

FOREIGN MILITARY DIGESTS

German Paratroops at the Foot of Aetna

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Hans-Georg Schnitzer, war reporter, in *Völkischer Beobachter*, Berlin, Germany, 16 August 1943.]

AS WE FLY on our way toward the south a few hours after the alert signal, the main question that occupies our minds is whether we will land or whether we are to jump.

One has to be a paratrooper to understand the feeling that we call "jumping fever." Hence the animation is great when at the first intermediate stop we receive the order to get ready to jump. We now wrap the bandages around our feet, put on our knee protectors, check our weapons once again, and carefully distribute the contents of our pockets, not for the purpose of balance but in order to know later exactly where to grab for the hand grenades, the first aid kit, and above all, for our cigarettes.

The discussion of the operation takes us into the dining room of the airport along with our transport crews. The group commander gives exact orders for the approach, landing point, height at which the jump is to be made, and the take off. There then resounds over the broad field the order which has a very special significance to the paratroopers: "To the air-
craft!"

From the dust and roar of the flying field, we again rise into the sky, assemble in group columns, and in close formations start on our way to Sicily. Flying past the smoking crater of Vesuvius, we take our departure from continental Europe, and look ahead unto another volcano, Aetna, shows up out of the hot glare of the flashing sea on the other side of the Straits of Messina. From its base rises the smoke of burning cities and villages. We see one great bomb crater after another along the highways. Many things seem to be awaiting us here! But we have no more time for reverie. We hear the order, "Get ready! We sit on our steel helmets, rise to our feet, and make the release cord ready. Again we hear the order, "Ready to jump!" The first man steps into the open port. Pressed close together, we stand breast to breast. "Out!" In a few seconds the plane is empty. Hundreds of parachute troops are floating down to Sicily. By the time the first have reached the ground, flight after flight and group after group of planes are

roaring in. The plain alongside a railway line is filled with the roar of motors—until finally the air becomes quiet.

A few hours later we have reached the area designated to us. We are to take over the left sector of the front, along the sea. We receive our baptism of fire in Sicily from naval artillery and low flying planes. Aside from that the enemy leaves us alone the first day. But he makes up for it in the night. We are just changing our position when we observe small dark objects moving toward the land from under the defensive fire of an enemy naval formation which is cruising off the shore and which is being attacked by German fighter planes.

Scarcely are the assault troops under way to meet this threat to our flank by the hostile landing boats when a low humming sound causes us to look upward. We see shadows detaching themselves from the dark silhouette of a plane, shadows which we know only too well—paratroops. While machine after machine unloads this dangerous freight over our heads we prepare for defense in all directions. The night is filled with many short but violent battles. When morning dawns we have not slept a wink, but we have put out of action not only the enemy forces who landed by boat but also those arriving by parachute. However, at the same time, the enemy, because of superiority in tanks and heavy weapons, has succeeded in breaking into our position on the right. Since he has also made landings to the rear of us, we, along with our regiment, are completely surrounded. We have no heavy weapons of any sort and are faced with the danger of being run down by enemy tanks when daylight comes. Now it is up to us to act quickly. The commander of the regiment, Lieutenant Colonel Heilmann, decides to break his way through the enemy's lines during the night. When the moon rises the whole regiment starts off in a file formation to effect a breakthrough. Marching silently, we move back through the coastal plain, expecting to be attacked by the enemy at any moment. But hour after hour passes without a shot being fired. When, at about 0400, we pass through a canyon-like gorge and come out into a valley, the cry suddenly comes from up ahead, "Enemy tanks!" Like a flash the leading company rushes up onto the railway embankment to the left of the highway. The whole column comes to a halt. Finally, a tense silence settles over us. Then we can hear the whole valley filled with the rattle of numberless tank

tracks. The enemy's route of advance is 800 meters away from us. Since the sun must soon rise and because of the heavy massing of enemy forces, we cannot risk a breakthrough. The commander decides to hide the regiment under the dense foliage of an orange grove until dawn. When the sun rises we learn just what our situation is. From the buildings belonging to the grove we are able to observe that we are located in an enclosed valley, that the enemy is occupying the hills around us, and that only 150 meters from us in the adjoining grove there is an English encampment.

To be ready for all emergencies, we dig in in the soft earth under the trees. Yet we have not entirely escaped the eyes of the enemy. Probably he has caught sight of our water carriers, for on two occasions we are fired on. However, he apparently believes us to be only a few stragglers unworthy of action of any considerable magnitude. Twice our hopes of getting out of this circular valley sink almost to the zero point. For every time that things get quiet we again think that we are discovered, and the enemy would need to call on only a few of the tanks that have been rolling over the highway the whole day long in order to run us out. Although during the long night we have brought along our weapon containers and some 70 prisoners, we know that we will have to leave all behind for the coming night as they will hinder our movements. We therefore bury our weapon containers, radio apparatus, and everything else that we cannot carry. The prisoners are left behind in the orange grove buildings under the guard of a slightly wounded man.

The main problem for the second night of the breakthrough is how to get across the route of advance. We plan to attempt to slip through under some viaduct-like bridges without being detected by the bridge guards. We wade a river whose water is breast deep, then start off in the direction of the bridge. The leading battalion and the regimental headquarters are already on the other side when we are suddenly fired on from above. Now there is just one chance for us, and that is to escape over the highway. Our whole battalion, under the fire of a tank which is just coming up onto the bridge, again plunges into the river, and rushes up the slope on the other side and across the highway before other tanks have time to block our way. Then we wheel to the right and dive down again into the gorge. While we hurry along, part of the time under cover of a dense growth of rushes and brush, part of the time in the open in the moonlight, the enemy keeps firing down on us from armored scouting cars. However, most of the time he fires too high. Finally he loses our trail as we turn off into an adjoining gorge which leads us up onto a barren mountain ridge. On the other side we march along a railway track, assemble at a deserted railway station, and a few minutes later make our way into a tunnel some two kilometers in

length. Here the seconds seem like minutes to us as we stumble along with burning feet and in complete darkness over the ballast, ties, switches, and great pieces of rock. Finally, when we are again out in the open, the report comes back from up ahead that we are not yet through the enemy's lines. Again we are obliged to hurry as fast as possible so as to be able to hide before daylight arrives. At the edge of a former German flying field the regiment slips down into a ditch filled with a growth of rushes. The headquarters personnel occupy the tents of the ground personnel which are camouflaged as straw stacks. We remain here until the night again passes, for enemy tanks and armored scouting cars are rolling past not far from us. Once a few of our men who had carelessly ventured as far as a house are fired on. Again we think we have been discovered and that we will soon be attacked by larger forces, but the night comes on again without our being further hindered in our advance.

In the rear of our fire-spitting front we make our way across the coastal plain toward the mountains. And we are led so skilfully on this trip that the first shot we hear is that of a German sentry. Our first thought after crossing our own line is to get some sleep. Our legs dragging with weariness, we drop to the ground under the trees of an orange hedge. Only on the next day in the rest camp, when hour after hour more of our scattered comrades, who have been breaking their way through alone, join us, do we give vent to our joy over the success of our operation and our happiness in seeing one another again. A few kilometers behind the main line of defense the divisional commander, Lieutenant General Heidrich, congratulates us in a regimental assembly. Then once more Lieutenant Colonel Heilmann steps out in front of us and draws the conclusion from the events of the last few days: "There is no situation so hopeless that it cannot be mastered by bold action." With this in mind, the regiment returns to the battle.

The Aviation Commander in Combat

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel N. Denisov, Soviet Army, in *Kasnyaya Zvezda* 3 October 1942.]

SUCCESS in combat depends much on the skill of the commander in correctly selecting a place for himself from which it is most convenient to guide the activities of his subordinates. This situation applies to all kinds of troops, including aviation. To be sure, it is applicable to aviation only with the consideration of a very important detail: the commander has to direct combat both in the air and from the ground. When the commander of a fighter unit is on the ground, he does not directly take part in the combat. At times he may not even see how the battle is developing, a thing which is absolutely

unthinkable, for example, for the commander of an infantry regiment. However, even on the ground he can influence the course of activities developing in the air. In the first place, his will is expressed in the combat order which the fliers are carrying out. In the second place, using radio, he can follow the course of combat from the ground, put new forces into action, give orders for withdrawal from battle, and so on. For commanders of bomber and attack air units these possibilities are still greater.

In aviation it is necessary to count on the presence of these two possible variants of combat command: from the ground and in the air. Which of these variants is more expedient? The decision here depends on a multitude of factors. First of all it is necessary to keep in mind the branch to which the given commander belongs. The commander of a large air unit is one thing, the commander of a smaller unit or escadrille is another. The character of the task and its importance, also has significance. It is necessary, in addition, to consider such a factor as the degree of preparedness of the flying personnel departing for a combat flight. One thing is incontestable: the possibilities of direct influence on the course of combat activities from the ground are always limited. For this reason many aviation commanders, called upon to guide directly the activities of their subordinates in combat, must accomplish command largely in the air.

Thus the question of the place of command, on the ground or in the air, must not be approached superficially. It is self-evident that any air unit, having been assigned its combat mission, fulfills that mission even in case the commander is not along. But very often the commander's personal participation in the battle is a basic prerequisite of success.

In one instance fifteen light bombers took off from an airfield of the western front. Captain Menyaev, commander of the unit, remained on the ground. After some time five planes returned. This group had encountered a very complicated situation. In the area of its activities the fire of hostile antiaircraft guns was especially dense. Here, besides the boldness of the crews, still greater skill was needed, and, in particular, experience in maneuver against hostile antiaircraft. The leader of this group had not handled his problem adequately. Hearing his report, the commander decided to await the landing of the other planes. Upon their return a number of other details of the situation became clear, such as frequent encounters with hostile fighters and deteriorating weather in the area of the objectives.

The leader returned from this mission not without some success, but from the unit as a whole incomparably more was demanded. It was cooperating with ground troops, and already at the very beginning of the action this cooperation broke down. It was necessary to correct the situation. The ground troops needed immediate assistance from the air.

Captain Menyaev organized a second flight, changing the route and elevation of flight somewhat. The same officer was designated as the leader, the commander again staying on the ground. The second flight also could not be considered satisfactory. Only on the third run did the unit successfully accomplish its mission.

Did the commander act correctly in remaining on the ground both times? Several very important circumstances connected with the ground service, the preparation of equipment, and the working out of further actions demanded the presence of the commander on the field. Thus it is possible in the first instance that he remained because of extreme necessity, although he must have known how tense was the situation in the air. As to the second time, it seems that there cannot be two opinions. For the air commander engaged in cooperation with ground units there is nothing more important than the interests of the general combat. The commander's duty was to head the unit personally on the second flight, no matter how urgent matters at the field. Everything indicated that the situation called for great skill and the mastery of a leader. How could the commander calmly stay on the ground when he knew that the results of the first flight were unsatisfactory? In each individual instance the situation dictates where the commander should be: in the air on the field, or at an observation post of the higher commander. It is necessary to remember that, being in the air all the time, the air commander may turn into a line pilot, and on the other hand, by directing all combat from the ground he ceases to be an air fighter. But the role of the air commander who having lost his function as a flier, ceases to be an air fighter is unenviable.

Can the commander of fighters have absolute authority among his pilots if he does not lead them into the battle himself? He cannot! But does this mean that he must go up in the air at every air alarm signal? Not at all. Only the situation in each individual case prompts the correct decision.

The commander of a bomber or assault regiment should approach his job in this manner: If the regiment is engaged in a single massed thrust, the place of the commander is in one of the active groups of aircraft. While in the air he will command the whole combat formation by radio. In case the situation becomes complex, he will at once make a decision to lead the planes to the objective, and strike it. If the work of the bombers or assault planes is planned so that they fall on the enemy in echelon, in small groups, then quite possibly it is more expedient for the commander to stay on the ground. Being at the field, he will direct the flights of the units, striving for the continuity of their action against the enemy.

The air commander organizing a flight must decide for himself where he should be. The one who correctly combines the duties of both the commander

and the flier acts in the interest of the battle as a whole. Wherever this commander may be, in the air, on the ground, or in the combat formations of ground troops, his unit must always feel firm leadership and unswerving direction, especially in decisive stages of the battle.

Improving Artillery Observation

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Captain Lehmann in *Artilleristische Rundschau* July 1943.]

ACCORDING to the principles laid down in Army Regulations the battalion commander is responsible for the choice of observation posts, but attention is also called to the fact that it is the duty of every artillery commander to improve the condition of observation. The following example, from the summer campaign of 1941 in Russia, illustrates the success that can be achieved by shifting an observation post as the result of a decision by the battery commander.

In July 1941 a division from lower Saxony was west of Zhlobin (not on sketch) warding off attacks by Russians from the Dnieper bridgehead. After a series of engagements which were very costly for both sides, the enemy occupied positions facing our regiment about as shown in Figure 1. Positions of

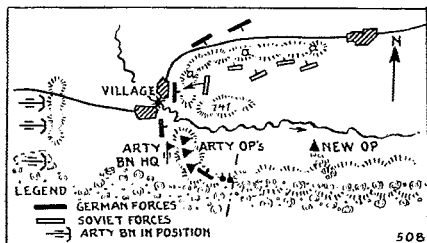


FIGURE 1

the enemy north of Hill 141 could not be observed from the German side since they were covered on the north and west by a rise, "a," and on the south and southwest by Hill 141. From these well-organized positions the enemy attacked frequently and violently in a westerly direction. He finally succeeded in capturing the village north of the small stream.

On account of the topography, artillery support of our own defense and attacks was possible only through employment of advanced observers. In order to get away from the crowded condition of the observation posts on the hill south of the stream and to increase the effectiveness of his fire, the commander of the right battery decided to seek a more suitable observation post for his own use. He found a favorable place between our own forces and the regiment about two kilometers to our right. From the tip of a narrow strip of woods in an elevated position, it was

possible to look down on the flank and rear of the enemy north of Hill 141. It was also possible to get a good view of traffic into and out of the positions and to obtain a view of the enemy's supply routes and installations. The place had two disadvantages, however—longer connections and lack of protection by one's own infantry. The observation post was transferred to this new location upon the battery commander's decision, sanctioned afterward by the battalion commander. At the battery commander's request the position of the right company of the infantry battalion was extended to the east, and a group was attached to the battery as a securing force for the observation post. Organization of the post was carried out at night with great caution and speed (see Figure 2). A communications trench was dug clear to

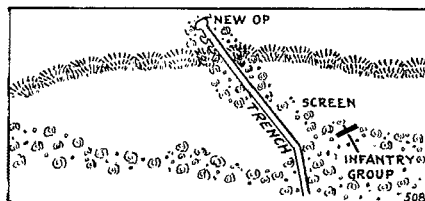


FIGURE 2.

the tip of the strip of woods, which measured only ten meters across and consisted of a dense growth of pines about four meters high. Holes were dug for the observer, the telephones, and the messenger. All excavations were carefully camouflaged. The position was secured against surprise attacks by means of trip wires connected with hand grenades and booby mines. The division quickly learned of the favorable position and the improved observational possibilities of the new post, and it was visited by many commanders and general staff officers who desired to observe the terrain and the habits of the enemy. In order to escape the danger of discovery by the enemy, the connecting trench was extended far into the sparse growth of tall trees; and a screen was constructed of sixty pine trees some three or four meters in height.

Effects obtained through the use of this observation post soon resulted in considerable relief for the infantry. By means of the battalion's concentrated fire laid down on the Soviet positions north of Hill 141, it was possible to break up all preparations for attack by the enemy; and it was also possible to recapture the village north of the small stream. Three enemy batteries were destroyed by means of observed fire, two others were forced to change their positions, and an enemy ammunition dump was discovered and set on fire by artillery shells.

And so the decision of the battery commander bore its fruits and laid the foundation for successful defense of the division and for its later attacks.

