stating whether vehicles will use tarpaulins and whether troops are to wear antigas capes.

Chapter 7
DEPLOYMENT

99. As a rule, deployment precedes the division's organization for battle. It enables units in the rear of the columns to move quickly into battle, making full use of space for maneuvering. The longer the columns, the earlier deployment must be ordered. Increased readiness for battle compensates for the reduction in speed resulting from advancing deployed.

100. The advance in deployed order is protected by combat reconnaissance. If the tactical situation demands it, artillery elements may be employed to cover deployment. Special routes must then be allotted to the artillery, so that it may take up its proper position after its support mission is completed.

101. If the division commander has insufficient data at the time of deploying to lay down objectives to commanders of subordinate units, the latter must advance by bounds deployed. New bounds must be ordered early in order to obviate unnecessary delays when bounds have been reached.

102. Early orders are necessary for employment of antiaircraft machine-gun units for the protection of deployment.

Chapter 8
ATTACK
Section I
GENERAL

103. In armored division combat, the decision is gained by attack of the entire tank brigade in one body. Employment of the brigade is therefore of decisive importance. The main effort will be made where the tanks can find suitable terrain and battle conditions.

The role of the other units of the armored division is to provide conditions necessary for employment of the armored brigade, to support the tank attack, to protect the flanks, and to insure that success is exploited by close support. The motorized infantry enables the armored division to seize ground taken by the tanks and hold it for a considerable period.

104. The armored division must endeavor, by obtaining early possession of vital points, to open the way for an attack.

105. If the armored division succeeds in surprising an enemy ill prepared for defense, the division will attack without deploying. Attack without deploying can also be considered if the enemy is advancing to attack. The rapidity with which fire can be brought to bear and the combination of fire power and movement in the tank brigade compensate for the enemy's advantage in being prepared for attack.

Attack is preceded by detailed preparation if the enemy's defense is organized and antitank defense is expected.

106. The armored division's actual frontage of attack is normally less than frontage of the sector allotted to it. It depends upon the tactical situation, the terrain, and the nature and strength of opposing forces.

An attack against an enemy whose defense is organized requires concentration of the armored division's forces. Against an inferior

or demoralized enemy, or where there is little antitank opposition, a series of attacks at several separated points is frequently successful. Areas which have natural antitank defenses are well mined, or are protected by strong antitank organization, may narrow the attack or impose a temporary division of the attacking forces.

107. Attack is made easier where the enemy has limited visibility. Attack at dusk or during darkness may lead to decisive results and completely disrupt the enemy. Suitable ground and good roads along which to press home the attack are essential.

Fog precludes observed defensive fire, restricts the movements of tanks, and makes it difficult to identify the objectives allotted to them.

Smoke assists the attack of the tanks if it is used to screen flanks and blot out antitank defenses and observation posts in the enemy's rear. It can be laid down by attached smoke units, tanks, or artillery, or can be sprayed or dropped in bombs by aircraft. Spray from low-flying aircraft is possible only when the enemy's anti-aircraft defense is negligible or neutralized.

Section II

CONDUCT OF THE ATTACK

108. Rapid and unexpected attack is the secret of success and leads to decisive results.

109. In an attack without deployment, the objectives allotted will generally be distant. Over difficult terrain or where the situation is not clear, especially when the attack has not been preceded by ground reconnaissance, the division may move forward by bounds in order to keep its forces together in readiness for unified action. Orders must be given early enough so that a steady, unimpeded advance is maintained and the enemy is given no time to organize his defense.

110. An axis will be laid down for the attack.

111. Wherever possible the attack will be led by the tank brigade. A short halt will usually be necessary in order to provide the attack with requisite breadth and momentum. A favorable opportunity will be exploited without delaying to make this preparation, even if only part of the armored brigade is immediately

available. In such a case the remainder of the tank brigade will follow deployed, so that it may immediately be thrown into the attack if the enemy's resistance stiffens.

112. The success of the tank attack depends upon neutralizing the enemy's antitank defense. All arms must support the tank attack to this end.

113. The motorized infantry follows the tanks in vehicles, deployed, as long as the enemy's fire allows. Troops dismount in order to attack defense areas which the tank brigade has not destroyed.

Contact between the tank brigade and the motorized infantry following must not be broken. If there are enemy elements which have not been attacked by the tanks, or if there is a likelihood of enemy defense areas resuming activities after the tanks have passed, the tank brigade must set aside part of its force to assist the forward movement of the motorized infantry. It may be desirable to attach part of the tank brigade to the motorized infantry for this purpose.

114. The attack must be pressed home to the objective regardless of threats to flanks. Threatened flanks will be protected by motorized infantry or elements of the antitank battalion. Frequently sufficient flank protection can be given by reconnaissance. If the situation allows, it may be advisable to employ forces farther in rear against an enemy attacking in the flank. This is not done by diverting them so that they meet the enemy in a frontal attack, but by using them even farther back so that they in turn strike at the enemy's flank.

115. An attack without deployment allows insufficient time to organize any artillery preparation.

The artillery engages targets which have not been reduced by the tanks and which impede the progress of tanks and infantry. Such targets are primarily antitank weapons and defense areas in country possessing natural tank defense (built-up areas, woods) within and on either side of the sector in which the tanks are attacking.

116. In order to obviate the danger of dispersion of fire in a rapidly moving battle, the commander must always make sure that the fire of several batteries is concentrated on a single objective. The main artillery effort should be concentrated either

far ahead of the tanks or outside their sector of attack. No time can be laid down for the artillery fire to be lifted. Isolated targets which appear in the paths of the tanks must be engaged by the tanks themselves.

117. It must be possible to support the tank attack throughout its depth with observed fire. Accordingly, observation and command posts must be pushed well forward before the attack begins, and fire positions must be so chosen that the artillery fire follows the line of attack as long as possible.

As a rule, part of the artillery, preferably batteries on self-propelled mounts, will be assigned to cooperate with the tank brigade. The commanders of the tank and artillery units must make every effort to confer. At the beginning of the battle the artillery commanders will be at observation posts from which they can give definite support in early stages of the attack.

118. If the tank attack gains ground, the artillery must be kept in close support in order to prevent its losing contact in subsequent stages of the assault. Constant support must be insured by employing artillery troops in leapfrog fashion.

Artillery commanders will move quickly in command cars to points from which they can follow the progress of the attack and support it by concentrated, observed fire. Forward observers in armored observation vehicles will move with the foremost tanks.

Artillery liaison officers, who accompany commanders of the tank units, communicate the latter's requirements to artillery commanders. In addition, personal contact with commanders of the tank units should be sought. Radio communication must be established.

If, after a successful break-through, the tanks find themselves in country clear of the enemy, all available routes must be used in order to push the artillery forward with the last wave of tanks so that they may be ready for action immediately if fresh enemy resistance is encountered.

119. There must be close cooperation between artillery not employed in direct support of the tank brigade and one or more artillery spotting planes. This is essential if enemy artillery is to be rapidly and effectively engaged and fire brought on important targets concealed from ground observation.

Parts of this artillery will, if their fire can be controlled by spotting planes, remain in their fire position as long as range of the guns allows.

One of the most important tasks of the artillery spotter plane is to keep watch for the appearance of enemy antitank and tank forces, and to direct artillery fire against these targets. Valuable data for the choice of fresh targets can be gained by the artillery commander from listening to the reports of reconnaissance aircraft.

120. The armored engineer battalion will usually be attached to the tank brigade. It accompanies the tank brigade, removing tank obstacles encountered during the attack. Material for improvising crossings over small cuts should be carried. Those parts of the engineer battalion which are not yet equipped with engineer tanks must follow as closely as possible behind the tank brigade.

121. The antitank battalion accompanies the tank brigade in the attack, covering its flank and supporting it in neutralizing enemy tank and antitank defenses. Antitank units not yet armored or equipped with self-propelled mounts follow the armored brigade by bounds, with the special task of engaging enemy tanks attacking the flanks and rear of the tank brigade.

Parts of the antitank battalion can be employed to provide anti-tank defense for the motorized infantry.

122. Depending upon the air situation and nature of the terrain, light antiaircraft artillery and machine-gun units attached can be assigned the task of protecting the tank brigade, artillery, reserves, and transport vehicle assembly points against enemy air reconnaissance and attack. Headquarters and important supply centers, especially for ammunition and gasoline, must frequently be given protection.

123. Rapid progress of an attack while the division is in motion rarely allows telephone communications to be established. Frequently only the most important radio communications will be possible because of the necessity of maintaining an adequate reserve to meet unforeseen demands. There must always be communication with the superior commander, the tank brigade, the motorized infantry brigade, the artillery, the armored reconnaissance unit, and the air reconnaissance unit.

124. If, in attacking on the move, the commander of the armored division decides to use his motorized infantry as the spearhead of

attack, it will remain in vehicles as long as the enemy and the terrain permit. After dismounting, its tactics will follow the principles laid down for infantry in the attack.

As long as the infantry is moving in vehicles, artillery elements on self-propelled mounts will follow closely in order to support their attack rapidly with observed fire.

As soon as the enemy's resistance weakens, the motorized infantry should return to its vehicles in order to make full use of their speed.

The tank brigade should be held back until it can be used in support of the motorized infantry.

Envelopment should be attempted.

The antitank battalion accompanies the motorized infantry brigade in order to destroy enemy tanks. It may be advisable to hold back the greater part of the battalion—frequently in rear of the flanks—in order to exploit its speed, mobility, and ability to carry out surprise attacks against tanks. If the enemy's resistance has been broken by the motorized infantry, the antitank battalion can be pushed ahead of the foremost infantry in order to attack and destroy enemy tanks. Advance artillery observers should be assigned for this purpose.

125. If, after attaining the objectives, the task allotted does not involve pursuit, the motorized infantry will hold the ground gained, and will be supported by the tank brigade. This will be done in accordance with principles laid down for the defense.

If the attack fails or appears likely to lead to no result, the attacking forces should disengage and attack afresh at another point.

126. If the armored division encounters enemy tanks during the attack, engaging them must take precedence over all other tasks. The tank brigade must quickly find covered positions from which it can fire effectively at the halt, while the enemy is compelled to fight at a disadvantage (attacking over open country, against the sun, with the wind). This method is particularly recommended when the enemy is superior in numbers of antitank weapons. Success in these circumstances can also frequently be gained by quick and determined attack, especially against the enemy flanks.

If the enemy is inferior in numbers or armament, or if it is im-

possible to find a favorable position, a short halt should be made during which all armor-piercing weapons should be brought to bear on him. The attack should then follow immediately, and should, if possible, be supported by some elements firing at the halt.

The rear waves of the tank brigade should be employed as far as possible in enveloping attacks against the flanks and rear of the enemy tank forces.

Extensive combat reconnaissance must be carried out by the division, especially in the flanks and rear of the tank brigade, to insure that the latter is secure from surprise attacks by enemy tanks.

The artillery's task is to attack the enemy tanks while they are deploying, breaking up their attack with concentrated fire.

Section III

ATTACK FROM AN ASSEMBLY POSITION

127. The purpose of an assembly position is to enable detailed reconnaissance to be carried out, to allow units to take up their allotted positions for the battle, and to insure cooperation of all arms participating in and supporting the attack.

128. The assembly area must provide cover against enemy air and ground observation; it must be situated far enough forward to enable the division to advance in battle order; the artillery must be able to carry out its tasks of supporting a break-through without changing its positions, and heavy weapons must be able to neutralize the enemy defenses, particularly his antitank weapons.

Usually the tank brigade and those parts of the motorized infantry which are to follow in vehicles behind the tank advance will be held back; so that they remain unexposed to enemy fire and can eventually be employed with surprise effect. The more thorough the reconnaissance, the longer it is possible to delay the approach march and deployment of the tank brigade. If the terrain permits the tank brigade to adopt its battle formation well in rear of the battle area and to advance in this order, only a short halt will be necessary in the assembly area.

The vehicles of those parts of the division which have previously

moved into the assembly area must not be allowed to impede movement of the tank brigade.

129. Surprise is assisted if the division moves into its assembly area during dusk or darkness.

130. Movement into the assembly area and the area itself must be protected from enemy reconnaissance and surprise attack. Antiaircraft machine-gun units must be assigned for defense against enemy reconnaissance and attacking aircraft.

131. The artillery moves up during the assembly. The armored observation battery establishes its sound-ranging and flash-spotting posts and plots enemy positions.

As far as is possible without sacrificing surprise, the engineers remove tank obstacles in front of enemy positions and make all necessary preparations for removing obstructions.

The armored signal battalion establishes line communications within the division in order to supplement radio communications during battle.

132. The object of the attack is to break through the enemy's defensive zone. This object is achieved when the enemy artillery is destroyed and the enemy's main line of resistance is so broken that the motorized infantry can follow up in vehicles. Only after a successful break-through must a distant objective be assigned.

133. If there are tank obstacles or natural antitank defenses in front of or within the enemy defensive position, the first stage of the attack will be carried out by the motorized infantry alone. It advances through the enemy main line of resistance until the obstacles barring the tank advance are removed.

The advance of the tank brigade must be so arranged that when obstacles are removed it can penetrate deeply into the main enemy defensive zone, accompanied by the motorized infantry.

134. If it has been possible to remove obstacles in front of the enemy position before the attack, and no obstacles are likely to be encountered in the main line of resistance, the attacks of the tank brigade and the motorized infantry will be launched simultaneously. By this means the armored division brings all its weapons to bear effectively at the decisive moment of attack to destroy the enemy's defenses and lend momentum to the advance.

135. If the terrain is favorable and no tank obstacles have been

reported, the tank brigade will precede the motorized infantry in attack on the enemy position. This assists the movement of the motorized infantry to the enemy position, speeds the operation, and reduces casualties.

136. The attack of the tank brigade is carried out according to the principles of an attack not preceded by deployment.

137. Targets against which the artillery is to concentrate its fire before and during the attack depend upon the method of attack. If the attack is led by the motorized infantry, the main effort will be directed against enemy infantry weapons. If tanks precede the motorized infantry in the attack, the artillery's main task will be to destroy or neutralize with smoke the enemy anti-tank weapons. It may be desirable to lay down smoke shortly before the attack in order to neutralize enemy observation posts and antitank weapons.

If the enemy is occupying strongly prepared positions, it will usually be necessary to lay down an artillery preparation which should be preceded by careful target reconnaissance.

If surprise is to be gained, or if the tactical situation is obscure, it is frequently advisable to delay opening fire until enemy resistance is encountered, and then to destroy it with concentrated fire. As the attack progresses, artillery support is governed by the same principles that apply to an attack not preceded by deployment.

138. If the motorized infantry leads the attack, it will have armored engineers attached. Elements of the armored engineer battalion follow closely behind the motorized infantry brigade to clear the way for the tanks following.

139. The bulk of the antitank battalion will be attached to the motorized infantry leading the attack; elements will be allotted to protect movement forward from the assembly positions.

140. If the armored division attacks through an infantry division, all forces of the infantry division operating in its sector will be attached to the armored division. This insures that:

a. All weapons and troops of the infantry division are concentrated under a unified command in support of the tank attack.

b. Movements of the armored division and the infantry division are coordinated.

This arrangement will end when the main body of the armored

division is no longer in contact with the infantry. It will frequently be necessary for the higher command to hold up movement of the infantry division in order to allow the armored division to continue its advance.

141. If the armored division is ordered to give fresh momentum to an attack by other troops, the attack will be carried out either by the tank brigade or simultaneously by the tank brigade and the motorized infantry brigade. The attack will be supported by the mass of the armored division's artillery and antitank units.

142. The higher commander will decide whether the whole or parts of the division shall be temporarily diverted from the original axis of attack in order to widen a breach in the enemy's position. Provision will be made to cover the new flank which is thus formed.

143. If the armored division is ordered to exploit success gained by an infantry division with the object of developing it into a complete break-through, the attack will always be carried out by the tank brigade. The motorized infantry will follow in vehicles as closely as possible behind the tank brigade. Strategic objectives will be assigned. As it is important not to dissipate efforts of the armored division but to maintain strictest concentration in view of tasks which remain after the break-through, the artillery and other heavy weapons will be employed only insofar as they are necessary for completion of the break-through.

Chapter 9

PURSUIT

144. Success must be exploited without respite and with every ounce of strength, even by night. The defeated enemy must be given no peace. The only factors which must be allowed to cause a temporary halt are exhaustion of fuel and ammunition, and even then contact must be maintained. The attack must be resumed as soon as fresh supplies have been received.

145. Every effort should be made in pursuit to overtake the enemy. If the enemy succeeds in maintaining a front in its withdrawal, the armored division must break through the enemy resistance at several points and use its speed to occupy ground in the path of retreat. The nature of the terrain and strength and attitude of the enemy decide whether the tank brigade is to be pushed forward in mass formation or in task forces.

Night attacks are likely to be particularly successful.