Mobile Columns

[Digested at the Command and General Staff School, Fort Leavenworth, Kansas, from an article by Major Ripley Webb, M.C., Indian Army, in the *Army Quarterly* (Great Britain) May 1943.]

IN WESTERN EUROPE we are likely to see operations again what the Prime Minister has called the "soft underbelly" of the Axis together possibly with a more direct assault. Sooner or later there will be operations in Burma and the Far East. In any of these theaters of war there will be from time to time a demand for self-contained columns, hard-hitting, fast-moving, and often forming part of an elastic system of penetration of enemy territory that does not favor a general advance on a broad front, or alternatively for cooperation in a general advance by a rapid occupation of strategic points or destruction of enemy communications.

Whatever type of operations we envisage there will arise a need for columns of fighting troops able to travel far and fast, and if necessary to fight to attain their objective without prospect of immediate support. It will therefore be of value to consider how and to what extent such columns can be organized, trained, and employed.

The organization of the column will be dependent upon the nature of the country. In open country, where enemy armor may be expected, the column will probably comprise a core of artillery with medium tanks and mobile infantry to exploit and protect its action. In enclosed country lack of observation may rob the guns of some of their value, while in mountainous country the howitzer alone is of real use while tanks lose their mobility. The column organization must therefore be flexible.

In the employment of mobile columns dispersion will be the dominant factor. Everything will be stretched to its utmost—control, communications, supply, and maintenance. To counteract this a high degree of initiative, self-reliance, and efficiency will be demanded from the more junior leaders, while grouping of formations and units must be flexible and training and ingenuity can make it. Success will depend upon speed and determination, both in thought and action, which will in turn depend upon practical experience and training to the point of weakness in such matters as march discipline and maintenance.

General Montgomery has emphasized that the training of big forces must be conditioned by the situation. Yet it is probable that under certain conditions direct air support, especially at the outset, may again be attenuated. Airdromes will, in the early stages, be few and far between, and fighters will be restricted by distance. So in our training we shall well to rely upon carefully planned passive defense rather than upon a large measure of direct support.

As regards the organization of a self-contained column, everything will of course depend upon the terrain. It may be an armored column in the true sense of the term, with armored cars, medium tanks, self-propelled guns and other hard-hitting elements backed up by infantry in armored vehicles. Such a column would be capable of thrusting far ahead of an advancing army and seizing points of paramount importance or destroying the communications of the forces attacked. The Russians have developed this technique with great success. In such a case the column might be formed from components of an armored division. It seems that each case must be judged on its merits, and no hard and fast rules can be made as regards organizations. Odd things happen. For example, tanks have their uses in mountain warfare while infantry may turn the scale in the desert. The tactical handling in either case will be very different but the principles of organization and employment will be similar. Whether the striking power lies in armor or infantry, it is very desirable that an existing formation headquarters should be utilized for the means of command and control of the larger columns. Improvised headquarters, lacking such essentials as signals, clerical staff, etc., are never satisfactory. With a mobile column operating on an attenuated line of communications it will be even more necessary to have every possible assistance in control and administration.

On the other hand it will be found that actual command while on the move must be exercised on the simplest possible system. It is at the head of the column that things will happen, and here that decisions must be taken that should not be delegated to a subordinate officer. The column commander who waits for information to come back to him will soon find himself in trouble. Of all things he himself must be a go-getter.

Remembering the length of our column, anything up to thirty or forty miles, we must be very careful in arranging the order of march for the day. Once the march has started this order can rarely be altered. On the information available at the time and the object to be attained, the commander must decide just what type of weapons he wants near the head of his column. It may be artillery, it may be Army Troop units, it may be explosives. In any case it will nearly always be advantageous to have some guns very near the head. It will be his aim to keep away from the head of the column every vehicle that is redundant.

Traffic control is of paramount importance in such maneuvers and the units responsible for this comprehensive duty must be versatile in their accomplishments. They must be able to sort out hopeless looking jams, sidetrack refugees, shepherd lost vehicles and units, and be traveling encyclopedias of information. Only the best of personnel should be selected for this work and the training must be wholly imaginative. It is easy to miss turnings when using i

defined tracks and a posse of traffic control men should always be near the head of the column so that men can be dropped to indicate the route, or otherwise mark it. Cohesion will be found another difficulty. If march discipline is not good, units or detachments will become separated. On one occasion a battalion commander sailed away in Italian territory under the impression that he had a whole battalion and a troop of artillery following him. In reality he was backed by no more than ten lorryloads of troops. The remainder had not seen the signal to advance.

Next the loads. An officer deputed to command such a column will be wise to consider the prospects and in certain cases see whether he cannot leave behind some of his equipment or administrative details, either at a depot or to be sent on later. Our column will have to carry far more petrol, water, ammunition, and food than normal loads allow for, so that either some equipment must be left behind or extra vehicles provided. Every added lorry means more exposure to the air and more petrol, etc., to be taken. Theoretical planning is not enough, only practical experience will show what is essential and what is redundant.

Communications will always be difficult and maps often at fault or nonexistent. The training should include much work on strange country without maps. Wireless still leaves something to be desired in wooded or mountainous country. A high ridge can cut communication completely between low-powered sets while tropical country often provides the unexpected in the way of "blind spots" in which neither transmission nor reception is possible. In this type of warfare the liaison officer will often prove the most reliable means of communication for important orders and information.

Adequate reconnaissance is essential to a swift-moving attenuated column with its long, vulnerable flanks. In the mountains air reports are apt to be misleading not only concerning enemy movements but topographically. The accustomed sectional elevation from the viewpoint of ground troops is turned to plan when seen by the pilot, and as anyone who has had experience of this type of country will know, features can be reported quite differently by ground and air. The tricks that can be played upon you by false crests and under features that are almost invisible until you reach them, have to be experienced to be believed.

The quality of the leader is more than ever of importance in this advance of long-tailed columns. In the leader of today we look for a vivid sense of imagination controlled by cold reason. This is well exemplified in General Montgomery's handling of the North African offensive. When we look at the bleak prospect that must have faced him at El Alamein, and at the same time realize that to reach the culminating success at Tripoli, each step of that forward move with its intricate administrative planning must

have been foreseen and allowed for, it is clear that he must have used his imagination to the full. There are many examples earlier in this war where events showed that we failed to use any imagination at all. It is equally fatal to let our imagination run away with us as it appears Hitler did in his disastrous Caucasian adventure. But controlled by reason it can be a wonderful servant and a valuable reconnoitering unit. Imagination can form a beam which will pierce the fog of war and operate behind the enemy's lines, laying the foundations for subsequent advance.

Our column commander, then, must use his imagination freely. He must know his country and be able to assess the value of the reports he receives. He will learn, too, to gauge the nature of the opposition he encounters. Nothing is more mortifying than to discover too late that a handful of men with a few automatics and a pack gun have been holding up your column and forcing it to deploy. Only experience based on careful training will obviate this. The leaders of such columns will find themselves acting on the barest of orders. It is desirable, therefore, that the superior commander should get to know his column leaders far better than would be necessary in ordinary operations. He must know their capabilities while they must know his mind, his object, his ideas on its attainment. They must know too his resources, the nature of the support they may expect in given circumstances. But above all they must know their airmen.

Good leadership will be dependent upon a good intelligence system. In no campaign has intelligence proved of such paramount importance as in the Western Desert. Mobile columns will again and again be employed to fight for information or to obtain it from far behind the enemy's forward positions. In a modern war of fast movement and unexpected situations there is no time for leisurely weighing up of considerations. Intelligence regarding enemy locations, equipment, morale, leadership, and organization, together with topographical knowledge, must be collated and minutely examined before an operation, and deductions must be prepared beforehand. These will of course be amended as reports come in, but when you consider the conflicting factors of type of country related to enemy organization, enemy morale related to obstacles, enemy equipment related to our own equipment, and then speed everything up to sudden unexpectedness, it is easy to see that during operations there is no time for pondering over pros and cons. It must all be ready beforehand, for never was there more need for the staff to be able to provide immediate and potted information of this kind for a commander who is called upon to take quick decision upon which may depend success or failure of at least a part of his superior commander's plan. A "tankable" map will be prepared of course as soon as the probable theater of operations is known. Shaded areas will show country impassable to ar-

moved fighting vehicles and the tactical implications of this factor will then stand out in immediate relief.

We now have some data upon which the training of troops likely to be employed in mobile columns may be based. Other factors will occur to the mind of the officer planning the training. Much attention is now being paid to battle training including the crossing of water obstacles.

There is no doubt that our pre-war training lost much from our tendency to use set-piece schemes designed to bring out stereotyped lessons. It was rare indeed that the unexpected happened or that junior commanders were faced with sudden dire emergencies. We are learning now that we cannot have too much imagination in our training. Especially will this be the case with columns of the type we are considering.

The mobile fighting column may be employed on various occasions. In the assaults upon Kursk, Kharkov, and Stalingrad, the Russians used such columns far behind the battle front to interrupt the enemy's communications and to aid in masking the point where the real threat was to develop. The value of modern armor lies largely in its ability to strike at any unexpected point by reason of its great mobility. It is therefore relatively easy on a wide front in suitable terrain, to pierce the front at some unexpected point sufficiently to let an armored column through. This column, operating in conjunction with a major assault in the neighborhood, can then profit by the general tie-up of reserves and accomplish its mission. It will be bounded by its limit of self-sufficiency which can be increased by raiding enemy depots or by an air supply system as the Germans did when invading Poland. In this way the enemy can be forestalled upon an objective, kept guessing as to the direction of an attack, or weakened by losses and severing of communications, never so important as during a major operation. Thus his mind becomes confused and his morale shaken. Though the German is stubborn in defense and is not easy to dislocate, once that dislocation is complete he finds it difficult to regain cohesion. This is an attribute worthy of exploitation and the mobile column provides the means. It is a weapon with which the enemy's arteries can be severed at a critical moment, while its use is obvious after a major defeat has been inflicted upon the enemy at a time when our own administration is stretched, armored formations are not available, and our forces cannot be got on the move sufficiently rapidly to interfere with his withdrawal at that fleeting moment when it can be turned into a rout. The mobile column may make all the difference but it must be ready, it must be trained and prepared and equipped for its task.

It is not suggested that there should be special troops for this duty. There are no great difficulties nor unusual demands upon the troops. But there are a great many details that need training and exper-

ience if undue delay and less efficiency are to be avoided. It must not be thought that such columns as these are to be limited to the role of strong offensive patrols which can fight for information or perform other tasks contributory to, but subordinate to, the main effort. Such an armored column will be *part of the main effort as the operations in Russia have shown*. Communications and equipment have become so vital to the modern army that its defeat is not only to be obtained through an assault on its main positions. To strike at its communications and at the same time envelop the main force, as a prelude to more leisurely reduction with the aid of heavy artillery, has been found a much more economical method.

These are some of the factors that are going to influence our tactics during the remaining campaigns of this war, with the emphasis upon the striking power of the offensive column. The main essentials of such a column are cohesion and mobility giving the power to punch hard, made possible by a high degree of skill in maintenance and road discipline, together with the ability to travel hard and light, careful organization in accordance with the nature of the task considered in relation to the terrain, the go-getter instinct implanted in every one, good reconnaissance, sound intelligence and power of deduction, with a high degree of initiative, the whole being parented by training and experience. The experience may be limited to what can be obtained in local conditions in training areas but practical experience there must be. It will be realized that we are assembling a machine every whit as dependent upon its components as is the aircraft moving in the fourth dimension. If one component is weak the efficiency of the whole is threatened. So that, given the leadership of such a column, a commander will be wise to set about his task on the lines indicated, never satisfied until he has trained and tested his troops in every likely capacity nor until he has built up that spirit of a corporate body which will be his standby when the last ounce of punch is needed to bring him success.

German Tank Tactics in Russia

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel M. Zubkov, Soviet Army, in *Krasnaya Zvezda* 20 April 1943.]

FROM the very start of the war, the German command has tried to use tank units in mass for the execution of deep penetrations. Right up to the winter of 1941-42, wherever the Germans operated, the action of all types of troops was attuned to what the armored forces did. Tanks fought in a compact mass and were not used for infantry support. This does not mean that tanks fought without infantry, but infantry was motorized; it was the tanks' own infantry.

Great German losses on the Soviet front caused its

infantry to weaken even in the winter of 1941-42, and it was unable to carry out any tasks independently. Then, contrary to its own doctrine, the German command began to attach small numbers of tanks to infantry divisions. These tanks were to clear the path for the infantry.

In the winter of 1942-43, after suffering great defeats, the Germans began to disperse their tanks still more, attaching them to large infantry units. Masses of tanks hitherto gathered in a compact group were dissipated. At some places, for example at Stalingrad, the Germans tried to accomplish something intermediate: they organized offensive armored groups which quickly shifted to the threatened sector of the front. But, at any rate, we did not see any massed use of tanks by the enemy prior to his counterattacks in the Ukraine.

Toward the end of the second year of war the Germans not only had abandoned their previous organization of tank units, but even introduced tanks into the organization of their motorized regiments.

The highest unit of the German armored force is the tank army. The smallest unit capable of performing operative tasks is the armored division. The Germans use tank divisions for the accomplishment of the following missions: breakthrough of a protective screen; prompt occupation of decisive sectors and points important for further conduct of fighting; sudden attack on moving units; attack on a sector not completely prepared for defense; attack along a narrow front on a prepared defense. The chief task of the tanks is the development and exploitation of success in the defensive rear and in the area of operation.

Attacks are usually undertaken by tank regiments consisting of about 200 tanks, according to their tables of organization. They operate in mass, organizing combat formations in two or three echelons. If a tank regiment attacks in two echelons, the first is made up of two tank battalions; the second, of one. The second echelon follows the first and has the task of developing the former's success. Antitank artillery advances with the second echelon.

As formerly, the tanks during attack carry on intensive fire intended primarily for psychological effect and are accompanied by planes which try to pin the defenders down. For this purpose hostile planes endeavor to remain over the battlefield as long as possible. They do not drop their bombs all at once, but at intervals. Between these bombings the planes dive and strafe with their machine guns.

Our units have frequently encountered all these enemy methods and have taken necessary measures for repulsing massed tank attacks. These measures include, first of all, massing and deep echeloning of antitank weapons (primarily artillery), and secondly, utilization both of mobile antitank reserves for combating hostile tanks which have broken through

and of strong tactical reserves for combating German motorized troops.

For successful repulse of massed enemy tank attacks, reconnaissance is of great importance. It must determine exactly where the enemy is assembling for the attack. It is important to anticipate the German plan and make preparations for the encounter in that sector where the enemy intends to accomplish the breakthrough. For this purpose it is essential to follow attentively the tactical regroupings and concentrations of the enemy troops with the aid of all means of reconnaissance.

The Germans try to inflict blows on the flanks and at junctions of our units. As soon as a concentration of tanks is noticed it is necessary immediately to undertake corresponding measures. A whole system of antitank-defense strongpoints with fire organized on the basis of mutual support must be prepared in the threatened sector. For mutual security of flanks, antitank-defense strongpoints should be echeloned in depth. This results in the creation of firepockets into which hostile tanks fall and are subject to fire from two sides.

It should be emphasized that, in all cases, successful repulse of hostile tank attacks depends entirely on the stubbornness and firmness of our troops. In the German army all sorts of troops are used for supporting the tanks. If the defenders, disregarding enemy aviation, concentrate all available fire on the tanks and cut off the infantry with rifle and machine-gun fire, then the enemy attack will surely fail. During a tank attack, under no circumstances should fire be diverted or part of the infantry shifted for action against the planes supporting the tanks. This is the job of the antiaircraft artillerymen and the fighter planes. For artillery, antitank rifles, and mortars, there is only one objective—the tanks. However thickly German planes circle above them, antitank elements must concentrate only on tanks.