146. If there is danger of losing contact with the enemy, elements possessing greater speed, i. e., motorized infantry, motorcyclists, and antitank units, will be employed in the pursuit. In this case, engineers will be assigned. If reinforced by equally mobile forces, the armored reconnaissance unit can strike swiftly and with decisive results.

147. If the division has penetrated deep into the enemy lines in its pursuit, it will establish a system of defense areas for its protection at rest and by night. They should be designed to enable heavy fire to be directed from every side.

148. If enemy resistance stiffens, all forces engaged in pursuit must be concentrated quickly under unified command for a fresh attack.

149. Strong artillery forces must always move directly behind the foremost elements. Strict cooperation with division reconnaissance aircraft is essential. Fighter and bomber support increase the chances of success.

18

Provisional Instructions for Leadership and Action of the Tank Regiment and Tank Battalion

(British Translation of Captured German Document, May 1941)

Commander in Chief of the Army
Army General Staff / General of the Mobile Troops.

H.Q., Army High Command, 18 JAN 1941.

I approve the "Provisional Instructions for
Leadership and Action of the Tank Regiment and Tank
Battalion" of the 18 January 1941.

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NOTE

Until the final instructions for Tank Regiments and Tank Battalions will be published, the present "Provisional Instructions for Leadership and Action of the Tank Regiment and Tank Battalion" will be valid.

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I. CHARACTERISTICS and ORGANISATION.

1. The Tank Regiment. Owing to its great fire power, its armour and its mobility, the Tank Regiment is the main driving force of the Division. Its strength lies in merciless surprise attack in close formation. Enthusiastic and responsible leadership and the daring launching of this powerful assault weapon in the decisive sector guarantee success. The other weapons support the Regiment in the execution of its fighting task. In principle, it fights within the orbit of the Armoured Brigade. *

2. The Tank Regiment consists of:

Regimental Headquarters with Signal Platoon and Light Tank Platoon.

Two Tank Battalions. **

One Tank Workshop Company.

3. The Tank Battalion usually goes into action within the sphere of the Tank Regiment. Each Tank Battalion is equipped with the same number of tanks and weapons.

4. The Tank Battalion consists of:

Battalion Headquarters.

Headquarter Company, with Signal Section, Reconnaissance Section, Light Tank Section, Pioneer Section and A.A. Section.

Two to three light companies. ***

One medium company.

One light column.

* If there is only one Tank Regiment in the Division it comes directly under Divisional Orders.

** In the intermediary period there are also regiments with three battalions. In such cases these instructions will be applied accordingly.

*** These instructions are based upon the organisation of battalions with three light companies.

II. C O N T R O L.

5. Daring and flexibility are essential in commanding a Tank Unit. Commanders carry their troops to victory by their personal example. Careful map study of the ground must precede the action. Air photographs can provide valuable clues for appreciation of the terrain to be attacked.
6. The surprising of the enemy must be assured by constant and careful camouflage and by speed of movement.
7. Forces must be kept together for united and simultaneous action. Any splitting up must be avoided.
8. The Regimental Commander informs Battalion Commanders as early as possible about the situation, ground and intention so as to enable them to act according to his intentions even if the situation should suddenly change.
9. The Battalion Commander must inform Company Commanders in time about his intention so that they can acquaint their units with their respective tasks. As a rule this is done by verbal orders.
10. Transmission of orders within the Regiment is chiefly by W/T (W/T instructions D.613/12). Wireless silence will usually be ordered, and W/T will only be resumed immediately before going into action. Therefore, orders will be transmitted as long as possible by D.R. In Camp and in the assembly area telephone connexion can be established.

III. O N T H E M A R C H.

11. On good roads with no traffic, full-track vehicles can travel at a speed of 20 k.p.h. by day and 12 k.p.h. by night.
12. On the march, Divisional Orders 472 and the orders of the Army High Command, General Staff Training (II) No. 2600/40 (Secret) of 4 DEC. 40 will be followed.
13. Always endeavour to separate track vehicles from wheeled vehicles. This spares the material and helps to maintain the continuity of the march.
The only wheeled vehicles remaining with track vehicles are those required for control, intercommunication, J (maintenance) and S (medical) Services, as well as the most essential fuel and supply vehicles of the A Echelon battle transport and part of the salvage section of the Tank Workshop Company.

14. Marching orders must contain:

Information about the enemy,

Own intentions,

March, route and objective, reconnaissance.

Security,

Time of departure.

Order of March (including allocation of transport columns, Maintenance and Medical Services),

Starting point (einfüdelungspunkte) of the Battalions (in Battalion orders: of the Units),

Halts,

Position of the leader and special orders for inter-communication.

Furthermore, when marching by night the scale of illumination (Beleuchtungstufe), as ordered by Division.

When issuing orders bear in mind that owing to the large area usually covered by a division, very often more than one hour elapses between the issue of the order and the first move. Warning orders which inform the troops of the probable starting time and direction of the march, or, of the time and place of their joining in, are therefore often advisable.

It is the art of leadership so to arrange that formations and units take up their ordered position in the marching column without any considerable interruption of movement and without interference with the movement of other formations or units.

Regiment.

15. If the Tank Regiment forms a marching group within the Division, the Commander is responsible for the speed and continuity of movement on the march and also for the timely clearing of the roads at the time specified. He orders halts and rests, security and camouflage, and sees to the refuelling and supply of the marching group.

If the marching group moves alone he can also be made responsible for the reconnaissance, security and marking of the route.

When the regiment halts, units, as well as camouflaged as possible, will keep off the track in such a way that they can resume the march at shortest notice.

16. Attached pioneers are to be placed well forward in the regiment.

17. Intercommunication on the march; within the Regiment, by D.R.

18. If the Regiment has A.A. Units at its disposal their timely employment at dangerous spots, e.g. bridges and defiles, must be anticipated and provided for.

19. If the Regiment moves as advanced guard of the Armoured Division, it usually throws out a screen of the strength of a light Tank Company, (Point Company), which may be up to fifteen minutes ahead. The Point Company is always reinforced by attached pioneers, and in most cases also by medium tanks and parts of the Reconnaissance section of the foremost battalion. Attached artillery on motorised gun carriages (Sfl.) is allocated behind the foremost battalion in the main column. The Regimental Commander moves between advanced and main column.

Battalion.

20. If a Tank Battalion moves alone on a road, paragraphs 15 - 18 will apply.
21. If a Tank Battalion is employed as advanced guard, paragraph 19 will apply; the battalion commander will then move with the Point Company.
22. If the Tank Battalion moves in another part of the marching column, the Battalion Commander will usually move at the head of the battalion. Then follow the Command Group, Medium Company, Light Companies, A Echelon Battle Transport and the remainder of Headquarter Company.
23. The A.A. Section of the battalion is mostly distributed between the Front Line (fighting echelon) and the wheeled transport echelon, so as to protect these from low flying enemy air attacks.

IV. DEPLOYMENT.

24. The opening of the battle is usually preceded by deployment. This makes the formation readier for action and shortens its depth. The Armoured Formation will shape itself with a view to creating the most favourable conditions for action. Orders for deployment are usually given by the superior commander. They can also be given by regimental or battalion commanders when they are in charge of the advanced guard or of an independent marching column. If the armoured formation unexpectedly contacts the enemy, or if it is forced to leave the road by enemy aircraft or artillery, it will be deployed on the orders of its commander or of the local commanders. Double file or arrow head will be formed according to the ground. If information about the enemy and orders already issued provide a sufficient indication of the probable method of action, inverted arrow head formation may be adopted by the battalion during deployment. For execution see APPENDIX 1. (Formation and Movements of the Battalion). Deployment is usually executed from the move.
25. Close reconnaissance should begin with deployment, at the latest.

V. ACTION.

A. THE ATTACK.

26. The strong offensive power of armoured weapons produces the best effect when the Tank Regiment goes into action in close formation.

The Tank Battalion attacks alone,

- a. as advanced guard, in order to strike the enemy by surprise while he is still unprepared; or in order to occupy points on the ground which are important for the further conduct of the battle;
- b. From the move, if there is no order to wait for the forming up of the armoured formations following;
- c. When it has an independent task.

BATTLE ORDER.

Regiment.