Recent battles have demonstrated that our units know from the beginning how to crack and smash German tank wedges. Good reconnaissance and detailed aerial photography, repeated several times, always disclose where the enemy intends to deliver his tank thrust. After this becomes known, it is necessary to act with precision and speed. In organizing antitank strongpoints it is necessary to take all precautions in guarding against flanking maneuvers by hostile tanks.

It is possible, of course, that the enemy will not be successfully stopped at the forward edge. In this case he must be absolutely ground down and destroyed by our units in the defensive rear. Energetic and violent counterattacks by mobile antitank reserves against the flanks of the enemy who have broken through will lead to the desired result.

It must be observed that, having suffered defeat, combat organization of the German armored division breaks down very quickly. In order to compen-

sa for the lost forces, the Germans attach some units of the defeated division to another armored division or even to infantry units.

In defense the Germans likewise assign an important role to their tanks, using them in small groups in close cooperation with infantry and other types of troops. These groups are intended for counterattack. But it should be said that when they encounter the antitank artillery accompanying our attacking infantry, enemy tanks usually roll back as soon as the foremost machines are hit. The Germans try to counterattack against the flanks.

Some of the damaged and non-repairable tanks are dug into the earth by the defending enemy and are used as immobile pill boxes. It is best to outflank such positions, but if this is impossible then they must be destroyed by artillery fire or isolated like ordinary log and earth dugouts.

The Germans sometimes try to solve defense problems by attacking, delivering diversionary counterthrusts with the purpose of reducing pressure in the sector of decisive importance. Here they do not break up their tank units at all but use them as a whole. Similarly, they do not break up tank units in holding engagements or in protecting the flanks of large forces engaged on a wide front.

It is necessary to combat this in various ways. Against tank counterattacks the same measures are employed as in an enemy attack. Hostile tanks protecting the flanks and wide intervals in their front line must be outflanked by our mobile antitank groups. It is impossible to set a standard procedure for this. The situation itself will dictate what is necessary. In other cases it is advantageous even to attack the enemy tank division deployed on a wide front. It is sufficient to filter through its combat formations and cut its components off from the rear and from transport; in a short time the matériel possessed by the enemy will prove to be but dead freight.

Smoke-Trail Mortars

Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Kugelen, war reporter, in *Münchener Neueste Nachrichten*, Munich, Germany, 31 July—1 August 1943. Photographs from *Die Wehrmacht* 4 August 1943.]

Infantry fighters and those in the homeland know, at least in a general way, what a "Stalin's organ" or a "cannon" is; but there are, for the most part, rumors and false ideas current in Germany with regard to a weapon which is far superior to this Russian copy.

Units of the smoke-screen-layer forces are organized into regiments which are fully motorized, are capable of traveling off highways and roads, and are highly mobile. They are equipped with smoke-trail mortars of medium, heavy, and extra-heavy caliber. As in the case with artillery, the regiment is subdivided

into battalions and batteries. Being a decisive arm, these regiments are concentrated at points of hardest fighting on the front and, on account of their extraordinary fire power, are a vital factor in the hands of the commander. The fire power of these mortars is made clear by the fact that a salvo from nine medium batteries corresponds to a salvo from 81 heavy field howitzer batteries. Organization and equipment, with communication apparatus and motor vehicles, are similar to those of a motorized artillery regiment. Since these mortars are usually close behind the infantry front line, batteries are also supplied with antitank cannon. On account of the light construction of the mortars, a 3-ton tractor suffices for pulling them. This tractor carries both crew and part of the ammunition.

The mortar is a six-barreled weapon (see Figure 1), the six barrels being mounted around a central axis or in two layers on a light carriage. Made of light sheet steel, the barrels serve only for pointing and guiding the projectiles. All other complicated parts about a gun, such as the tube made of the best steel, breech mechanism, recoil brake, pneumatic counter-recoil mechanism, and heavy carriage, are absent in the case of this modern weapon whose peculiarity lies in a special method of propelling the projectile. Thus, a weapon weighing from 7 to 16 *Zentner* [about 770 to 1760 pounds] depending on the caliber, combines the fire power of six heavy field howitzers each of which weighs 120 *Zentner* [13,200 pounds]. This modern weapon is, therefore, very mobile and particularly suited for quick action with tank and motorized divisions. By means of electric ignition, the six projectiles are fired within the space of a few seconds. While in the case of the Soviet "salvo guns" the stabilization of the projectiles is obtained only by means of vanes and therefore considerable dispersion occurs when the wind is blowing, in the case of our mortar a rotation about the longitudinal axis, that is, a twist, is attained. Hence the shots group themselves over a very small area of the target.

While at the beginning of the campaign in the east the black powder that was employed left great trails of smoke behind the projectiles and a lofty wall of smoke was produced in front of the battery (see Figure 2), the smokeless powder now used leaves only a slight trail; and only a red glow marks the path of the shell. Any one who has witnessed night firing of the mortars with their trails of fire, or by day has heard the howling and whistling of hundreds of fiery projectiles within a few seconds, will never forget the impression made by it. And when the salvo crashes down onto the enemy with flash and thunderous roar, the heart of every infantryman beats harder; for he knows that where the salvo struck there is no life left.

The mortars fire three kinds of projectiles:

1. Explosive shells, among them shells with highly



FIGURE 1.

SMOKE-TRAIL MORTAR BATTERY. CREWS RUSH FORWARD TO RELOAD AFTER SALVO HAS BEEN FIRED.

sensitive and delayed-action fuses which make it possible for the shell to destroy protective covers. First of all, the explosive projectiles are intended for anti-personnel purposes by means of their fragments and mine effect. Without external wounds, whole groups

the infantry attacks. In the defense, the laying of a smoke screen makes it easier to disengage from the enemy and prevents losses. It has often been possible, by neutralizing the enemy's antitank weapons by means of a smoke screen, for our tanks to cross difficult terrain which was under fire.



FIGURE 2

THE PROJECTILE CAN BE CLEARLY SEEN IN FLIGHT

of the enemy have often been found dead from the effects of the fearful explosion of massed volleys of heavy-caliber shells, and even field fortifications and bunkers have been caused to collapse and their crews have been destroyed.

2. Flame shells, which by their frightful jet of flame and smoke produce a strong psychological and moral effect on the enemy and inflict severe burns. Houses go up in flames, and under favorable circumstances woods and fields are set on fire.

3. Smoke shells which, shot over the enemy as a wall or zone of smoke, deprive him of vision and therefore of the opportunity to employ aimed fire. By this means a great deal of blood is saved when

The smoke-trail mortar forces, in accordance with their task of destroying the enemy by means of concentrated fire, are employed in units of a battalion or regiment in strength. By means of proper establishment of the batteries, well planned communications system, and numerous observation posts with advanced observers with the infantry, great flexibility and rapid concentration of fire power on the most important targets are assured. For operations far into the enemy's positions, for breaking up assemblies for attack, for knocking out command centers, or for effectively breaking up sudden attacks, the mortars are brought far to the front, almost always ahead of the artillery. In their firing positions, which are built after the manner of supporting points, they are a strong support for infantry which is engaged ahead; and many an attempted breakthrough by the enemy during the winter months collapsed in the face of direct fire of smoke-trail mortar batteries.

Air Reconnaissance

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Major General I. Vinogradov, Soviet Army, in *Russkaya Zvezda* 4 July 1943.]

IN THE present war of maneuver, air reconnaissance has a special role among other types of recon-

naissance. It is the most important means by which to gather data about enemy concentrations and intentions. The enemy often uses misinformation to conceal his plans and to lead our troops into error. In such cases the data of other types of reconnaissance can be checked by air reconnaissance not only before battle but also during all its stages.

The importance of air reconnaissance is especially great in offensive combat. It usually gives a sufficiently full picture of the system of enemy defense, obtained by continuously photographing the defense zone. In the course of attack air reconnaissance constantly observes the approach of hostile reserves and the areas of their concentration. Often it alone is able to determine the start of the enemy's retreat which begins with the movement of rear installations and trains concealed from ground observers. During pursuit, air observation discloses retreat routes of main and secondary enemy concentrations and the positions which he prepares for organized resistance.

Air reconnaissance also gives invaluable service in difficult battles when liaison between the higher staff and the units is disrupted. Information steadily comes in from air scouts about the course of combat in various sectors of the front and about the position of hostile troops.

Air reconnaissance can be divided into long distance or operational and local or tactical. Long distance reconnaissance usually proceeds in the interests of the general front or army command. Local reconnaissance acts to a depth of 40 to 50 kilometers or, during battle, directly over the battlefield. For the latter not only special scout planes are used but also all combat air craft. Let us examine briefly what demands are placed on air reconnaissance in battle, and what factors sometimes hinder fulfillment of these demands.

Air reconnaissance attains its objective only when it is carried on constantly, day and night, both on the battlefield and in the rear. Unfortunately, it cannot be said that this rule is observed everywhere. Sometimes because of bad planning of reconnaissance and incorrect calculation of its forces and means, actions of the enemy for a long time escape the attention of the higher commander. Absence of constant observation of the enemy leads to reconnaissance not being carried to completion. It sometimes happens that the scout reports movement of a column but cannot indicate its destination. Sometimes the region of concentration is also successfully determined, but there is no further observation of the column, and it is uncertain whether it is there at the given time or has gone to another region.

It is necessary to attain constant observation of areas of concentration of large groups or columns of the enemy, especially tank and motorized. This does not mean, of course, that the scout plane must follow the column all the time. Continuity of reconnaissance is attained by repeated flights, both day

and night. These flights are provided in the staff plan of air reconnaissance of the force of combined arms. It is also desirable that local reconnaissance planes literally "hang" above the battlefield. Continually observing all that goes on on the ground, the flier must perceive the slightest changes in actions of the enemy and in the movement of his reserves. When enemy counteraction is strong, fighter planes can be engaged for this task.

Accuracy and reliability of air observation data is of great importance. Practice shows that there still are deficiencies even in this sphere. We have encountered such facts as these: the air scout reports an observed column by radio, frequently orally, without saying anything about its composition. He notices the column but cannot say whether it includes artillery, tanks, or motorized infantry. Or the scout says that on some stream line there are a certain number of hostile crossings. As to their nature, whether they are small assault bridges or ponton bridges, he is unable to say. Of course such data do not give the higher command a clear picture, and prevent determining exactly what is going on within the enemy dispositions.

In order that air reconnaissance data be correct and reliable, the scout must be persistent in his observation and must skillfully evaluate the actions of enemy troops according to various symptoms. Hence the conclusion: cadres of air scouts must consist of officers with high tactical training and knowledge of the organization and tactics of enemy troops. It is desirable to have in the air reconnaissance units some crews with wide experience. They may be entrusted with the most responsible tasks: for instance, checking especially important information received from ground and air reconnaissance.

The most reliable picture of the disposition of hostile troops in the defense zone and fortified areas is provided by air photographs. Absolutely inadmissible is the disregard prevailing in some quarters as to this most valuable form of air reconnaissance. True, at times such underestimation of air photographs is produced by their extremely prolonged and incomplete deciphering in air staffs. It is necessary to attain speedy and precise work by the photograph-reading personnel, and it is especially important that at the time of preparation for attack the commanders and units engaged in the main effort should receive photographs or large-scale maps showing the system of enemy defense in the given sector.

Prompt reporting is essential, especially during combat when the aerial observer communicates in the clear by radio about everything observed. His data are received simultaneously by the air and higher headquarters, sometimes including the division staff. It may happen that not all headquarters have stations for the reception of air reconnaissance data. In this case, and also when the scout discovers something very important, it is necessary, besides report-

ing by radio, to throw small pennants [dropped messages?] to staffs of units and columns of troops moving to the battlefield.

To all that has been said it is necessary to add that success of air reconnaissance largely depends on how correctly higher headquarters assigns problems. The air staff sometimes receives too general a task: to reconnoiter such-and-such a region. There is no doubt that reconnaissance will not produce satisfactory results in this case. It is necessary to give more concrete directions, pointing out what to reconnoiter and when. On a certain sector, the forward edge of German defense along the whole front was successfully photographed. Positions to a depth of ten kilometers and also the supposed second defense line of the enemy were photographed. Air reconnaissance proceeded uninterruptedly by day and night, with the result that the shift of German reserves from a depth of up to 250 kilometers was successfully determined. Air reconnaissance data and interrogation of prisoners showed that the Germans did not have reserves in this sector, and air photographs revealed the strong and weak places of hostile defense, which helped the command to choose correctly the direction of the main blow. Three days before the attack, commanders of regiments and battalions engaged in the main effort received photo-maps.

Our units successfully broke through the German defense, and mobile troops streamed through the breakthrough. About a day later air reconnaissance reported that the enemy had begun to shift troops from his left flank to the place of breakthrough. It was clear that the German command, not having reserves, was weakening its left flank. The unit stationed there confirmed this fact by ground reconnaissance, and a blow was inflicted on the newly formed weak spot. Soon the whole concentration of hostile troops fell into a deep pocket and began to retreat in disorder, abandoning a mass of equipment.

Systematic day and night air reconnaissance then disclosed the routes of the German retreat and the concentrations of men and equipment. This gave our aviation a chance to inflict a number of crushing blows on enemy troops and communications, while the ground command was helped in correctly organizing pursuit. It may be confidently asserted that in this victory much credit was due to the air scouts, and also to the combat planes which, while fulfilling their immediate missions, constantly informed the ground command as to everything noticed in the enemy camp.

Defense of Inhabited Places

[An extract from an article translated at the Command and General Staff School, Fort Leavenworth, Kansas, from the *Revista Militar* (Argentina) July 1943. The article appeared in that magazine as a translation (probably from German) of an article by Majors Greiner and Nebe.]

INHABITED places provide considerable protection

against attacks by armored vehicles. Therefore the defender, on finding nothing in front of his position which will afford absolute protection against tanks, such as, for example, a wide river, will always make a great effort to occupy inhabited places which are inside his position, provided they are not too small.

The strength of forces which must be considered for defense of an inhabited place can always be more limited when there exists considerable time for construction of all installations of defense. Placing too great a force within an inhabited place for its defense may constitute a grave error, especially when the possibility of enemy gas attack has to be considered.

A decisive role in defense of inhabited places is played by *selection of the main line of defense*. With reference to this, we may distinguish the four following cases:

1. Main Line of Defense in Front of the Place

Disadvantages: Defense installations located near the main line of defense lack shelter and protection that the inhabited place can afford. Communication toward the rear is rendered difficult.

Advantages: Infantry located in the most advanced defense installations is out of enemy fire which most probably will be directed at the edge of the locality. Besides, infantry so disposed will be exposed in lesser degree to unfavorable factors affecting morale.

2. Main Line of Defense Through the Edge of the Place

Disadvantages: The most advanced infantry is exposed to strong enemy bombardments and morale will be affected to a greater degree. The danger exists that, during enemy assault, troops will not emerge from cellars and shelters in time to resume their places at defensive installations where they have left their weapons.

Advantage: Establishment of the main line of defense along the edge of the locality possesses the advantage that terrain in front can also be directly attacked by the defenders.

3. Main Line of Defense Through the Center of the Place

Disadvantage: It is not possible to make a frontal attack on the terrain directly in front. Effectiveness of flanking fire from neighboring sectors in front of the inhabited place is not always certain.

Advantages: As a trap, the inhabited place may be fatal to the main combat forces attacking it, especially in places of considerable depth. The preparatory bombardment of the attackers' artillery, etc., may not follow with absolute fidelity the course of the main defense line, in which case it will be of slight effect. In addition, there exists the chance that attacking infantry may be subjected to surprise action from this main line of defense by the

employment of weapons still intact after the bombardment.

4. Main Line of Defense in Rear of the Place

Disadvantage: All advantages which an inhabited place offers to the defender are given up.