27. The Tank Regiment can attack with two battalions one behind the other (in two waves) or one alongside the other. *
If the Regiment is fighting within the Brigade, the latter decides the battle order.
28. The attack by the Regiment in waves strikes the enemy a blow the weight of which is continually maintained by the Companies of the rear wave. This makes a battle in depth possible.
Formation in depth is the best protection of the flank of a regiment fighting in the enemy's zone of resistance. The attack in waves facilitates the control of the Regiment. It is the rule.
29. Action with two battalions side by side and with little depth may be useful in the pursuit of an already weakened enemy, or when breaking off action in order to (counter)-attack a pursuing enemy.
30. If the Regiment wants to concentrate the forces of battalions fighting side by side towards the centre, it orders "central line" (advance on one axis).
31. The Regimental Commander moves in front of the Regiment, till he has ascertained that the first wave has attacked in the direction ordered. He then takes his position as far in front as will ensure him a good view of the action of the first wave and enable him to influence the action of the second wave.

* If the Regiment disposes of three battalions (Abteilungen), the third battalion can be employed as a second or third

Battalion.

32. For the attack, the Tank Battalion forms up in several lines, the composition of which depends upon the position of the enemy, the task, the width of the available space, the field of view and the position of the Battalion in the battle order of the Regiment.

As a rule the light companies make up the first line; the medium company usually fights in the second line so as to provide covering fire for the light companies. The third light company follows in the third line either behind the exposed flank or behind the centre of gravity.

33. Endeavour to bring up the medium company in closed formation for covering fire. This is conditional upon:

Clear view of the ground,

Elevated fire positions or gaps in the forward
Companies and

A not too great front of attack for the Tank
Battalion, (not over 1200 metres).

A poor field of view may necessitate the allocation to the light companies of platoons or half platoons of the medium company.

34. If axial advance is ordered by the Regiment, the Front Line Company attacking along the axis gives the direction within the Battalion. If the Regiment has ordered a sector to be attacked by the Battalion, the latter can concentrate along an axis indicated by it.

35. The Battalion Commander moves in front of the Battalion till he has ascertained that the battalion has taken up the direction and the right frontage for the attack. He then takes up his position far enough forward to have a good view of the battle field and to be able to influence the action of the rear companies. The Commander of the second wave must, if the ground permits, also be able to observe the action of the rear parts of the first wave.

36. The order for attack must contain:

Information about the enemy, own situation,
neighbouring units.

Intention of the Regiment (the Battalion).

Objective of attack.

Battle order of the Regiment (the Battalion).

Orders for the waves (to the Companies).

Co-operation with other weapons.

Direction, axial line or touch.

Orders for Headquarter Units.

Orders for maintenance and Medical Services.

Orders for battle transport (if Battalion, only to A Echelon) and wheeled vehicles.

Intercommunication, line of assault.

Position of Commander.

37. Attack from the Move.

When attacking from the move it is essential to strike the enemy quickly and by surprise without splitting up one's own forces.

38. To form battle order, a halt for forming up is usually necessary. This must be done under the best possible cover from enemy observation and weapons. It must be carried out quickly so as to leave the enemy no time to prepare his anti-tank weapons. The readier the unit was during deployment, the shorter the halt for forming up will be.

39. Unexpected encounters with the enemy or ground conditions (for instance fighting one's way out of a defile) may necessitate an attack from column of march or from narrow battle formation. As soon as the leading tanks have cleared room for the deployment of the tanks following, and as soon as the ground and the enemy situation permit, battle order must be taken up.

Regiment.

40. Close reconnaissance by the light section of the Regiment gives the commander the necessary information for his plan of action and his choice of battle formation for his regiment. In particular, there must be thorough reconnaissance to decide the suitability of the ground for tank attack, also for A.F.V. blocks and obstacles.

If the Regiment has two exposed flanks, orders must be given to which flank the battalions are to reconnoitre.

Endeavour must be made to establish early liaison with the weapons which are to support or accompany the attack of the Regiment.

41. When attacking from the move, the regiment usually brings up its battalions in line. In that case it is the task of the first wave to smash the enemy and penetrate as deeply as possible.

The second wave is brought up in such a manner that it can go into action from depth. The battle objectives will often only become clear during the course of the attack.

42. Close liaison during the attack with the Commander of the co-operating artillery is of particular importance as, when attacking from the move, there will be little information about the enemy before the start of the attack and there will usually be only a few moments for a verbal exchange of views. If the Artillery Commander does not accompany the Regimental Commander in the Command tank, liaison is kept up by Artillery Liaison Headquarters.

The artillery must be informed of the attack orders, the width, axial line and objective of the attack.

It must continuously receive requests for action against those objectives which the regiment cannot fight with its own weapons.

43. The Pioneer Section and attached elements of the Armoured Pioneer Battalion are often attached to the first wave.
44. Immediate reports of the objectives reached by the regiment are to be forwarded by the commander to higher formation.

Battalion.

45. As soon as the Battalion Commander receives the order for action, he will bring up his light platoon to the front or to the exposed flank of the Battalion so as to supplement the close reconnaissance carried out by the Regiment. Reinforcement of the light platoon by tanks of the light companies may be necessary.

46. From the move, the Battalion will usually attack in inverted arrowhead formation.

47. During the attack, covering fire for the further advance of the companies must always be arranged. For this purpose, the medium company must be brought up from sector to sector. Touch between the first and second waves must never be lost.

48. The Artillery Commander and Observer will accompany the attack of the foremost elements in the O.P. Tank and, at the request of the Battalion Commander, will direct artillery fire chiefly against those enemy weapons which are not dealt with by the attack of the battalion. If, in exceptional cases, a battery of artillery must co-operate with a tank battalion, fire control is also exercised by artillery liaison headquarters.

ATTACK FROM THE READY POSITION.

49. Before moving up to the point of assembly, the approach roads and the assembly point must be reconnoitred. They must provide cover from enemy ground and air observation. The assembly point should, if possible, also be within reach of the wheeled vehicles necessary for supply.

50. At assembly point the Regiment forms up for the attack as far as space and ground will permit and prepares for action.

51. All preparations necessary for the launching of the attack must be made. Amongst these are:

- Thorough reconnaissance of the ground to be attacked.
- Removal of blocks and obstacles in front of the main enemy battle position.
- Obtaining of all information necessary for the attack by means of close reconnaissance.

- Establishment of liaison with the Commanders of supporting and accompanying weapons.
- Establishment of liaison with the commanders of formations and units which are already in contact with the enemy in the area of attack.
- Under certain circumstances, establishment of liaison with the commanders of infantry and rifle formations which attack before the armoured formations.

The results of the reconnaissance by all arms and all weapons of located enemy centres of resistance, especially their anti-tank weapons and artillery, must be exploited.

52. The picture of the ground over which the attack is to take place should be painted to Company Commanders and as many subordinate commanders as possible, provided that by so doing the intention to attack is not given away (to the enemy).
53. Wireless silence at the assembly point will be observed, so that the enemy can get no inkling of an impending tank attack through increased W/T activity.
54. The armoured formations should be moved from assembly point in battle order. If the ground does not permit this, a short halt for forming up will also be required when attacking from the ready position.

Regiment.

55. If the Regiment attacks in several waves, the first wave will usually be ordered quickly to penetrate deep into the main enemy battle position and to destroy the enemy artillery. The second wave, which follows immediately, will overpower those enemy infantry and heavy weapons which have not been smashed by the attack of the first wave. In simultaneous attacks with riflemen and infantry, the second wave enables the former to follow up quickly to exploit success.
56. If the Regiment is ordered to help forward the attack of infantry or riflemen, the commander of the tank regiment is responsible for the maintenance of touch between his regiment and the riflemen. The Regiment details certain of its elements, usually only up to the strength of a light company, for direct co-operation with or attachment to the riflemen.
57. The Regimental Commander can detail the second wave to bring up its medium tank company to reinforce the covering fire for the penetration of the first wave. In this case, it is not usually necessary to attach this company to the first wave.
58. After successful penetration, the assault must be quickly carried on deep into the main enemy battle position. This is the quickest and safest way of breaking the enemy's resistance.

59. If parts of the anti-tank battalion are attached to the regiment, they form up in several waves immediately behind the first wave so as to assist it in overpowering the enemy anti-tank weapons during the penetration. After penetration, they are usually brought up behind the exposed flank of the first wave in such a manner that they can support it in an encounter with enemy tanks and also cover the flank of the regiment.

60. Close co-operation with the Pioneers who accompany the attack in pioneer tanks is essential to ensure the quick removal of all A.F.V. blocks and obstacles which might hold up the attack deep into the main enemy battle position. During the removal of obstacles protection of the pioneers by tanks may be necessary.

Battalion.

61. When attacking in waves, the Battalion of the first wave will, as long as it is not engaged in fighting the enemy anti-tank weapons, also engage located heavy enemy weapons and centres of resistance; but this must not cause deviation from the accomplishment of the main tasks.

After having reached the objective of the attack, the Commander immediately organises the Battalion in the necessary battle formation for further action. Enemy counter attacks must always find the Battalion ready to attack (in turn).

62. In the second wave the medium company, which will be the support for the first wave, is to be kept well up with the latter. This effectively provides for covering fire for the light companies against anti-tank weapons which have not been located or overpowered by the first wave. The light companies must seek out and destroy any enemy not destroyed by the first wave.

One of the main tasks of the second wave will be to repel enemy counter-attacks directed against the tank attack and the riflemen which follow it. In order to be able to do this, arrangements should be made when forming up the second wave, (after penetration), for the employment of the weight of the medium company at the decisive point.

63. After penetration, the quick resumption of close reconnaissance, especially on the exposed flank, is important.

REPULSING CLOSE RANGE ATTACKS.

64. Close range attacks by the enemy, chiefly using Molotov Cocktails, must be expected especially when penetrating the main enemy battle position and also in forests and built up areas, particularly when the enemy shows a strong will to resist.

The danger of close range attacks grows with the following:- reduction in speed of tanks owing to enemy resistance; certain ground conditions; limited visibility; when ground obstacles compel tanks to halt. When tanks are compelled to slow down or halt, therefore, they must arrange with each other for careful mutual observation and fire protection. Units and formations must also arrange for close range reconnaissance and protection of their front, flanks and rear. Only by doing this will it be possible to shake off and destroy the enemy, who is usually well camouflaged and will attack only from very close quarters, taking advantage of the blind spots both of the weapons and field of view of the individual tanks.

Details of the measures to be taken by crews when attacked at close quarters and when tanks are immobilised are given in Divisional Order 470/5b, paragraphs 81 to 83.

TANK v. TANK ACTION.

65. Decisive in tank v. tank action are:
- Lightning appreciation of situation and ground and immediate action by leaders of every rank;
 - Timely realisation of the strength and direction of the enemy tank attack;
 - Knowledge of the mechanical and fighting powers of the enemy tanks.
66. As soon as enemy tanks appear they must be attacked and destroyed with all available anti-tank weapons, even if this should entail abandoning the original task. The quicker action is taken, the quicker the armoured enemy will be destroyed and the sooner the original task can be resumed.
67. It is up to close reconnaissance to locate the enemy flank as early as possible.
68. For the destruction of an armoured enemy all forces must combine for united action. It is essential that a strong fire front should quickly be formed so that the enemy can be surprised with fire and compelled to halt in his attack. This will prepare the ground for the action of the rear waves. It will depend on one's own strength, the ground and the weather whether the front, the flank or the rear of the enemy armoured forces is to be attacked.
- Always try to fight against the wind with the sun behind and to engage the front of the enemy tanks in such a way that they expose their vulnerable flanks to the regiment leading the counter attack. If the action is carried out in waves the regimental commander will arrange for the first wave to make the frontal attack while the second wave, using all advantages of favourable ground and full speed, will be thrown forward to deal the annihilating blow to the flank and rear of the enemy.
69. Attached anti-tank troops on motorised gun carriages (Sfl.) accompany the tank attack. Co-operating artillery and heavy weapons support the action of the armoured formation with concentrated fire.
70. In order quickly to avoid the aimed fire of enemy tanks appearing unexpectedly, also to gain time for the formation of a fire front and to conceal the movements of the rear waves and lines, it may be advisable to make a smoke screen between one's own and the enemy tanks.
71. If a tank battalion is unexpectedly attacked by enemy tanks the companies will begin by repulsing the attack independently. The battalion commander will endeavour to regain control over his battalion as quickly as possible.

72. If enemy tanks try evasive action they must be mercilessly pursued. Increase of speed to the very limit will be necessary to outflank the enemy tanks and to cut them off from their line of retreat. In this case, co-operation with reconnaissance aircraft will be increasingly important.

ATTACKS ACROSS RIVERS.

73. The tasks of the tank regiment when attacking across a river are:

- To clear the near bank of enemy forces,
- To provide fire cover for the moving up of the bridging material and the forming up of the crossing unit (Übersetztruppe),
- Support of the attack of the crossing unit by engaging enemy centres of resistance and finally extending the bridgehead formed by the crossing unit.

74. The covering fire for the preparation of a crossing and the attack across the river is usually provided by the medium companies from concealed and frequently changed firing positions.

75. Tank Battalions or units detailed to mop up the approaches will, in case of enemy air or artillery attacks, be placed in widely extended formation and in such a manner that they do not interfere with the movements of the crossing units and of the bridging party (pioneers). The non-employed elements are kept far back, usually behind the reserve line (ablauflinie) laid down by the Division.

76. After a small bridgehead has been formed by the attacking infantry it will often be necessary quickly to ferry over tank units with anti-tank weapons, so as to extend the infantry bridgehead or to help in maintaining the position. The first elements of the tank units brought across will usually have to support the infantry fighting on the far bank.

77. If the regiment has to attack on the enemy side immediately after crossing the bridge, the regimental commander and commander of the front battalion must quickly obtain a picture of the ground to be attacked. They will cross to the far bank in their command tank, before the termination of the bridging operations, if possible. The light platoons will cross with the leading parts of the regiment so that they can immediately be detailed for close reconnaissance. Of the units of the leading battalion, the medium company will cross first.

78. The assembly of the regiment after the drawn out crossing of the bridge will take a long time. Therefore, at least the first battalion over must be assembled as soon as possible in order to avoid going into action split up. If the bridgehead is small it may be necessary for the first units over to attack, after a short forming up halt, in order to make enough room for assembly.

ATTACK ON A POSITION WITH PERMANENT DEFENCES.

79. The bulk of the tank regiment is kept back, if possible under cover from enemy fire from the permanent defences, until gaps have been made in the anti-tank obstacles. Close touch with the pioneers who remove A.F.V. blocks and obstacles is to be maintained.
80. The armoured formation will most need covering fire when driving through the gaps in the anti-tank defences and during the subsequent forming up into battle order in the enemy main battle position. Screening of the flanks with smoke may be useful. The objective of the armoured attack is the enemy artillery. The most important task of close reconnaissance is to prevent the armoured formation from meeting with unexpected obstacles, particularly mines, inside the main battle position. Tank Pioneers must be placed far forward to locate and remove such obstacles.
81. Parts of the armoured formation, in particular the medium company, support the unit which is to penetrate the main enemy battle position by engaging enemy centres of resistance in the intermediate position, if possible from concealed fire positions.

B. THE PURSUIT.

82. Once the enemy gives, he must be completely broken up and annihilated by unremitting pursuit, even into the night. Only lack of fuel and ammunition can be allowed to halt, temporarily, the pursuit. The personal example of the commanders is all-important.
83. Battle Groups are often formed to carry out the pursuit on a wide front or in order to be able to use detachments for an overtaking pursuit (überholende Verfolgung). Their composition and control is laid down in regulations D66X. The tank battalion pursues in broad arrowhead formation, if possible in front of the other arms.
84. Maintenance of touch is of particular importance in the pursuit. Troops of the medium company are usually attached to the light companies for this purpose. The concentrated battalion must quickly smash any enemy resistance or counter attack. Should enemy resistance increase, the regimental commander must endeavour to bring his unit to the attack in close formation.
85. In the pursuit, particular care must be given to the keeping up of intercommunication. Frequent reports on bounds reached and on the location of the defeated enemy forces will be forwarded to superior commanders.
86. If the pursuit is extended into the night, pursuit groups are usually formed along the roads. Forces must be kept close together. Advancing by bounds may be advisable.

87. If night causes a halt in the pursuit formations will, if possible, halt in anti-tank country. Armoured divisions must be formed up so as to be able to bring uninterrupted fire to bear in all directions (hedgehog formation). To avoid major casualties in case of enemy bombing or raids, vehicles must be formed up with gaps between them. Wheeled vehicles and the lightly armoured vehicles will be in the middle.

Advanced reconnaissance sections on foot constitute the covering party. They call the prompt defensive fire of the tanks by prearranged signals.

C. THE DEFENCE.

88. If, after the objective of the attack has been reached, the Tank Regiment has to defend ground gained until relieved by other arms, the bulk of the tanks are to be kept back till the enemy attack begins. They will be protected from enemy artillery and aircraft by dispersion and the use of covered positions.

89. The armoured formation must protect itself against enemy surprise attacks by careful close reconnaissance, particularly in country with limited visibility. Reinforcement of the light tank platoons may be necessary for this.

90. Enemy reconnaissance is hindered by the fire of individual tanks with long range weapons. These tanks should frequently change their position.