Advantages: The inhabited locality may be fatal to the enemy as a trap, especially if it is located in open terrain and attracts the enemy as he advances. Encounters during attack and ignorance of the location of the most advanced defensive positions expose the attacker in the interior of the place not only to the effect of gun fire but also to the most powerful mental impressions. Mines of all kinds placed by the defender inside the place may cause serious and irreparable losses to enemy forces.

No standard method can be given for selection of the main line of defense.

Advantages and disadvantages need to be analyzed in each case.

Selection of a line is facilitated when the most pertinent factors are known.

Making Use of Inhabited Places in Delaying Action

Inhabited places of considerable depth facilitate orderly retreat of friendly forces. They possess the particular characteristic that successive delaying lines can be located at a short distance from one another. Under these conditions it will be possible even with weak forces to hold the enemy in check over considerable periods and cause him serious losses. Besides, it is always possible in an inhabited place to deceive the enemy with respect to the strength of friendly forces. Frequent changes of position by all types of troops and small scale attack with a limited objective effected with weak forces can deceive the enemy and delay his advance considerably. Attacks with limited objectives executed in inhabited places always promise the opportunity of great success when the enemy attacks imprudently or incorrectly and fails to keep his reserves close enough at hand.

The Built the Atlantic Wall

Interviews with Officers, Construction Foremen, and Laborers of the Todt Organization.

Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by L. Tank in *Die Gräue Post* (Berlin) 25 April 1943.]

A General Speaks

THE GENERAL who had explained the extent and purpose of the fortification system on the Atlantic and northern coasts concluded with: "We do not underestimate the power of our adversary. We know that the English are excellent seamen. We also know that normally, the Britisher proceeds wholly without regard for consequences. We are not ignorant of the fact that back of the English the Americans

are standing with means which should be considered. But we also know just as surely and certainly that if the enemy attempts an invasion in the west he will run into a coast that is guarded by very good troops and which is heavily fortified. The fortification system in the form of a 'West Wall,' as com-



GERMAN ANTITANK BARRIER, PART OF THE "ATLANTIC WALL."

manded by the Führer and carried out by the dependable Todt Organization from Norway to the Bay of Biscay, is virtually completed. The Atlantic Wall now stands. When the enemy comes, he will have the opportunity of learning how tough these fortifications are."

In these words are to be found the highest recognition that can be accorded to men of the Todt Organization and their Chief, Reichsminister Speer. These men, who at one time under the orders of Dr. Todt built the "West Wall" in a surprisingly short time, followed the fighting forces in the French campaign. They rebuilt factories; built bunkers, landing fields, and those enormous, invulnerable submarine bunkers which make it possible for the navy to carry on the war against enemy supply shipping on all the seas of the earth. They are now about to complete an unbroken system of fortifications on the Atlantic and northern coasts surpassing the "West Wall."

The Chief Director of Construction

"The accomplishment of these tasks has not been easy. There was a sea coast over 1,600 miles in extent, and mostly flat, to be fortified." The chief di-

rector of construction responsible for technical features of the work explains to us in curt sentences and with convincing figures the extent of the now almost completed labors. When we learn that at the time of greatest building activity, the monthly amount of concrete used was twice that in the case of the "West Wall," we can realize what the Todt Organization was accomplishing. Yet the real significance of this figure can only be understood when one has seen the hundreds and thousands of pieces of construction along the coast and talked with the construction foremen of the various sectors who were engaged in the construction of bunkers and armored installations, of coast and highway barricades. The gigantic line of fortifications is being built with 90% foreign labor. Part of the work is being done in spite of unfavorable soil and weather conditions, in the face of heavy attacks by the enemy who often in the course of a few hours destroys the camps of hundreds and thousands of laborers. But all these difficulties have been surmounted. Work has been done better and completed more rapidly than the enemy suspects. Time limits for completion are not being postponed. Directors of the Todt Organization and, above all, the old, battle-tested Todt Organization laborers see to that.

The Old Todt Organization Laborer

The reader must have seen these men on the Atlantic and northern coasts. They have an odd appearance in front of the deserted facades of the high class hotels in La Baule or Ostend. They wear coats on which one can see the marks of war and of their hard daily tasks. Their hands are gray and cracked. But their eyes sparkle in sunburned, furrowed faces. They know why they are working here under hard conditions and with all their strength. They get, from the French or Flemish, from the Dutch or Moroccans, of whom they at times have from one to two hundred under them, the greatest output of effort. And many of these common men who have not seen their wives or children for months or years have been able to make it clear to the non-German laborers under them that it is not alone a defense wall for Germany that is being erected here, but a protective wall for Europe which will first of all protect the homeland of the French and Flemish, of the Walloons and Dutch. Little by little the European laborers comprehend this and they recognize in the wall which they are building along the Atlantic and northern coasts the first great communal task of the European continent.

The Help of the Front Line Commanders

Front line commanders have contributed a great deal to this recognition. They shape the wills of the men in the labor camps, men who are frequently of heterogeneous composition, into a uniform mold. Naturally this requires men with special ability as leaders. Any one who has accompanied them through

a camp or about a construction site has realized the value of their work. Men of various other nationalities who have proven themselves as volunteers on the eastern front have been successfully used as sub-bosses.

With a purely mechanical conception of the job and a materialistic management, work on the Atlantic and northern coasts could not have been carried out. Something had to be added, something possessed only by the men of the Todt Organization, experienced in labor and tried in battle, a fanaticism built up of belief in Germany's final victory which surmounts stubbornly and calmly all difficulties and which in the days to come will suffice for the task at hand.

The Navy of the RAF

[An article by Raphael Nelson in *The Fighting Forces* (Great Britain) August 1943.]

IT SEEMS paradoxical to speak of surface ships and crews as an integral part of the R.A.F.; but the servicing, maintenance and scope of the varying types of coastal aircraft in use today could hardly function without them. An organization which can boast of its own small shipyards, slipways, workshops, and the paraphernalia usually connected with ships and the sea is, in fact, operated by Coastal Command, and is known as the R.A.F. Marine Section.

The news bulletins of the B.B.C. and the Press generally have already made the public familiar with the fast R.A.F. launches which snort their way through the seas on the merciful errand of picking up survivors from our own as well as enemy aircraft; at times, too, from wrecked ships. But these racing rescue launches represent only a small part of the R.A.F. navy and its varied duties.

Little heard of are the many other craft in use, such as the large pinnaces, flying boat refuellers, trawler and drifter auxiliaries, pilot-cutters, bomb-scows, fast dinghies, mooring-boats, and armored target-boats.

By far the largest of the craft in use are the rescue launches, which are powered with Napier aero engines capable of developing a top speed of 40 miles per hour and a cruising speed of 32 miles per hour. They are 63 feet long. Often they have to stand up to raging seas and lashing winds, and the job, especially in the winter, is about as hazardous and onerous as only work of this nature can be. Such are the enduring qualities of these launches that, for twelve unbroken hours, if need be, giving them a range of something like 500 miles, they are able to plough the seas at their top speed. Until the merciless Nazi airmen made it their business to swoop down and attack the rescue launches, even when out to save their own nationals, these craft were unarmed. Now they carry defensive machine

guns, but use them only when directly threatened. It is usual for the rescue launches to work in cooperation with aircraft acting as "spotters." When these locate a crashed fighter or bomber or torpedoed ship, they make known its position to the launches by repeated dives over the spot. At other times the assistance of the rescue craft is sought by operational planes which may have shot down an opponent into the sea, or witnessed the loss of one of our own. On immediate receipt of such messages, away scorch the launches to pick up survivors and, where necessary, apply first aid; bunks and first-aid outfits are kept on board. On reaching the scene of peril nets are thrown over the side to help survivors up. Accurate navigation is of paramount importance. Often the launches have to thread their way through tortuous lanes in mine-strewn areas or plot courses from information received; and unless the officer in charge were a qualified seaman (he must hold the Board of Trade's Master Mariner's Certificate) it would be impossible to operate the service. As a rule, the men in command of the launches are former Royal Naval Reserve officers. Each rescue launch carries a crew of ten. They comprise engineers, two wireless operators, two first class coxswains, and three deck hands.

Possessing nothing like the power and speed of the rescue launches, but nevertheless doing a fine job of work, are the stout pinnaces. Their 300-horsepower Diesel engines give them a speed up to 14 knots. They are 60 feet long and have a beam of 14 feet. Their main function is the servicing of Coastal Command's flying-boats; but they are also put to such other uses as recovering practice torpedoes, transporting stores, and laying flare paths on the sea's surface for seaplanes landing at night. In addition to these varied duties, when occasion calls for it they take part in rescue work. A crew of five is carried.

Mention has been made of fast dinghies. Fitted with outboard motors, these nippy little craft perform a special task. They race out to meet incoming flying-boats back from photographic reconnaissance from whom they take the precious film. Speed is essential; and back dart the dinghies to shore, where they hand over the film to the development department. Often the pictures are printed and scrutinized for information before the crew of the flying boat which brought them is able to reach land.

Another craft in use by the R.A.F. navy for a special job is the armored target-boat. It is the queerest of all jobs undertaken by a boat and calls for nerve, resource, and not a little energy. The armored target-boat is the one which exposes itself to practice bombing with live bombs in order to help our bomb aimers drop their destructive loads with all the accuracy possible. Because of the risks involved special "danger money" is paid to the crew of the boat, who undoubtedly earn it! In their little

"funk hole," with their crash helmets and earplugs, the four adventurous men rush their boat about in a crazy pattern to avoid the small bombs which pound down on and around them. It affords excellent practice for our airmen in dealing with ships attempting evading action. As for the crew, so well versed are they in the art of righting their boat after receiving a direct hit that they often scramble aboard within a short space of time and signal for a further dose! The armored target-boat can "take it." It is covered with three and a half tons of plating and is unsinkable.

Compared to the armored target-boat the work of the R.A.F. mooring-boats is dismally dull, though each has its part to play in the general scheme. Theirs is the task of maintaining in good working order the numerous mooring sites of the flying-boats. It is a job which takes the crews a good way round the sea-girt coast of these islands.

Although the famous R.A.F. speed launches cover almost the entire ground in that particular sphere, work similar in essence but not quite the same is carried out by what are known as seaplane tenders or "crash boats." These workmanlike craft are used as a stand-by when the monster flying-boats take off or land. Should some mishap occur they are on the spot for immediate assistance.

A job with more than a grain of excitement is the work carried out by the crews of the R.A.F. drifter auxiliaries. These are used to represent shipping in practice for our torpedo-carrying aircraft. They also pick up the special torpedoes after they have been discharged at them. The duty of these drifters is to avoid at all costs the diving planes and make it as difficult as they can to be struck by the torpedoes. They employ all the artful tricks they know, and accurate indeed must be the aim of the torpedo hoping to find its mark against the evading tactics of these boats. Pilot-cutters are also used in this work.

The R.A.F. refuelling craft, as well as the handy bomb-scows, carry out afloat what truck and trolley do on land. The first, as its name implies, is a "tanker" with a load capacity of 2,500 gallons; the second, the floating bomb trolley. Both are at hand when the huge flying-boats return from their patrols, ready to refuel and reload them for further work.

The work of the R.A.F. Marine Section is, in essence, as silent as the Royal Navy's; and only very occasionally do we hear of the good work being done by all ranks comprising it.

A German Estimate of Foreign Tanks

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Heinrich Kluth in *Berliner Lokal-Anzeiger*, Berlin, Germany 26 June 1943.]

IN A German collection of enemy tanks the "Gen-

eral Sherman" completes the already great number of various enemy types tested by our military experts for the purpose of determining their most vulnerable parts and for obtaining, if possible, ideas which might be useful in our own tank construction. Also the "General Lee" is there and stands alongside the "General Stuart" of only thirteen tons weight in order to show the development of the American tank.

The "Sherman" is ready to go. The built-in mirrors give a good impression of the visional possibilities from the interior of the tank. To the right of the 7.5-cm long-barreled cannon is the built-in sighting mirror which is provided with telescope sights with fine adjustments. The tank rolls along with steadily running motor over dusty roads and prepared slopes and rises. It runs well, that cannot be denied.

On a steep slope the "Sherman" stops. The treads dig in and grind away in the sand without being able to get a good grip. The tank is backed down a few meters. Then another start is made. Again the treads merely grind into the surface in this place, which is, however, the most difficult place of the test course. This time the motor stops also. It has been killed. But there aren't really any such slopes in the natural terrain. Again we back off. At the third attempt, the "Sherman," panting and groaning, succeeds in getting over this superdifficult obstacle.

We could give other details of this American tank which from point of view of construction, is without any question the best-worked-out model possessed by our enemies. Its armor is designated as "good" by experts of our armed forces. But in spite of this, the "Sherman," both with respect to size and armament, is not up with the most recent German tank, the "Tiger," which has given the best of accounts of itself on all fronts. Standing alongside one another, the "Sherman" and the "Tiger," it is clearly apparent that the American construction cannot come up to that of the Germans.

In contrast with the Americans, English, and French, who prefer to employ cast steel in constructing their tanks, the Russians at a relatively early period made use of welded construction which was also successfully employed in Germany. In an enormous hall they can all be seen standing alongside one another, the tanks that were developed and built by the Soviets. There are a great many different types which show clearly that they were strongly influenced in their construction by the types developed in other countries. There are amphibious tanks and types of construction which even the expert will say show plenty of progress. The 28-ton T-28 tank (the Soviets still call armored combat vehicles "tanks," so that every designation of a type is preceded by the letter "T"), one model of which was first shown in a parade in Moscow in 1932, was at that time fitted with a water-cooled BMW-VI airplane motor which the Bolsheviks had carefully copied from a German pattern. An impression of power and weight is

gained from the 45-ton T-35, which has a length of 9.7 meters, a width of 3.21 meters, and carries a crew of 10 men. In the well-known T-34 (26.3 tons) with armor of 45-mm thickness, the Soviets make use of a 500-horsepower Diesel motor whose fuel injection pump is so closely copied after a German model that Bosch replacement parts can be used in the captured Soviet tanks. With this T-34 and the later 43-ton KW-I the Soviets at that time far outdistanced all the foreign types. When we look upon these colossi we are filled with wonderment at the thought of our men on the front who, with materially weaker equipment, time and again met and conquered these Soviet tanks.

Regarding English and French tanks, which stand in another hall, there is no longer much to be said. They were, to be sure, not bad at the time they were employed, whether we are speaking of cruiser tanks or of the 38-ton "Churchills" used at Dieppe, but they are not up to the Soviet nor American developments.

With regard to French tanks, there are a great many types here in which one can see the absolute insistence on safety. Everything is built, as in the case of the Maginot Line, with an eye to safety. It has obviously been overlooked that both armament and speed suffer as a result of this.

Outside the hall stands a model of the legendary 72-ton French tank, the Char 2-C. This was the giant tank which at the beginning of the war played so great a role in enemy propaganda. It is equipped with a 7.5-cm cannon and bedecked with four machine guns. Thirteen men were supposed to constitute its crew. Its gasoline-electric drive is the only one of its kind in the world. It employs two 250-horsepower Maybach airplane motors.

One tendency is to be recognized in this review of the enemy's tanks: Tanks are becoming larger and more rapid, and their cannon are becoming more effective. Germany will see to it that the superiority obtained with the "Tiger" is maintained in the future.

An Armored Scouting Mission in Russia

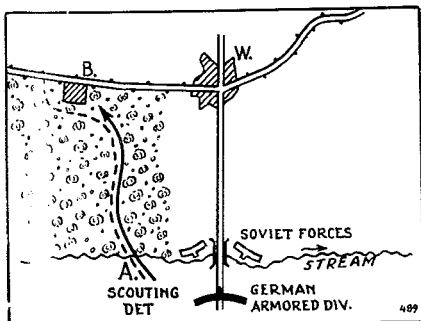
[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Captain Riedel, German Army, in *Die Panzerwaffe* April 1943.]