91. If the enemy attacks he is kept at bay by prompt opening of concentrated fire. The armoured formations and units which were kept back will be brought up for counter attack in the most profitable direction, if possible against the enemy flank.

92. In case of an attack by enemy tanks the battle will be conducted according to paragraphs 64 to 71.

D. BREAKING OFF THE ACTION.

93. If the armoured formation must break off action against a non-armoured enemy, it will withdraw under the cover of the medium companies supported by the fire of the co-operating artillery. As soon as the light company is no longer within range of the enemy anti-tank weapons, the medium companies also will retreat by bounds (uberschlagende Einsatz).

Pioneers will prevent pursuit by motorised enemy forces by blocking roads and tracks.

94. If the armoured formation has the task of disengaging our own non-armoured forces, it must repeatedly attack the pursuing enemy with strong close quarter assaults from unexpected directions, till our own troops have withdrawn a good distance from the enemy. Wide fronts of attack are the rule.
95. Breaking off action against superior enemy armoured forces becomes easier when it is possible to arrange strong covering fire in rear and, if possible, a tank-proof position. Active reconnaissance to the flanks and the timely detailing of forces, particularly of attached anti-tank troops and pioneers, for flank protection, are necessary to prevent outflanking pursuit by the armoured enemy. If it is not possible to shake off the enemy, the retreating armoured formation must take advantage of the ground and of favourable situations to attack individual elements of the pursuing enemy with superior forces.
96. Artificial fog facilitates disengagement from the enemy and conceals the direction of the withdrawal.

ACTION UNDER SPECIAL CONDITIONS.

Action in fog.

97. In fog, armoured formations are formed up on a narrow front and in depth. The form of deployment is usually double file. Intervals and distances are sufficiently reduced to maintain visual touch between the tanks.
98. It will usually prove advantageous to move the formation by bounds. In order not to lose direction, the deployed formation will, if possible, keep to tracks and clearly visible ground leading in the direction of the objective. The compass bearing of the general direction of the attack is given by the battalion to units.
99. In order to avoid sudden encounter with enemy A/T weapons, obstacles, blocks or close range enemy raids, (particularly in case of sudden breaks in the fog), close range reconnaissance and observation are of special importance. Motor-cycle troops will usually maintain communication between formations and take charge of immediate covering and reconnaissance duties. When the fog clears, distances and intervals must quickly be increased.

Action in Built-up areas and Woods.

100. If the armoured formation is compelled to fight in built-up areas and woods, the attack will be directed to outflanking the rear or the deep flank of the enemy. In front, the enemy must be pinned, his centres of resistance being held or blinded with smoke. The burning of houses will hasten success. Close communication between the units which attack in the front and those which carry out the outflanking movement is essential. Large inhabited areas and woods must be taken and mopped up by sectors.

101. When combing through larger woods the battalion will adopt a narrow and deep formation. For this, platoons of the medium company are usually attached to the light companies.

102. The danger of sudden enemy attack from close quarters must be met by increased reconnaissance and covering fire from tank to tank. Reconnaissance, observation and covering operations immediately in front, flank and rear by the light platoons and often also by elements of the light battalions are therefore of particular importance.

ACTION IN MOUNTAINS.

103. Action in mountains requires extremely careful previous ground reconnaissance. If possible, the armoured formation will follow the slopes and valleys, so that the advance should not be delayed by frequent crossing of gradients and gorges.

104. Steep slopes hinder the effect of tank weapons. Covering fire therefore requires particular control when crossing deep gorges.

Deep valley roads with precipitous sides, particularly in the high mountains, afford no possibilities for the employment of armoured formations. Tanks can therefore only be employed in small fighting groups, often only in the strength of a platoon. Attachment to rifle or infantry formations is therefore the rule.

VI. PROCEDURE WHEN ENCOUNTERING MINES.

105. The high speed of movement of the armoured formations involves the risk of tanks unexpectedly hitting mines laid by the enemy.

The longer the delay caused by encountering mines, the more time will the enemy gain to reinforce his anti-tank defences or to concentrate on important points.

106. Should, therefore, enemy mines and in particular mine fields be expected in the sector of attack of the armoured formation, it will be the chief task of the light platoons detailed for observation and reconnaissance to identify the position and size of enemy minefields in time and to forward an early report. It will be useful to attach some pioneer scout sections to the light platoons reconnoitering to the front.

107. In order quickly to remove mines and clear lanes through minefields, the tank pioneers at the disposal of the regiment will always be placed far forward in the first wave and attached to the leading armoured formation.

108. When having to cross country strewn with mines it may be of advantage to disperse formations in width and depth. Within the formation the tanks of the second and third line will follow in the tracks of those of the first line. The same applies to the formations of the rear waves.

109. Minefields of major width and depth must be circumvented. For this, the timely sending out of observation and reconnaissance patrols and an early decision and subsequent order to divert, are necessary. The regimental commander will decide whether the original battle formation will be kept while circumventing the mine field or whether it will have to be adapted to the enemy situation and the ground. He will report his decision to his superior commander and will re-establish the original battle formation as soon as the enemy situation, ground and obstacles permit.
110. If it is not possible to circumvent the minefield movement must be halted and the formations must take cover. Close reconnaissance will be intensified so as to provide detailed information as to the position of the mines and the extent of the minefield.
111. A first task will be to find out new openings for action, to assure covering fire for the pioneers and to hold the formation ready so that it can form up quickly after lanes have been created or the minefield has been removed.
112. Leaders of all ranks must themselves try at once to discover gaps in the minefield or to use their attached pioneers to make lanes under the covering fire of tanks.
113. Minefields are often only recognised after the foremost tanks have already hit mines. In this case, the tanks in the mine field will be withdrawn and recovered under the covering fire of the rear units.
The order for the withdrawal of units which have entered the minefield as well as the order for the halt and the assembly of the formation will be given by the battalion or regimental commander.
114. Self concealment of tanks by smoke, also the firing of smoke shells by tanks and artillery detailed for covering fire, are effective aids in protection from enemy reconnaissance and fire when encountering mines.
115. Detailed instructions for units encountering mines are contained in Chapter 5 of Divisional Order 470/6.

VII. ACCOMMODATION.

116. The great number of vehicles in a tank regiment usually necessitates the forming of several billeting groups; advantage will be taken of habitations in areas affording cover. Billets must be camouflaged against ground and air observation and must allow free movement in several directions (not hemmed in).

117. If in exceptional cases the tank regiment must itself provide protection for its billets against enemy land forces, then it will employ elements of the light company, reinforced by odd tanks of the medium companies, in such a way that
- (a) by day, they completely cover with fire from high ground any area which the enemy might occupy;
 - (b) by night, they are able to cover the approach roads by fire, themselves keeping close to the roads and tracks.
118. Erection of obstacles by the pioneer platoon and the attachment of motor cyclists are advisable.
119. Quick inter-communication between covering troops and resting troops must be assured.
120. Protection from enemy air attacks will be given by the A.A. platoons of the battalions. Reinforcement by M.G.'s of the tank companies may be ordered by the battalions.
121. Although, while in billets, the tank regiment may be standing by to move, the roads and tracks leading through the billeting area must always be kept clear for the movements of other formations.

VIII. TRANSPORT, MAINTENANCE and MEDICAL SERVICES.

Battalion.

122. Battle Transport will be divided into A Echelon battle transport (Gefechtstross I st) and B Echelon battle transport (Gefechtstross II).
- A Echelon battle transport must be kept small. Its composition changes and must be adapted to the requirements of the battle. The following may belong to A Echelon Battle Transport:
- P.O.L. lorries;
 - Ammunition lorries;
 - Fitters' lorry for armourers;
 - Some of the reserve crews;
 - Field kitchen.
123. During the march, A Echelon battle transport will remain in battle formation.
- When deployment begins, it will follow in close formation under a single leader in such a way that it can be quickly brought up by a battalion before going into action in order to relieve crews and for maintenance purposes.

124. All remaining vehicles of the battle transport will go to B Echelon battle transport. It will be brought on in close formation by the regiment. Its movement is often controlled by the division.
125. Leaders of A and B Echelon battle transport must be experienced and energetic officers.
126. During action, the maintenance groups form part of the fighting units. Their role is decided by the battalion commander.
The commander of the maintenance groups, the battalion engineer, decides which vehicles will be sent to the Tank Workshop Company for repair. He is in intercommunication with the Battalion Commander and the regimental engineer.
127. To the supply transport belong the ration vehicles of Headquarters and of the Companies; they are commanded by the Battalion Messing Officer.
128. The baggage transport will be concentrated within the battalion. It goes to B Echelon battle transport when not moved under regimental or divisional orders.
129. The Medical Service is controlled by the battalion medical officer.
Quick medical assistance, particularly in battle, must be provided by a doctor accompanying the attack in an armoured ambulance.
The setting up of the regimental aid post and the evacuation of wounded to the main dressing station are the task of the second medical officer.