THE ARMORED division had been stalled for a day at a bridge on the route of advance toward "W," twenty kilometers south of the city (see sketch). It was decided therefore that the battalion should try to reach the east-west road running through "W" and reconnoiter a new route by which the division could advance. Two scouting detachments were sent out. If the first of these detachments found that there was a bridge in condition at "A," the battalion was to follow by this route. Three-quarters of an

hour after it set out, the scouting detachment was able to report "Bridge in order." In fact the bridge was a bit wobbly, but the three light cars were able to cross it safely, and without encountering hostile opposition the battalion advanced through forest and swamp over a road that was just passable.

On our right we could hear the noise of battle at the main bridge. Then suddenly in front of us four Russians appeared with rifles on their shoulders. They surrendered willingly and climbed up behind us. We could make nothing of their signs and gestures and could not find out whence they came, but it was necessary now to proceed more carefully because where there were four, there might be others. The gunner kept his eye on the sight, the commander no longer sat on the edge of the tank, and the driver closed the shutters somewhat. Nothing was seen of the enemy until we suddenly reached the roadway running east to "W." We had reached our objective.

Motor vehicles occasionally passed from east to west along the road, and we let them go by unhindered. Then with a great deal of noise three or four large horse-drawn vehicles appeared in the distance. The leader of the scouting detachment, holding his binoculars to his eyes, murmured, "That's artillery, isn't it?" "It is," replied the commander of the third tank. The detachment leader gave his orders immediately: "Machine-gun cars to the highway, secure ahead and to the right. I will go forward with the radio car." With motors humming and turrets turning, the cars moved to the highway and swung to the left, firing with all guns on the surprised columns. The radio car plunged past the



confined mass of men, horses, and vehicles and came to a stop a few hundred meters away, providing security to the east. The commander himself came to a stop beside the enemy guns and made prisoners of a few wounded men. Then he fixed a kilogram charge to each of the three gun barrels and lit the fuses. As the smoke of the explosions slowly drifted away, our three cars disappeared into the woods like ghosts, to observe once more and if necessary to attack. The new prisoners peacefully joined the old ones, who had remained meekly on the spot.

Later the battalion arrived, blocked the road at "B," and sent reconnaissance far to the east. More columns of all types were reported on the march to threatened "W," but nothing more got through at "B."

The armored scouting cars felt their way into "W," moving slowly from house to house, from corner to corner. One of the cars succeeded in putting an enemy gun and its crew out of action. It was later found that the gun was a 7.65-cm anti-aircraft cannon.

The climax of this successful day came at about 1600 when the scout detachment farthest east sighted a very elegant armored car approaching at a dizzy speed. They let it come to within a few meters and then opened fire. The car skidded, recovered again, and came to a stop by a fence. At the first shot a brown, heavy figure had fallen from the car. It was a Soviet general, twice decorated with the Order of Lenin, who was on his way, all unsuspecting, to "W."

Toward evening the first units of the division, consisting of tanks and artillery, came up over the new route. After firing on "W" for a short time, the tanks attacked and took the city. The enemy quickly gave up resistance there and also at the bridge site when he found that we were on his right flank.

The mention in the corps order of the day that we were the first in the division to capture an enemy general was the finest reward for the crews of the armored cars and the men of the detachment.

Military Secrecy

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article in *Krasnaya Zvezda* 29 July 1943.]

MAINTENANCE of military secrecy is the first and obligatory condition of success in any attack. The most excellent plan of action is useless if the enemy learns of it in good time. The most powerful and concentrated offensive loses a good half of its effect if the enemy expects it. Experience of war teaches that action without surprise, without preserving strictest secrecy of all intentions of the commander, is unthinkable if success in battle is to be attained.

Military secrets are concentrated in various documents: combat orders, reports, staff maps, etc. It is evident that these documents must be guarded against any possibility of loss. Laxness and carelessness in handling secret documents is a very grave crime against the State. It is not simply a matter of keeping secret documents, as the saying goes, "under seven seals," in especially equipped places, and under reliable guard. For sometimes the order lies in a safe at night but during the day it travels from one staff room to another, from desk to desk, visible to the eyes of anyone who enters. It must be an ever-

remembered law that everything connected with military secrecy is performed with the utmost system and care. In working on secret documents and in distributing them, especially under field conditions, the very strictest organization is essential.

It has long been an unquestioned truth that the fewer the people who know the command's plans and intentions, the better. But in some units it happens that while an operation is being prepared it is subject to wide-spread rumors long before it is launched. Why does this happen? Primarily because the number of people informed of the intentions of the command is sometimes too large. From one man is demanded the fulfillment of a separate, concrete task; but when being assigned this task he is handed almost the whole plan of operation. This contradicts the elementary rules of security. It must be a firm rule that a military secret is entrusted only to those absolutely necessary to the conduct of the matter.

Along with this it is essential to employ severest measures to prevent all talk on questions connected with proposed combat operations or with intentions of the command. There are those who like to boast of their knowledge, those "home-grown strategists" who are always ready to discuss the development of events, disclosing everything that is on their minds. There are also those heedless people who simply forget that the enemy is sly and cunning, that even the walls may have ears. Where there is talk of military secrets, the soldier of the Red Army, when off duty, must have only one rule of conduct: *silence*.

Every soldier of the Red Army and every officer must be a vigilant, watchful guardian of military secrecy. It must be remembered that often just one careless word dropped by chance, one hasty move however insignificant at first glance, may give the enemy the key to the riddle of the most important intentions of the command. It is enough, for example, for a German spy to overhear on the street the conversation of two officers concerning when and whence they arrived, and it will be clear to him that a concentration is taking place; he will be able to determine the nature of the regrouping of our troops. The officer may not even mention the word *attack*; but nonetheless, by his whole conduct among people, by unusual excitement, hurried assemblies, etc., he discloses the secret of the operation in preparation. That is why the very keenest watchfulness and the greatest restraint must be the firm rule of conduct of the Soviet officer in any situation.

To preserve military secrecy means to close up all but one chink, all passages through which even secondary signs of prospective operations might seep out to the enemy. Is it not clear, for instance, that it is impossible to speak seriously of watchfulness if staff officers are lodged in the same houses with local inhabitants? Is it not clear that it is impossible to depend on preservation of military secrecy if preparation for shifting the command post is ac-

companied by fuss and commotion before the eyes of the whole population? It is necessary to take into account every trifle, everywhere and in everything, striving for the greatest concealment of action, not stopping even at misinforming those not directly concerned. This is particularly essential during preparation for the prospective operation. Employing all methods of concealment and military cunning, it is necessary not only to hide from the enemy the fact of such preparation up to the very last moment but also to do everything to lead the Germans astray and deceive them.

Guard the secret of each operation, of each intention of the command, with all your strength and by every means!

German Engineers in the Attack on Stalingrad

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Friedrich in *Vierteljahreshefte für Pioniere*, No. 1, 1943.]

This report of the engagement of an engineer battalion in Stalingrad was written when the Sixth Army was attacking the city. It shows that our engineers gave their best in the attack just as later, in the defense, they made their heavy sacrifices.—THE AUTHOR.

THE DIVISION was able to launch the attack on Stalingrad on 5 September 1942. Engineers were placed with each regiment and battalion. It had become axiomatic that they were to be found in the center of every action.

On 13 September the regiments stood ready for the attack before the great sea of buildings over which, black and threatening, floated the heavy smoke from burning structures and from explosions.

By evening the suburbs in the division's sector were in our possession. On the following day the railway area had scarcely been taken when the leading forces reported: "15:16 o'clock, the Volga reached." Important as this success was, the rapid attack in the direction of the river had left a great deal on the enormous confusion of houses and industrial establishments that was not yet mopped up; long days and nights of bitter fighting were yet to follow.

Experiences of the year before caused us to suspect that Stalingrad, like Kiev and Kharkov, would be entirely destroyed by the Soviets. The day's experiences appeared to confirm this suspicion. Hundreds of mines in wood casings were removed, and every street, every intersection, whole areas, and individual houses had to be searched carefully and painstakingly—a nerve-racking task which required the greatest watchfulness and discipline on the part of every one.

In order to carry on the work systematically, the

battalion established a mine reporting center. Incoming reports were checked, street after street and house after house; all the extensive over- and under-passes in the street system and all industrial establishments were thoroughly searched. The engineers were constantly engaged in this task in a hail of bomb and shell fragments.

Companies of the engineer battalions were divided into assault detachments and were constantly engaged shoulder to shoulder with men of the other arms. In addition to this they continued to provide security for the main line of defense that had been reached in the city by the establishment of mine barricades and *chevaux-de-frise*. The daily advances and heavy losses testified to the energy of both officers and men.

In one place a fire-spitting bunker was holding up the infantry advance. Two courageous engineers succeeded in creeping up to the enemy with their flame throwers, their comrades providing fire protection for them. The red column of fire leaped from the nozzle and struck the port-holes and other openings, destroying everything with the glowing flame. The infantrymen leaped to their feet and rushed past, taking advantage of these few minutes of silence. Two positions were passed in this way. On the same day these same men, with their flame throwers, smoked out a whole group of houses which had been built into a formidable center of resistance.

Streets leading to the Party Building, symbol of Bolshevik defense, were blocked by barricades which stopped our tanks. Engineers worked their way ahead from house to house and hurled concentrated charges of explosives against the barricade. At the moment of explosion they leaped forward into the smoke, rushed through the holes that had been blown in the barricade, and broke the enemy's resistance. Thus engineer assault forces cleared the way for infantry and tanks.

For days we had suspected that the enemy was making use of underground passages from one part of the city to another for communication and supplies. An entrance shaft was discovered back of a stone house. The engineers charged across the open square, overpowered the occupants of the building, and destroyed the entrance to the passage by means of explosives.

Time and again the enemy attempted to establish himself in houses and cellars, on roofs, and in the corners of ruins; but the engineers always came to the rescue and broke all resistance with their varied weapons.

At one point an entire building unit, like a powerful fortress, was holding our attack in check. From all openings and embrasures heavy fire was being laid down. All alone, a single engineer fought his way through, on his back the heavy burden of a flame thrower. He directed the nozzle at the nearest opening in the building and in quick succession the bursts

of flame penetrated all crevices and apertures. Everything succumbed under the crackling, fiery blast. The rattle and cracking of rifles and machine guns ceased. Timbers came crashing down and the walls crumbled. One hundred and fifty Bolsheviks, two commissars, and one captain barely escaped with their lives and, seized with terror, surrendered to this one engineer.

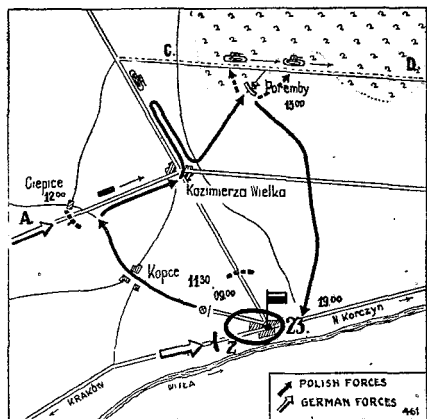
And so the fight goes through the city. Successful work by the engineers speeds up the attack, and at last the division is firmly established on the bank of the Volga. The heroic group of engineers is but a small one, yet it has stood this hard test unbroken and in exemplary manner.

For days now the swastika flag has been waving over the city. Our forces are establishing themselves for defense and getting ready for the counterattack of the enemy. Again it is the engineers for whom there is still no rest. They are engaged in building positions for all units, and in erecting combat positions they are just as indispensable as in the fighting itself.

Initiative in Reconnaissance

[An extract, translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Polish article, "The Role of the Commander in Battle," in *Bellona*, monthly publication of the General Headquarters of the Commander in Chief of the Polish Army, London.]

GENERAL SITUATION: The 23rd Infantry Division of the Polish Army, retreating along the route Krakow-Nowy Korczyn in contact with the enemy, reaches the vicinity of "Z" at dawn, 8 September



1939. Because of the fatigue of his division after several days of combat, the commander decides to go into bivouac. The losses of the division so far are about 35% in personnel and about 20% in matériel.

To the north, the group of Colonel R. is retreating along the route from "A" to Kazimierz Wielka.

In this situation the 23rd Infantry Division issues the following order to the commander of the division's bicycle company: "Mission: (a) Reconnoiter the region Ciepice-Kazimierz Wielka and establish liaison with Colonel R. who should be approaching Kazimierz Wielka. (b) Inform Colonel R. that the division goes into bivouac in the vicinity of "Z," where it will probably remain until dusk 8 September 1939, following which it will proceed in the direction of Nowy Korczyn."

Execution: The commander of the reconnaissance detachment is commander of the bicycle company. Composition of the reconnaissance detachment: one bicycle platoon. Route: "Z"—Kopce—Ciepice—Kazimierz Wielka. Return: any route. Reports: after contacting the enemy; after reaching the highway "A"—Kazimierz Wielka; after establishing liaison with Colonel R. Reports are to be sent via two routes. Time of start: 0900.

Course of action: At 0900 the commander of the reconnaissance detachment starts on his mission and reaches Kopce where he hears sounds of battle coming from the northwest. He decides to proceed in the direction of the battle and sends a report to this effect to the division commander.

At 1200 he reaches Ciepice where he ascertains that the group of Colonel R., under cover of rear guard which is in contact with the enemy two kilometers west of Ciepice, is retreating in the direction of Kazimierz Wielka. At Ciepice the detachment commander personally establishes liaison with Colonel R. whom he informs of the division commander's decision. Thereupon the detachment commander proceeds to Kazimierz Wielka, having dispatched a report to this effect to the division commander.

From Kazimierz Wielka, on his own initiative, he accomplishes reconnaissance along the road to "C," and at a distance of about fifteen kilometers he finds several enemy tanks and truck-borne infantry moving on Kazimierz Wielka. He sends a report of this to the division commander.

At 1400 he returns through Kazimierz Wielka and, again on his own initiative, he accomplishes reconnaissance in the direction of Poremby where he arrives about 1500. At Poremby he finds an enemy motorcycle unit. He sends patrols to reconnoiter the route "C"—"D" leading to Nowy Korczyn and finds an enemy tank column proceeding east on that road. He sends a report of this to the division commander and to Colonel R. and returns with the detachment to "Z" where he arrives about 1900.

On the basis of the last two reports concerning the enemy armored elements, the division commander decides to break up bivouac and proceed to Nowy Korczyn at once. Note that both these vital reports

were entirely the result of personal initiative on the part of the commander of the reconnaissance detachment.

Enemy Blockade Runners

[An article in *The Fighting Forces* (Great Britain) August 1943.]

SINKING of enemy blockade runners, of which we get news from time to time, is of far-reaching importance to the Axis Powers. Such ships cannot be assessed in the same class as ordinary supply vessels. Blockade runners might be described as Number One Priority Ships. Their value and the value of their cargoes to the Axis powers is in ratio to the risks the vessels run in attempting to make passages between enemy-controlled ports, which are in many cases separated by distances amounting to more than half-way round the world.

For these reasons, blockade runners are invariably modern, fast ships with sea endurance far above the ordinary; they are, in fact, a class of vessel which the Axis powers can ill-afford to lose.

This traffic, or more properly the traffic which the Axis partners attempt to maintain at such high cost to themselves, is two-way. That is because in many important respects the economic resources of Germany and Japan are complementary. Germany requires raw materials for her war industries. Japan needs chiefly machine tools, with which to increase her war potential and exploit her raw-material gains.

With the closing of the Trans-Siberian Railway in June 1941, trade between the European Axis nations and Japan could be carried only by sea. From the Southwest Pacific to the Biscay coast is a voyage of about 12,000 miles, but one within the range of a modern Diesel-driven ship. Blockade runners have the choice of either the Southern Pacific or the Indian Ocean, and throughout their voyage they need never come within 600 miles of an Allied base.