IX. SUPPLY.

Regiment.

130. The Regimental Commander must give particular attention to maintaining his tanks ready for action. He has a Workshop Company for the repair of tanks.
131. The main task of the Tank Workshop Company is the repair of tanks. In order to work effectively, the tank workshop company must to a certain extent be stationary. Movement by bounds is, therefore, necessary to keep it working in one place for several days. Its timely and appropriate employment is decisive in the maintenance of the fighting strength of the regiment.
132. If it does not follow behind A Echelon, the salvege section must be brought up into position at an early opportunity.

Battalion.

133. The Battalion Commander is responsible for the supply of his battalion.

Before going into action, the complete supply of the tank battalion must be arranged. Battle transport must be divided accordingly (see paragraph 122). On a march during which no action is anticipated, P.O.L. lorries and some of the field kitchens will be placed among the companies. This will reduce the time necessary for them to come into action at the end of the march.

134. On long marches additional fuel will be carried in A.F.Vs.

Refuelling will take place before going into action. The spare fuel carried by A.F.Vs will be put into their tanks as soon as an encounter with the enemy seems likely. So as not to jeopardise the orderly working of the fuel supply, empties must be taken back or, in case of fast movement, be dumped in an orderly manner. The location of the dumps will be reported.

135. At the end of or during pauses in a battle, the troops must be freshly supplied. Rations, ammunition and fuel are brought up, the wounded are taken care of and removed, the tank evacuation service must be organised. Fighting strength must quickly be made up.

FORMATIONS AND MOVEMENTS OF THE BATTALION.

A. BATTLE FORMATIONS.

A. Formations.

1. One must distinguish between:

Drill Formations: "Battalion Column", "Line Ahead",
"Double Line Ahead".

Marching Formations: "Line Ahead" (also marching order)
and "Double Line Ahead".

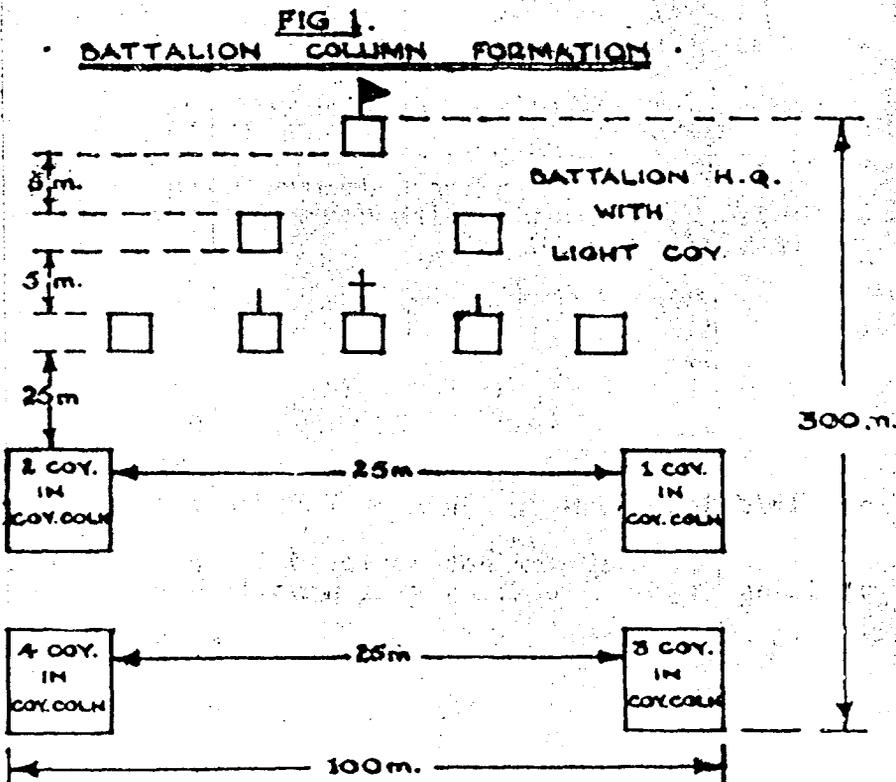
Battle Formations: "Arrowhead" and "Inverted Arrowhead".

The intervals and distances given for these formations are only rough indications. Touch within the Battalion formation must never be lost.

2. Unless otherwise ordered, the right leading company is responsible for direction and approach.

3. It is only in Drill formations that tanks of Battalion Headquarters need keep their places as shown below.

4. "The Battalion Column" is the usual drill formation (see figure 1). The companies are in company columns.



NOTE: DISTANCES AND INTERVALS ARE ONLY APPROXIMATE.

APPENDIX 1 (continued).

5. Line Ahead is the marching formation of the Tank Battalion on the road.
6. Arrowhead is a suitable formation for the Battalion to move in when deployed. (See figure 2). Front of the Battalion in arrowhead formation is approximately 500 metres, depth approximately 1,800 metres.
7. Inverted Arrowhead is the most common formation for the Battalion in the attack. (See figure 3). In this case, the front of the Battalion is approximately 1,000 metres and the depth approximately 1,300 metres. The leading companies are also in inverted arrowhead formation.
8. Unless otherwise ordered, the right leading company gives direction and is the pivot for all changes of formation. The rest march on it or deploy from it.
In Arrowhead or Inverted Arrowhead, the next Company will usually move up to the right. If in Inverted Arrowhead formation, it will move up left of the forward company. This is "inverted arrowhead left".
In arrowhead formation the third company will move right while in inverted arrowhead formation it will follow in the centre behind the leading company.
In both arrowhead and inverted arrowhead, the last company will move in rear. (See figure 2 and 3). Any special changes must be specially ordered.

B. MOVEMENT.

9. The movements of the Battalion will be directed by wireless orders from the Battalion commander.
10. The Battalion Commander transmits W/T orders either to all companies by collective message (using the Battalion code name) or to individual companies (using company code names).
If the Battalion Commander wishes a company to acknowledge, he must ask the company to do so; (for further information see D613/12).

II. Wheeled Vehicles.

11. Formations for the wheeled vehicles of the Battalion are laid down in M.T. Training Instructions (Divisional Orders 472).
12. If they are not employed for special purposes, wheeled vehicles of the Battalion will usually march in one or more groups.

MARCH TABLE, DENSITY and SPEED of the TANK BATTALION and
TANK REGIMENT.

Unit.	Extended at the Halt.	15 km.p.h.		25 km.p.h.	
		Metres.	Minutes.	Metres.	Minutes.
<u>Battalion.</u>					
Including B. Echelon Battle Transport.	1,400	5,060	20	7,500	18
Battalion without B. Echelon Battle Transport.	1,000	3,880	17	5,800	13
<u>Regiment.</u>					
Including B. Echelon Battle Transport.	3,000	14,000	45	17,000	40
Without B. Echelon Battle Transport.	2,200	8,380	34	12,500	30

The length of Units when halting under war time conditions is the same as at 25 km.p.h.

Forming up times: (On favourable ground).

Battalion: From marching column to Battalion inverted arrowhead
10 - 15 Min.

From Battalion Column to Battalion Inverted arrowhead
5 - 10 Min.

Regiment: From Marching Column to Action in Waves
20 - 25 Min.

to action by wings

25 - 30 Min.

From Battalion Column

10 - 15 Min.

APPENDIX 3.

THE BASIC LINE OF ADVANCE (Stosslinie).

The giving of map references by means of the basic line of advance serves for the transmission of orders, the forwarding of reports and the control of artillery fire.

Two points on the map (if possible church spires) in the field of movement of the division will be indicated by Division and connected by a line on the map; this line must lie in the direction of the attack. The line will be divided in centimetres, with the zero point approximately at the height of the starting point of the Division.

The map reference of a certain point (objective) is arrived at by drawing a vertical from it to the basic line of advance.