Some small-scale attempts to run the blockade were made in the autumn of 1941 with goods which Germany had brought for transport by the Trans-Siberian Railway, and with a substantial quantity of rubber obtained from Indo-China.

Japan's entry into the war gave an added stimulus to this traffic. Her only source of supply for the goods she needed was then German Europe. In addition, her conquests had provided a bargaining weapon in the form of a large surplus of raw materials—this at a time when Germany, heavily committed on the Eastern Front and opposed by America as well, had become faced with a long war.

At about this time plans for much-increased blockade running appear to have been put into effect. The Allied navies were then very much preoccupied in the Far East, and these plans met with some success.

It was probably against the background of this

success that the terms of a new Axis economic agreement were framed. Last January the partners announced that they had signed a treaty to "extend their economic collaboration so as to support each other more completely in the war by the extension of their economic exchanges." The theory was all right, but very soon the widely separated Axis partners discovered that Allied naval and air patrols were frustrating the execution.

Since the early autumn of last year attacks on blockade runners in the Indian Ocean, in the South Atlantic, and in the approaches to the Bay of Biscay have become increasingly successful. It is probable that cargoes bound for Europe and intercepted since last November, include no less than 30,000 tons of rubber, 5,000 tons of tin, and 25,000 tons of edible oils, and smaller but equally important quantities of tungsten and quinine.

The cargoes lost to Japan consist of heavy machinery and machine tools and engineering components, dyestuffs, and so forth. These commodities are of no less importance than the German losses. The implications of the Japanese losses are more difficult to draw than the effects of the loss of raw materials selected by the Germans themselves with an eye to their most urgent requirements.

To be seen in proper perspective, the great success of the Allied Navies at sea must be related to the enemies' war effort as a whole. Germany has been unable to liquidate a huge military commitment and is continuously engaged in land fighting; the drain on her stocks of both finished products and the raw materials required to make them has been heavier during the past nine months than ever before. In the same period, an important source of supplies in North Africa has been closed; industrial centers of the Reich itself and the enemy's land and coastal communications and other important economic objectives have been subjected to an ever-increasing weight of attack from the air.

Substantial as our successes have been, it cannot yet be assumed that Germany and Japan will not make further efforts to maintain sea communications with each other. The adventurous blockade runner, cleverly camouflaged and ingeniously routed, always has a chance of getting through. But with the Allies' increased and increasing strength in ships and aircraft and the creation of new bases from which to conduct the passage of blockade runners will become increasingly hazardous.

Antitank Strongpoints

translated at the Command and General Staff School, Ft. Leavenworth, Kansas, from a Russian article by Captain of the Guards V. Korol, Soviet Army, in *Voennaya Zvezda* 9 July 1943.]

PROCEEDINGS shows that a system of antitank strongpoints is most effective in repulsing tank attacks.

This system not only is a dam capable of restraining the avalanche of attacking tanks, but also is a gigantic mill whose grinders convert hostile tanks into heaps of metal. Of course, such effect can be attained only by skilful organization of antitank positions.

From reconnaissance the commander determines the main and secondary direction of tank attack as well as sectors of terrain impassable for tanks. Where terrain is accessible for them (flat or dissected but without deep gullies and swamps), there will naturally be more antitank strongpoints. During reconnaissance, the senior commander [in the given sector] designates places where use of antitank guns and rifles will be most feasible. He considers just what elements to dispose in this or that antitank position and determines the character and types of obstacles most useful in the given situation.

It must be remembered that not every sector which seems impassable to tanks is really so. For this reason it is recommended that a system of fire be organized so that even approaches to regions not accessible to tanks may be covered. If the commander disregards this, events may turn out as in the following example.

Fifteen German tanks attacked the forward edge of our defense. On the sector where the hostile attack started, an artillery battery was active. Its left flank adjoined a ravine accessible to tanks only with difficulty. The artillery beat off three German frontal attacks without much trouble. But then the Germans with the aid of their sappers blasted the precipitous slopes of the ravine and made it passable. Approaches to the ravine were not covered by specially designated artillery elements. The neighbor on the left failed to open fire. Hostile tanks took the ravine and fell on the battery from the rear, and the position was maintained only by committing the antitank reserve into battle. If the commander had provided fire cover on approaches to the ravine, the Germans, of course, could not have reached the rear of the battery.

The commander in direct command of the antitank strongpoint must estimate what fire elements he needs and how best to dispose them in the terrain. The quantity of weapons needed depends on anticipated density of enemy tank attack in the given direction. If available antitank agents are insufficient, the commander then asks the senior commander to add to them. But if the senior commander has a limited number of antitank guns and rifles, he, of course, does not scatter them through the whole defense but uses them to protect against probable enemy main efforts.

Some commanders, in estimating the means needed for antitank defense start with the theoretically possible density of tanks in attack. But on a number of sectors the Germans actually have a very

limited quantity of tanks. Hence it is necessary to take into account not theoretical but anticipated density of the tank attack. If it becomes known that the enemy has brought up tank reserves, the anti-tank strongpoints may be correspondingly reinforced.

It is very important to see to it that all approaches to strongpoints and the intervals between them be covered with dense crossfire. Besides that, fire elements are disposed so as to make it possible to hit enemy tanks in case they succeed in breaking through into the rear of the strongpoint.

Combat experience shows the effectiveness of the following distribution of antitank guns and rifles. Guns are placed at intervals of 100 to 150 meters and at distances of 200 to 300 meters. Antitank rifles are disposed in squads. They must conduct flank and diagonal fire at the same time as the guns. Intervals between squads of antitank riflemen are 50 to 100 meters; distances, 100 to 150 meters. In flanking fire, the distance between guns and rifles must not exceed 100 to 150 meters.

For protecting intervals between strongpoints, constant communication is set up. Agreement as to methods of cooperation must be complete and detailed. Further, it must be remembered that the distance between flank guns of two neighboring strongpoints must not exceed 500 meters. For antitank rifles this distance is reduced to 150 to 200 meters.

The artillery commander establishes close contact with the infantry unit commander in whose area the antitank strongpoint is organized. Above all, agreement is essential as to use of infantry elements and signal communications. Practice suggests that it is also profitable to set up communication with combat security wherever a special representative is sent. In case hostile tanks appear, this representative determines their number and direction of movement and immediately informs the strongpoint.

For repulse of heavy tank attacks artillery of all calibers and heavy mortars are used. Batteries, firing from concealed positions, register their fire beforehand on approaches to strongpoints and on anti-tank obstacles erected by the engineers. Of course, careful agreement with artillery commanders as to signals is obligatory in case tanks break through into the rear of our defense. Division artillery and, when necessary, heavy artillery move out to open positions. It is necessary to organize open firing positions beforehand for these artillery elements.

The whole antitank defense is carefully camouflaged. For purposes of camouflage it is necessary to observe strictest fire discipline. It is not necessary to open fire by all guns on single tanks or small groups of three or four tanks. It is better to let them approach to point-blank distance and then open fire. When the enemy undertakes a massed tank attack, guns and antitank rifles fire point-blank at

limited distances. Besides this, there is the mobile barrage fire of artillery of all calibers, firing from concealed positions.

What importance all this has is shown by the following combat episode. At dawn more than thirty German tanks appeared before our defending units. They moved along a road in three echelons. The road was covered by an antitank strongpoint whose artillery battery opened intensive fire. The enemy, leaving seven wrecked and burning tanks on the road, retreated. After an hour and a half the attack was repeated. This time German tanks came in three groups deployed along the front. By the direction of movement of each group of tanks it was easy to see that the Germans had decided to take the battery in pincers. To right and left of the road at a distance of seven hundred meters were two other batteries. At the time of the first attack they had not fired a single shell. When the flanking tanks approached to within 500 meters of these batteries, strong fire was opened. The Germans lost sixteen vehicles and did not return.

It must be remembered that antitank defense cannot be equally strong everywhere. Hence a vital role is played by antitank reserves which are at the disposal of commanders of units of combined arms. These reserves must move quickly to threatened sectors. It is expedient to organize firing positions beforehand for the reserves in those directions where breakthrough of enemy tanks is most possible.

It is good if the senior commander makes a plan of maneuver for antitank reserves. In such plan there are indicated the composition of the reserve, its commander, the line of probable deployment, and the march route in detail. The signal calling for reserves must also be established and must be known both to the commander of the unit of combined arms and to the commander of the reserve group.

Increase of Fire Preparedness in Defense

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by First Lieutenant Stammer in *Artilleristische Rundschau* December 1942.]

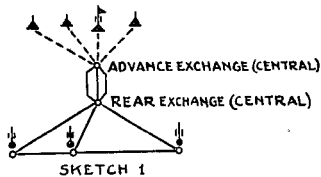
Securing Communications in the Detachment

IN DEFENSE the combined fire of all weapons is required in front of the main battle line to repulse hostile attacks. One of the most important pre-conditions for this is the correct functioning of communications, both for reports and for conduct of fire. In contrast to attack, as wide a net of communications as possible, with many cross connections, must be demanded in the defense position.

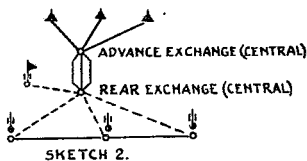
To correspond to this demand the net of communications in our artillery battalion was organized as follows:

The signal platoon of the headquarters battery set up two exchanges: the advance exchange behind the observation posts and the rear exchange near the firing positions.

In general, the battalion command post will be situated with the observation posts (sketch 1). In this case the signal platoon runs wires from the advance exchange to the observation posts and to the detachment command post.



SKETCH 1



SKETCH 2.

LEGEND:

- WIRES OF BATTERIES
- - - WIRES OF SIGNAL PLATOON
- ▲ OBSERVATION POST
- ⊥ ARTILLERY COMMAND POST
- ⊥ GUN IN FIRING POSITION

In the situation, terrain, weather, or road conditions required installation of the battalion command post near the firing positions or the command post of the infantry regiment, then the signal platoon laid connections to the firing positions (sketch 2).

Batteries were instructed to lay their wires to the observation posts through both exchanges. All parallel wires must absolutely be at least fifty meters from each other. If enough cable was still on hand, firing positions were connected with each other. The left battery always laid wire to the right battery.

Even with disturbance of individual lines, connection within the battalion to all its parts was always assured.

A battery sent a troubleshooter to each exchange in order to secure rapid repair of disturbed lines.

The disadvantage of longer wires from the observation posts to the firing positions was compensated for by the advantage of assured connections.

More than that, it was always desirable to connect advance observers, likewise by wire, to each other and to the advance exchange, since maintenance of radio communication required in the long run too much current and was subject to weather influences.

Radio was primarily the communication medium for attack.

The signal officer must be able, on the basis of the situation and terrain, to decide on the most practicable employment of signal equipment, according to the above-cited principles, and to propose them to the commander.

Emergency Illumination in Night Firing

Necessary economy with illumination means, such as pocket-lamp batteries, carbide, and oil, was especially disadvantageous in firing at night, above all when it was a question of rapid preparation for barrage fire. Experience showed that in the defensive moment the media for illuminating aiming devices slowed down fire preparation considerably, if indeed they didn't make it altogether uncertain. Therefore a proposal is made here for securing with the means at hand the illumination of aiming devices for firing at night.

On each of the two aiming stakes a socket with a 2-volt bulb is fixed; for distinction in aiming, one is red and one is blue. A circuit is laid with light cable,



SKETCH 3.

LEGEND:

- * AIMING STAKE
- ⊥ GUN IN FIRING POSITION
- - - WIRES

by which the four night-illumination contrivances of the panoramic sight and the two bulbs on the aiming stakes are connected with a source of current (sketch 3). Available as sources of current are an accumulator of the radio apparatus or tent-illumination apparatus or even a spare automobile battery which can be charged again with the help of the charging outfit of the headquarters battery.

By installation of a switch in the command post, the battery officer can at once set the night illumination in operation.

By this simple process the readiness of the battery is always assured, even at night. With correspondingly economical use of illumination the source of current will last long and spare other means of illumination.

Employment of Armored Trains

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Captain V. Morozov, Soviet Army, in *Krasnaya Zvezda* 7 July 1943.]

Tactical qualities of armored trains appear most fully when they solve combat problems by the

method of sudden fire. This problem is more successfully solved at night, in stormy weather, or in rain when the enemy cannot discover the approach of the armored train by its smoke and open aimed fire on it.

The more sudden and fierce the blow of the armored train, the greater its effect. One of our armored trains in a battle for an inhabited place succeeded in moving almost to the rear of the enemy at a distance of effective machine-gun fire. Its fire on previously reconnoitered targets was so strong that in a short time these targets were all silenced. The Germans recovered only when our infantry units had already succeeded in penetrating to the center of the populated place.

Armored-train fire may be successfully realized in daytime also if the enemy is not able to bring up artillery to the forward line of his defense for point-blank fire. A characteristic episode occurred in the attack on a town. The Germans were holding its central part, situated across a river in a region inaccessible for tanks. Bridges were blown up and were covered by strong fire from machine guns, mortars, and artillery in hidden positions. Enemy machine-gun and mortar positions in the buildings did not permit our infantry to capture the large open space contiguous to the river. Bringing up guns for point-blank fire also was unsuccessful because the enemy had a good view of the area. But the problem was quickly solved by committing an armored train. While the Germans fired on it, the train was able, by shunting on the yard tracks, to silence thirteen hostile firing points, thus clearing the way for movement by our infantry. The enemy, caught unawares, kept on firing; but the armored train had already accomplished its task and had withdrawn to the rear.

Naturally the success of armored train actions depends on skilful direction and rapidity of maneuver. The armored train of Captain Ibragimov, returning from an action, was attacked by a group of German bombers. One bomb destroyed the track in front and damaged the control platform. This occurred not far from the forward edge of hostile defense. The Germans, encouraged by the successful fall of the bomb, began a counterattack. At this critical moment Captain Ibragimov correctly estimated the situation. It appeared that the only escape from the situation was to stand near the destroyed section of the line, conduct fire from the spot, and at the same time repair the damaged track. But then the enemy might blow up the armored train with combined land and air blows. Captain Ibragimov made a different decision. He sent out a small party for the repair of the track, and himself moved the armored train at full speed toward the enemy. With artillery and machine-gun fire the German counter-attack was beaten off.

Of course, when the enemy is not prepared for

encounter with an armored train and the entire track is unmined, conditions for armored-train attack are favorable. But with present day defense, which involves a multitude of fire elements and obstacles, such conditions are not often present. How then are armored-train attacks to be executed if the situation does not favor their actions?

On one sector of the front where the enemy had a strongly fortified defense, we had several armored trains. The Germans were holding the railroad station and the large inhabited place adjacent to it. The track was destroyed for a distance of three and a half kilometers in front of the forward edge, and it was not being repaired.

During calm weather enemy observers discovered our armored trains by their smoke at fifteen to twenty kilometers. The height of the hills was insufficient to conceal the flash of artillery fire, and when the armored trains opened fire from concealed positions, the Germans registered them by the flashes. Behind the firing positions of the armored trains and leading in the direction of the enemy, there was a section of good track running along the front line. It was well observed by the Germans, and they were registered on it. Still nearer to the enemy the railroad track turned directly toward the hostile positions and here it was greatly damaged. Nonetheless, the Germans kept a few guns on the forward edge in case of need.

It seemed impossible to attain surprise. Nevertheless, early in the morning on the day of attack, an armored train appeared under the very nose of the enemy. With artillery fire from a distance of about one kilometer it destroyed several important enemy gun and firing positions. Before the Germans could recover, the armored train disappeared. By this bold maneuver the train considerably facilitated the infantry's capture of hostile positions. The gunners and the machine gunners knew well the targets in their sector of fire, which permitted the achievement of a high degree of accuracy of fire and its rapid concentration on the most dangerous targets. Success of the armored-train attack was assured also by the fact that before the attack, in the course of several dark nights, a large party of railway troops secretly repaired the track for a distance of three kilometers, running it almost up to the hostile defense.

As is evident from the preceding example actions of the armored train should be preceded by skilful reconnaissance of targets, as well as by most painstaking preparation for the attack. Fire of the armored train must be directed from the beginning at the nearest artillery targets. This alone permitted the armored train to depart unharmed beyond the nearest hill after finishing the shelling of the enemy position.

Usually it is not advisable to make several consecutive armored-train attacks on one and the same

sector of the terrain. The enemy, adjusting his fire, easily knocks out the train. But in combat practice there are cases when a group of armored trains executed attacks for a long while, putting out of action one German firing position after another in the very same sector. Safety of action of the armored train was secured in these cases through organization of points for continuous observation near the forward edge of hostile defense and through the maintenance of close contact with infantry reconnaissance, always noting the least changes in the German defense system.

Guns prepared by the Germans especially for fighting armored trains were annihilated suddenly by the concentrated fire of our artillery either before or during the armored-train attack. For this purpose point-blank fire of individual regimental and divisional guns is widely employed. To the lot of the armored train usually falls the crushing of numerous enemy machine-gun and mortar nests. True, the Germans tried to fire on the railway tracks from hidden positions; but our batteries, especially assigned for the purpose, awaited this moment in order to come down with their fire on the hostile artillery.

These and other examples of successful action of armored trains in varied tactical situations affirm that by skilful use in general combat they can support attacking units with sufficient effect. Success of action by armored trains will be greater, the more accurately their cooperation is organized with artillery, infantry, and aviation. Results of armored-train attacks increase if armored-train units systematically conduct reconnaissance themselves and set up their own observation posts in the terrain, maintaining communication with those of the artillery.

Night Combat

Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from an article in *Krasnaya Zvezda* 1 August 1943.]

It has always been the true ally of bold and warriors. In conditions of the present war the power of night operations has grown especially. The power of the defense and the abundance of combat matériel now limit the success of day combat. On one sector of the front, fighting for a tactically important hill went on more than a week. The rules tipped first in one direction, then in the other. But when our units made sufficient preparation accomplished a bold maneuver at night, the problem was solved. All experience of war proves that night favors actions of well organized troops that are brave, resourceful commanders. Darkness helps to achieve the element of surprise, reduces losses from the enemy's fire, and weakens his resistance. It is the duty of our troops to use fully the

benefits of night for inflicting rapid and powerful blows on the enemy.

Night actions involve a number of serious difficulties. The least mistake by the commander organizing night combat or the least negligence by the troops will produce disastrous consequences. The most careful, foresighted preparation is necessary. Success in night combat is impossible without exemplary arrangements and impeccable accuracy of action on the part of all links of the army organization down to the last.

Experience of war emphasizes that at night complicated maneuvers should not be indulged in, however alluring they may appear at first glance. Our regulations demand that the plan of night attack be simple in design, that troops receive limited tasks, and that routes of attack be straight and short. Chance, accompanying to some degree all combat actions, is a most frequent guest in night operations. Besides that, darkness naturally makes troop command difficult during combat. This necessitates the most minute and detailed development of the plan of night actions. In each separate case, when deciding on night fighting, the commander must evaluate the situation in every way, weigh all its elements, and provide ahead of time for several possible variations in the development of events.

Of course the success of night action is largely determined by how reconnaissance works—how well known is the enemy's system of defense, his strength, and the condition of the terrain. But some of our commanders consider only one side of this question, conducting all the activity of reconnaissance solely for getting information concerning the enemy. Undoubtedly this is one of the most important factors of combat security, but to limit it only to this would be incorrect and unfortunate. It is necessary to study not less thoroughly the starting lines of attack, and to mark routes of movement with designating signs. In a certain unit the commanders, going out on reconnaissance, took along guides. During reconnaissance the guides carefully studied approaches to the hostile defense and set up beacons, and at night they faultlessly led their units to indicated places. It must be a rule that, before every night battle, orienting points in the terrain are marked, azimuths determined, and directions indicated by the moon and stars. All resources, all means must be used to secure rapidity of maneuver, concealment of movement, and correct departure. This is a good half of combat success at night.

It is well known that in defense the Germans make wide use of all possible obstacles; and at night even the smallest obstacle can become a serious obstruction which not only lowers the tempo of the movement, leading to excessive losses, but also reveals the attack before it reaches the forward edge of hostile defense. This means that it is essential to clear the way for the attack beforehand. It is impossible, of

course, and also unnecessary to aim at complete clearing on the whole extent of the zone of attack. For the first stage of battle it is enough to disclose exactly where mine-fields and wire entanglements are located and to mark them with precision. Not only the commander but also every soldier must be sure to know the location of cleared passages and the methods of overcoming the obstacles still remaining.

In night battle infantry has the main role. But this in no way lessens the roles of other kinds of troops. At night, as in daytime, it is necessary to strike the enemy not with spread fingers but with a firmly clenched fist, gaining victory with combined forces of all types of weapons. Anything but really exemplary cooperation is out of the question. Artillery and mortars must be prepared ahead of time for barrage fire in front of the attackers as well as for striking the most important objectives. Our tanks can also do much at night. It is necessary not to be alarmed at the difficulties of employing tanks in night combat, not to exaggerate these difficulties but to surmount them skilfully, carefully preparing each tank attack. In the dark, tank personnel, like infantry, must not indulge in complex maneuvers but must use their vehicles for short blows, moving within the combat formations of the infantry.

All this also applies in full to the actions of aircraft. Their active support can and must play a large role in the outcome of every night battle. It happens, however, that some general officers in planning night actions either leave aviation out of consideration altogether or assign to it extremely general and hazy tasks. No wonder that in such cases our fliers do not find objectives for bombing and at times do not drop the bomb load where the situation demands. In the course of the war there have come to light several tried methods of designating directions for aircraft and of indicating targets and positions where friendly troops are located. It is necessary to use all these methods fully. Infantry commanders must be required to fulfil most thoroughly all rules of cooperation with aviation on the battlefield. At night, as by day, not a single fruitless flight, not a single bomb off the target—such results cannot be achieved without the help of infantry commanders.

Night fighting also makes increased demands on the soldier's moral qualities. Solidarity of units, self-control of soldiers and commanders, their ability to act decisively and enterprisingly in any situation—these are among the basic factors of success. "The advantage in night fighting," writes Dragomirov, "is that it is not apparent who is stronger, and he who is bolder and does not fear death wins out." When every soldier is thoroughly conscious of this and when masterful command of night combat is firmly combined with courageous, decisive action by every last soldier and commander, nothing can block the road to success.

Prepare every night battle with thorough thought

and care and do not disregard even a single trifle. Do not give the Germans a minute's rest; in darkness as in daylight, stubbornly and resolutely destroy the enemy!

German Tank Grenadiers in Action

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by 1st Lieutenant Schaefer, German Army, in *Die Panzertruppe* June 1943.]

ON A broad front a tank battalion goes rattling on its way eastward under the burning sun. Close behind follows a tank grenadier company.

In each of the grenadier company's armored infantry vehicles there are two men who are ceaselessly on the watch. The anti-aircraft gunner stands at the rear machine gun with the circular front sight in place for use against aircraft and ammunition ready at hand. Red fliers may come from any direction, and it is his task to fire quickly and cause the planes to turn aside without using bombs or weapons on the column of vehicles. Up in front, beside the other machine gun, stands the group com-



mander. Now and then he raises his field glasses to his eyes and searches the terrain. He is responsible for giving his group the first view of the enemy. Beside him the glistening snake-like form of the cartridge belt passes into the machine gun. Ammunition is arranged on a 1:3 ratio today; i.e., every third one is a tracer bullet. For a long time now, old gunners have not made use of sights in fighting from a vehicle. They guide their fire to the target by means of tracer ammunition.

The task today is to make an energetic drive through the partially surrounded enemy, cut his forces into several parts, and then annihilate these parts separately.

The gaze of the company commander sweeps

proudly over his company. His platoons are following him in a formation of great width and depth. Intervening between tanks amount to at least fifty meters. Radio apparatus is set for reception, for we are not yet permitted to send messages as we do not wish to draw the enemy's attention.

Through the glistening haze a village shows up ahead of the leading tanks. According to the map, it should be Krutoyarka. Suddenly we are fired on from the edge of the village. We have brought the enemy to bay. Our tank cannon and the enemy's antitank cannon roar loudly, and in between them is heard the slow rattle of the Russian machine guns and the rapid rattle of the German. There is no need for a combat order by the company commander of the tank grenadiers. The combat situation is perfectly clear. The men look cautiously over the edges of the armored cars. They know what to do. Tank grenadiers do not have to be given many orders. They catch sight of the enemy and go after him as the situation requires, either in the armored cars or after rapidly dismounting.

The leading tanks break into Krutoyarka—and at once come out again. There must be something wrong! Immediately there is a radio order for the commander of the tank grenadier company: "Krutoyarka occupied by the enemy. Clean out the town!"

At a rapid pace the armored troop vehicles push ahead towards the edge of the village through the tank formation, which is giving the enemy everything of which its guns are capable. One of our vehicles gets a direct hit in its tracks by an antitank shell, and the crew immediately leaps out and puts the flanking antitank cannon out of commission with their machine gun while the driver and his helper change the damaged track under the enemy's fire. Now the tank grenadiers are at the edge of the village. In a flash they are out of their vehicles, into the Bolshevik trenches, and onto the necks of their occupants—and the edge of the village is in our hands! The empty vehicles dash around to the side of the village, and the assistant drivers open fire on the enemy tank with the vehicles' cannon and machine guns. The roofs are quickly set on fire and acrid smoke descends between friend and enemy, shutting off the view. Three tanks dash forward on the village street, the fight has begun in the village. With hand grenades, pistols, and bayonets, tank grenadiers bring the Reds out of their holes and bunkers. The smoke is a great friend to us; the Bolsheviks cannot recognize how small our numbers are. Fortunately, on account of the smoke, the Bolsheviks are not able to make full use of their numerous machine guns; and the fighting is decided at close range. Unified command of the company is scarcely possible any longer. Under officers and noncommissioned officers small assault detachments have been formed which dash forward from house corner to house corner, from bunker to trench, mopping up nest after nest

of the enemy. The company commander discovers a Russian 3.7-cm automatic antiaircraft cannon ready for action and climbs into the seat. His two messengers attach the magazines and although the commander has never fired such a gun before it blazes away bravely when he presses the trigger, planting its explosive shells in the midst of the Reds.

When half of the village is in the hands of the tank grenadiers, resistance grows weak. It is high time, too, for our hand grenades and pistol ammunition are at an end. Part of the tank grenadiers have already seized Bolshevik machine pistols and Nagant revolvers and have gone on fighting with them.

The fight for the village, which was almost one and a half kilometers long, lasted two hours. Then it was mopped up. When the tank grenadiers arrived at the other end of the village and were finally able to breathe fresh air again, the tanks, which during the fight had gone around the village, continued on their way to the east. The armored personnel carriers moved in behind; and the tank grenadiers mounted them, following the tanks to a new engagement.

The Light Antitank Gun

[Digest of an article by Lieutenant R. D. Boyd in *An Cosantóir* (Eire) July 1943.]

JUST as the tank appeared as a counter-check to the machine gun, so in turn a variety of weapons have been developed to counter the tank. Of these, one of the chief is the light antitank gun with a caliber of from 37-mm to 57-mm.

This gun, with its flat trajectory and wide traverse, is able to switch and adjust its fire quickly when engaging a moving target. Its effective range rarely exceeds 1,200 yards. Its power to penetrate armor naturally increases with shorter ranges, and in combat fire is withheld until the last possible moment. Fire is seldom opened at ranges greater than 800 yards; thus the telescopic sight of the German 37-mm gun is graduated from 300 to 900 meters, that is, from 327 to 981 yards. The shell penetrates two to three inches of armor at ranges from 500 to 1,000 yards, according to caliber. Penetration is affected by the angle of impact, and varies in direct ratio to it. The angle of impact varies according to the part of the tank which is struck and according to the nature of the terrain. The reader will appreciate that a 45° angle of impact on the level may become a 75° angle for a tank going downhill. The surfaces of a tank crossing rough ground present constantly varying angles of impact to the defender's fire. Failure to knock out a tank with the first hit, therefore, does not necessarily mean that the tank is proof against the defender's fire. Guns sited in flanking positions have the advantage of a line of fire against the lightly armored sides of hostile tanks, as against their heavy frontal armor. They have also a good chance of effecting surprise, as tank

crews have very restricted observation to the flanks. Guns sited on reverse slopes may fire with good effect against the vulnerable under-bellies of tanks appearing on the crest.

Although the armor-piercing shell is the standard ammunition, a proportion of high explosive ammunition is usually carried.

The rate of fire of the gun varies, in general, from 15 to 25 aimed rounds per minute.

The gun has a low silhouette. Presenting a small target, it is inconspicuous and easy to camouflage. A light shield gives the crew some protection against small-arms fire. It is mounted on a carriage with two pneumatic tired wheels and a split trail. When on the march, the trails are closed and linked to the rear of a truck in which the crew and ammunition are carried.

Antitank guns now appear in nearly every type of formation. The standard antitank gun of the German Army was of 37-mm caliber until the spring of 1941, when a 50-mm gun was introduced; it may be assumed that this gun is replacing the 37-mm. The German Army also uses the 47-mm Skoda. In the German armored division these guns are found in the antitank battalion, which has 36 of them, and again in the reconnaissance unit of the division, and in the battalions of its lorried infantry regiment. In the German infantry division there is an antitank battalion with 36 guns, and in each of the division's three infantry regiments there is an antitank company with 12 guns. These guns are found also in the reconnaissance squadron of the division.

Here we shall deal with the antitank gun as used in close cooperation with infantry. For this reason we shall confine our attention to the antitank company of the infantry regiment. The company is completely motorized. Before the present war the German antitank company* was organized as follows:

	<i>Rifle Companies</i>	<i>Machine- gun Companies</i>
1st Bn -----	No. 1, No. 2, No. 3	----- No. 4
2d Bn -----	No. 5, No. 6, No. 7	----- No. 8
3d Bn -----	No. 9, No. 10, No. 11	----- No. 12
No. 13 (infantry howitzer) company with 6 75-mm howitzers		
and 2 150-mm howitzers No. 14 (antitank) company		

A Company, consisting of
A Headquarters troop and

Four Platoons, each platoon having three guns. This organization is reported to have been used in France in 1940. On the other hand, a company of three platoons, each platoon with four guns, was reported in the Polish campaign of 1939. An account of German infantry organization which appeared in July 1942 gives the organization as:

A Company consisting of
A Signals Platoon, and

Three Antitank Platoons, each platoon having four guns. We may therefore take the present organization of the company as being on a three-platoon basis.

The individual training of the German antitank gunner includes the use of the hand-grenade, pistol, rifle, and light machine gun. The gun commander and No. 1 (who aims and fires) and No. 2 (loader) carry pistols. Nos. 3 and 4 (who carry ammunition) have rifles. We may assume that grenades are also carried. We do not know where or in what numbers the machine gun appears in the company organization but the inclusion of at least one machine gun in each platoon would seem a likely arrangement. The machine gunners would have the task of protecting the platoons against enemy infantry trying to clear a path for their own tanks by knocking out the gun crews. They would also give some defense against low level attack by aviation.

The pre-war organization of the company provided each gun crew with two armored trucks. One truck carried crew and ammunition, and towed the gun; the other truck carried ammunition and towed an ammunition trailer. If this establishment still holds, it would give the sub-units of the German company considerable freedom of action. Being less dependent on supplies from the higher unit, they would be better able to carry on the fight if cut off from adjacent and supporting troops. This is important in combat against tanks, in which attacks may develop from several directions in a matter of minutes.

The tactical employment of the antitank gun is such a large subject that we have space here to refer only briefly to a few general principles.