The situation of the point is determined by:

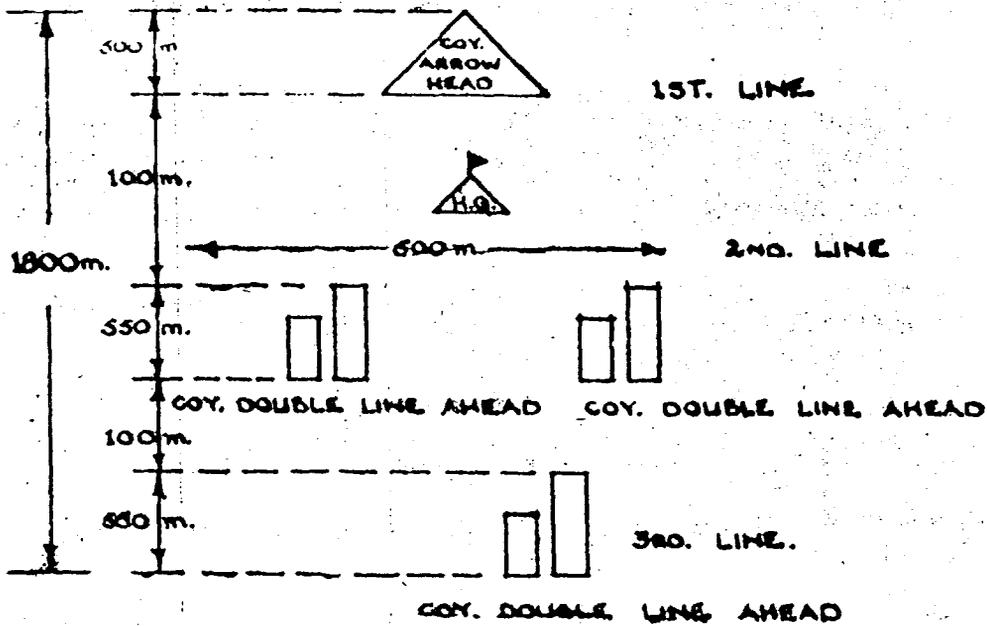
- (a) The distance between the zero point on the basic line of advance and the point on which it is hit by the vertical.
- (b) By the vertical distance between the point and the basic line of advance.

Example: A locality situated at a height of 9 (9 cm. from zero) of the basic line of advance and 2.7 cm. to its right will be referred to in W/T messages with "9 RIGHT 2.7".

The reading will always be in centimetres whatever the scale of the map may be.

So as to make W/T interception by the enemy more difficult Division will, on different days, order the origin of the basic line of advance to be referred to NOT as zero but as another number. Should the Division switch off at an angle; the switching off point on the basic line of advance will get a new reference number; this also will make interception more difficult.

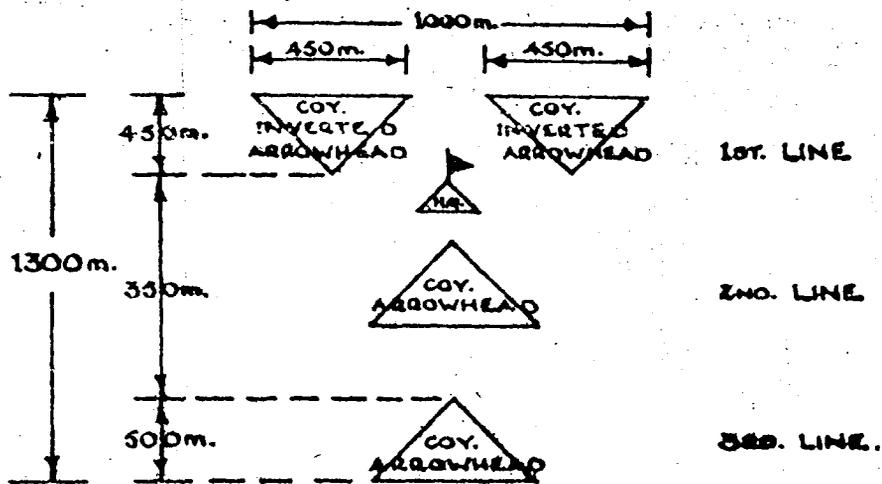
FIG 2. - THE BATTALION IN ARROWHEAD FORMATION ②



⊗ DISTANCES & INTERVALS ARE ONLY APPROXIMATE .

FIG. 3.

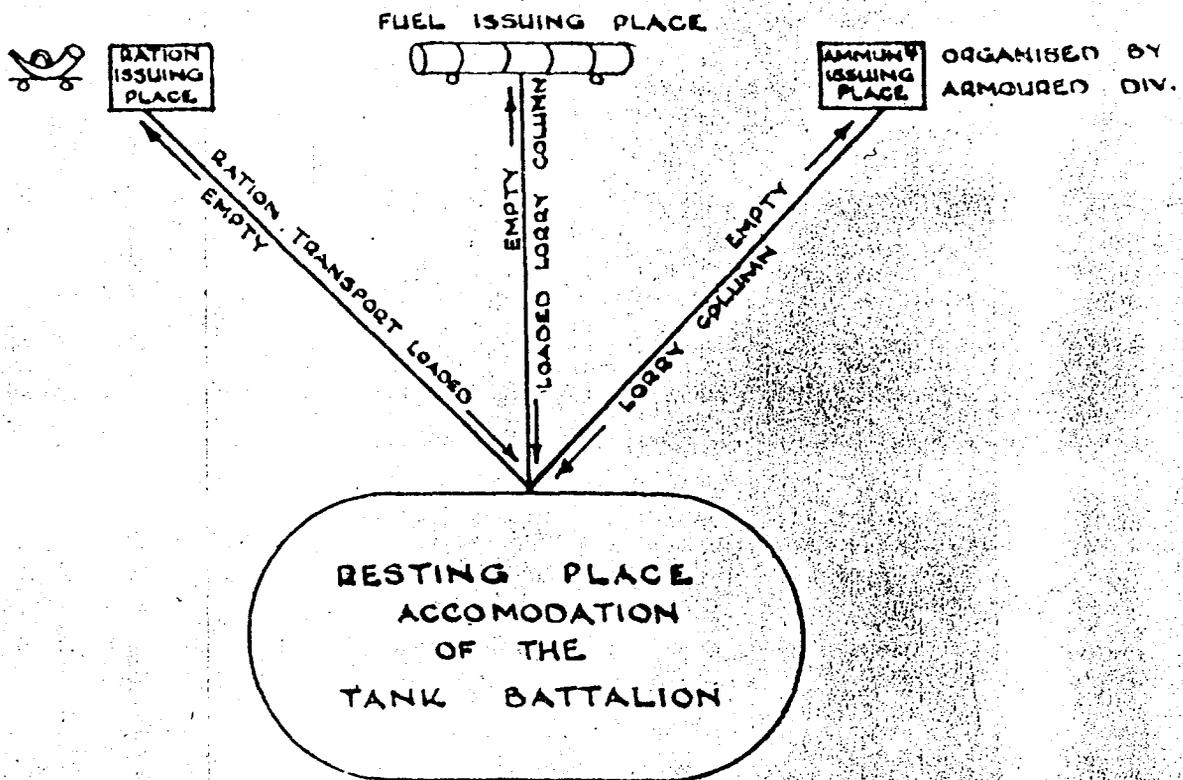
THE BATTALION IN INVERTED ARROWHEAD FORMATION ②



⊗ DISTANCES & INTERVALS ARE ONLY APPROXIMATE .

• DIAGRAM SHOWING SUPPLIES •

• AMMUNITION, FUEL, RATIONS, FIELD POST OFFICE •



"EMPTY" TRANSPORTS TAKE :

(a) 1 COLUMN ("A" ECHELON) :

TO AMMUNITION ISSUING PLACE

PACKING MATERIAL

NOT WANTED (AUSGEBAUTE) SPARE PARTS AND U.S. MATERIAL .

TO FUEL ISSUING PLACE :

EMPTY CANISTERS.

(b) RATION TRANSPORT :

OUTGOING MAIL.

PACKING MATERIAL .

DIAGRAM SHOWING THE ALLOCATION OF THE

MAINTENANCE SERVICES -

A.F.Vs, M.T., SPARE PARTS

- CENTRAL LINE -

2 TANK REGT.

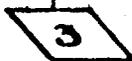
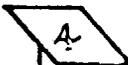
1 BATTALION

1 PLATOON



LIGHT SECTION (TROOP)

BULK

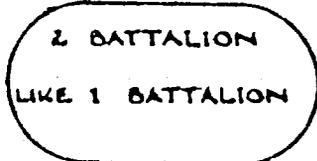


MAINTENANCE GROUP
2 + 3 COYS.

MAINTENANCE GROUP 1 COY.

MAINTENANCE GROUP
H.Q. AND 4 COY.

BATTALION ENGINEER
O.C. ALL MAINTENANCE
GROUPS.



REGTL. CHIEF ENGINEER

SALVAGE SECTION

TANK WORKSHOP COY.
(WITHOUT SALVAGE SECTION)