We have seen that each gun is truck towed. The truck does not tow the gun into the firing position, as its bulk would reveal the position to enemy observation. Instead, the gun is unlimbered under cover and is manhandled into position by the crew. The unlimbering position must be as close as possible to the fire position, as the manhandled gun has very low cross-country mobility.

On account of its flat trajectory and relatively short range, the gun must fire from an open position. Most light antitank guns have both telescopic and open sights for direct fire, which is the only effective fire against tanks. At present there is a general tendency towards an increased use of direct position by field artillery. Once fire has been opened, the gun is exposed to enemy observation and fire. For this reason the gun, when in action, cannot stay long in one position. The crew must be prepared to move it quickly, again by a covered approach to alternative fire positions selected and prepared beforehand.

In antitank work guns are generally sited in pairs, for mutual support, so that each gun in turn can cover the movements of the other. Guns may fire

*The antitank company is the 14th company of the German infantry regiment. The companies of the regiment are numbered consecutively as follows:

singly in operations which do not involve antitank defense, such as in attacks on positions or emplacements or in street fighting.

From the tactics of the individual gun we pass to the tactics of the company and its platoon. With a three-platoon company, the German regimental commander is able to attach a platoon to each of his three infantry battalions. As the battalion includes three rifle companies, it is possible to carry the distribution of guns still further by attaching one gun to each company.

Normally, however, guns would not be attached to units lower than a battalion, except to a company with a specific antitank mission or acting as an advance guard, in which case a platoon would probably be attached.

It has to be remembered that the German infantry regiment may be reinforced by an additional antitank company from the divisional antitank battalion, which consists of a signals platoon, three antitank companies and an antiaircraft company.

In the approach march the disposition of the company is governed by the terrain and the disposition of the other units of the regiment. The ground is reconnoitered and areas which offer approaches to hostile tanks are noted. Sites suitable as gun positions are sought. The bulk of the company will be concentrated in any direction which seems especially vulnerable to attack. No standard disposition of the company can be laid down. As regards German practice we are able to cite two actual cases. In the Polish campaign the 12th Infantry Regiment made an approach march in the following order:

RIGHT (MAIN) COLUMN:

- Horsed Reconnaissance Unit.
- Infantry detachment.
- No. 1 (Rifle) Company.
- Light howitzer Platoon (2 75-mm howitzers).
- Antitank Platoon.
- Battalion (less No. 1 [Rifle] Company).
- Heavy howitzer Platoon (2 150-mm howitzers).
- Field Artillery Battalion, attached from Division (less 1 battery).
- Antitank Platoon.
- 5 (Rifle) Company.
- Regimental Staff and regimental Signals Platoon.
- 6 (Rifle) Company.
- 8 (machine gun) Company.
- 13 (Infantry Howitzer) Company (less 2 light and 1 heavy Platoons).
- 14 (Antitank) Company HQ.
- 7 (Rifle) Company.
- Battalion (less No. 7 [Rifle] Company).

LEFT COLUMN:

- Battalion.
- Light howitzer Platoon (2 75-mm howitzers).
- Antitank Platoon.
- Field Artillery Battery.

Our second example of a German approach march concerns the 28th Infantry Regiment, and here we have information only of the battalions and the antitank company, which consisted of four platoons. During the campaign in Belgium in 1940 this regiment made a march in the following order:

RIGHT (MAIN) COLUMN:

- 2d Battalion.
- 1 Antitank Platoon.
- Regimental H.Q.
- 2 Antitank Platoons.
- 3d Battalion.
- 1 Antitank Platoon.

LEFT COLUMN:

- 1st Battalion.

In the attack, the disposition of the company is determined by the terrain, the enemy situation, and the regimental commander's plan.

The platoons may be attached to the battalions when the attack is to be made on a wide front, or when the terrain is of a generally uniform character, so that no one sector of the front offers better obstacles or better approaches to tanks as compared with other sectors. The platoons may also be distributed among the battalions when the terrain or the weather restricts visibility to short ranges. But these are special cases. In general it is thought best to concentrate the platoons as much as possible.

In the attack the company is given supporting and protective missions. One or more of its platoons give close support to the assault echelon, moving forward with it as it advances. Here their action will not always be limited to antitank fire. Using either armor piercing or high explosive ammunition, the guns are able to attack pill boxes, machine-gun positions, transport, and personnel. The remainder of the company usually stays in rear with the regimental reserve, protecting it from flank attack and enabling the company to develop fire in depth should enemy tanks break through the assault echelon. When the enemy's defenses have been broken, the company is held in readiness against possible counterattacks. When the enemy is in retreat, antitank guns will often be attached to pursuit forces.

We now turn to the company in the defense. With tanks, an attacking force has great power of maneuver. In a few minutes it may be able to develop concentric attacks from several directions. The tank attack is rarely limited to a frontal onslaught.

Hence, in antitank defense, the ground to be defended is organized as an area against which tanks may advance from any direction. The older defense systems were based on a frontal "main line of resistance," organized to meet attack from only one general direction. Linear defense went out in 1917 with the advent of infiltration tactics. Mobile armor

rendered the purely frontal defense obsolete, and it is now found only in special cases, as for example, where a river can be used as an antitank barrier.

When possible, the guns are placed in positions where the terrain is difficult for tanks, but from which there are good fields of fire on likely tank approaches. The platoons should work in close mutual support with adjacent infantry units, the platoons giving antitank protection to the regiment as a whole, while the other units of the regiment in turn defend the platoons against enemy infantry and aviation. The guns are thus coordinated with other infantry weapons to form a closely woven pattern of defensive fire. Tank mobility necessitates the defense being provided with a carefully organized system of observation posts and warning signals.

In general it is thought best to keep the platoons within as small an area as possible. To achieve this, certain approaches may have to be defended by obstacles, demolitions, and mines, and covered by infantry fire. A policy of dispersing guns to cover every conceivable avenue of tank approach results in the defense being nowhere really strong. If on the other hand the guns are disposed fairly centrally and in depth, fire can be quickly concentrated in any direction from which tanks threaten to break through. A Russian officer writes: "The antitank defense center and the antitank area become the basis of antitank defense."

Fire in depth is essential. Tanks usually attack in mass on a narrow front. A single platoon may knock out several tanks but it cannot hope to stop an assault by large numbers of tanks advancing at anything from 15 to 35 miles per hour. The platoon position will be overrun, but if the tanks have still to face further platoons which have been disposed in depth, then the defenders may still break the attack.

Mobile Obstacle-Building Reserves

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel F. Lvov, Soviet Army, in *Krasnaya Zvezda* 4 June 1943.]

ENGINEER OBSTACLES, especially mines, are widely used in all types of combat. If in former wars it was enough to have one kind of obstacle arranged in a straight line, now, when varied matériel and especially tanks are involved in battle in great quantities, obstacles laid on a straight line are easily overcome and cannot serve as dependable protection for the troops against hostile attack. In order always to have antitank defense, and in attack to consolidate a position quickly and cover the flanks of the attacking unit, it is necessary to prepare engineer obstacles in good time and in great depth. It is necessary to note that obstacles are most effective in those

cases where their system is integrated with the fire system of antitank artillery and antitank riflemen and is covered by the fire of infantry units.

Contemporary combat is a battle of movement, for tank and motorized units can move with great speed over considerable distances. This means that it is impossible to rely solely on a previously erected system of obstacles. Obstacles must be maneuverable, and it is necessary to be able to erect them quickly in places of probable hostile attack or counterattack. This is accomplished by the constant presence of a mobile engineer obstacle-building reserve. The practice of using mobile engineer obstacle-building reserves has proved its worth in fighting at the approaches to Leningrad, Stalingrad, and on other sectors of the front. Whenever these obstacles (minefields) were installed in sufficient density, the enemy suffered great losses.

Basically, this mobile obstacle-building reserve is a group of sappers familiar with mines and explosives, and supplied with this type of equipment and also with automotive transport. They must be able to set up the obstacles quickly. The composition of such reserve groups is varied, beginning with sapper squads and ending with engineer units. A combined force of all arms, as a rule, will have attached to it one or several platoons detailed from large engineer units. Sometimes, according to the situation, it is necessary to have tommy gunners and other units accompany the sappers for reinforcement and protection.

In 1942 a considerable force of the enemy succeeded in breaking through two antitank positions of a certain sector, forcing our units to retreat somewhat. The situation demanded the quick erection of mine obstacles in the narrow zone of the enemy breakthrough in order to block his advance, to give time for our reserves to move up to the place of breakthrough, and to deploy for the counterattack. Engineer units of the obstacle-building reserve accomplished this task.

The commander of engineer troops of a certain force of combined arms assigned to each unit of the mobile obstacle-building reserves a zone four to six kilometers wide along the front, and ordered the bridges and roads to be mined, leaving passages for friendly troops, while also reinforcing several natural obstacles with mines.

The commander of the engineer unit, having received the order, assigned missions to his lower units. He informed the men as to the situation, pointed out to each lower unit the immediate objective and the next one, and, for the eventuality of withdrawal, he indicated the general distribution of obstacles. It was also indicated where and how the mines were to be obtained and when the first lines of obstacles had to be ready. For communication with the commander of the force of combined arms the engineer unit commander sent a staff officer, while

he himself proceeded to the first objective with one of the lower units.

The work of the engineers was organized in relays from the advanced units to the defensive rear.

The task of each unit was to mine the bridges and possible detours and to lay minefields in those directions whence enemy tanks might appear. The commander of the engineer unit, being present on the line where the work was to start, assigned the tasks by platoons, and the latter proceeded to their sectors where the platoon commander detailed groups of sappers to their respective objectives, and the work began. The first line was reinforced with mine and explosive obstacles three hours after the order was received, the second line after four hours, the third after six hours. These three lines formed a zone of obstacles 8 to 10 kilometers in depth. Reconnaissance was carried on simultaneously with the work.

What were the results of this work when the enemy launched an attack in this place? On the first line (a stream), at a small bridge destroyed by a group of sappers, the leading hostile tank was blown up by a mine. Three other tanks, fired on by our artillery, turned back. The enemy did not appear here again during the day, while on the following day he was thrown back by our counterattack and his offensive was finally stopped. All the obstacle-building elements were at once shifted to the outer edge of our defense. It must be noted that the units of the engineer obstacle-building reserve accomplishing this defensive work were completely equipped with automotive transport for the movement of personnel and mines in the proportion of ten mines to one sapper. They were supplied with obstacle equipment from the army depot, moving it by means of their own transport.

The most important part of the work of mobile obstacle-building detachments is to determine promptly the probable direction of an enemy attack or counterattack in order to direct the mobile obstacle-building reserve to the proper place. Lines along which obstacles may have to be laid are marked out ahead of time, small streams and irregularities in the terrain being designated for the purpose. The supply of obstacles is made quickly available by concentrating them in various field depots. The successive lines of defense which may come under enemy attack are constantly reconnoitered in order that they may be quickly reinforced by obstacles when necessary. Communications are constantly maintained with the commanding officer of all forces in the area in order to be prepared for any movements that may be anticipated. The obstacle-building reserves must be located along the principal routes so that they can be shifted quickly to the positions where they are needed. They should be in a position to accomplish assigned mission in as little time as possible; one to two hours should be enough for a lower-unit reserve, two to four hours for an army reserve.

Lower unit mobile obstacle-building groups, as a rule, must operate within the general antitank reserve. However, the possibility is not excluded of using these groups independently for blowing up bridges, mining stream fords, etc., in those cases when the retreating rearguard does not have the means for performing this work. The obstacle-building reserve often may be required for mining various roads leading to a strongpoint, to command posts, and to certain firing points and positions.

Tanks In Attack

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article in *Krasnaya Zvezda* 13 August 1943.]

SUCCESS of attack is assured primarily through close cooperation by all types of troops. Working hand in hand, each of the arms and services must be used according to the demands of the developing situation. At the present stage, especially in the Kharkov sector, activities of tank units play an important role. Skillful use of tank and mechanized units, moving in the advance guard of ground troops and inflicting deep blows on the enemy, now assumes decisive importance.

Tank units have great striking power and mobility. They can operate at some distance from the main mass of infantry and artillery engaged in attack along the front line. In some cases it is difficult to avoid space between the tanks and the main body of forces, but tank units used for development of a breakthrough must not be permitted to lose operative contact with the main mass of attacking troops. More than that, under present conditions the interval between them must not be allowed to continue for a prolonged time when tank units find themselves forced to engage in individual combat. However strong the mobile tank and mechanized units, they themselves are not able to execute all tasks of an attack operation. By decisive action, tanks can create favorable conditions for destruction of the enemy; but this destruction is attained by the combined efforts of all types of troops and all means of attack concentrated in the decisive direction. Troops must unwaveringly move behind tank units, increasing their impact and consolidating their success.

All this permits tanks to make full use of their mobility for delivering fast, deep blows against the enemy. Whatever sort of break there may be in operative contact between tank units and other troops, lack of coordination in their actions is inescapably expressed in slowing down the tempo of general attack. Tank wedges striking into the enemy disposition have crushing force only when they are backed up by infantry-artillery masses. This does not mean, of course, that tank units must stall around waiting for the infantry to come up. Tank blows must be energetic but also in consonance with the

movement of the other engaged forces. Tank units cannot turn back to take up broken contact with other troops. This contact is maintained only by incessant, energetic advance of infantry and artillery behind the tanks. Equal advance with tank units penetrating the disposition of the enemy—that is the iron law of attack, the law of victory.

Tank and mechanized units fighting in rear of hostile positions are in need of air support. For this purpose, means must not be spared. Massed tank and air forces in decisive directions—that is another fundamental principle of attack. Without mastery in the air over the battlefield, it is difficult to win tank mastery on the ground. This means that tank operation must be combined with powerful air attack estimated to cover the full depth of enemy positions.

What is demanded of aviation engaged in support of tanks developing the success of an attack? First of all, well coordinated blows on obstacles encountered in the path of the tanks. In some cases there will be previously prepared strongpoints; in others, antitank reserves brought up by the enemy against our tanks. Both strongpoints and enemy reserves must be subjected to powerful action from the air and then attacked by the tanks, or by-passed by them if this is expedient. Everywhere where tanks need air support it must appear at once and inflict precise blows on indicated targets. This demands flawlessly organized communications between tanks and air units and their commands. The order calling out aviation, directing it, and designating the position of tanks in the terrain, all this to the least detail must be worked out in advance and known both to fliers and tank personnel. Besides that, experienced air officers must accompany commanders of tank units to maintain radio communications with their units and to direct the planes while the latter are in flight.

Actions of tank and mechanized units must be dis-

tinguished by high maneuverability, speed, and boldness combined with precise calculation. Without special need prolonged battles must not be engaged in on fortified enemy lines. The basic method of operation of mobile troops is outflanking and flank blows, to which the enemy is more sensitive than to frontal blows.

The fight for lines of communications in every large battle takes on great significance. Boldly maneuvering tank units must seize railroads and highways, cutting off enemy routes of retreat. In fighting for populated places which cannot be seized at first blow, tank units are used primarily for surrounding and blocking off hostile garrisons, thus preparing for their final liquidation.

Moving forward, tank and mechanized units must always be ready to encounter large forces of hostile tanks. Well-organized ground and air reconnaissance excludes surprise in such meetings and gives the opportunity to take up battle under favorable conditions. It is essential to oppose enemy tanks with all the fire power of organic and attached artillery, to call out strong groups of bombers, and with their support to execute further maneuver. Elements of units of all arms must promptly hasten to the place where tanks are engaged and simultaneously with the tanks inflict their blows on the hostile concentration, thus insuring continued action of the tanks.

Tank and mechanized units are powerful elements for developing a breakthrough. They permit execution of the attack at high tempo, striving to crush hostile defense in great depth. It is important only that their maneuver be strictly coordinated with the activities of other types of troops, and that cooperation between them be faultless in the course of the whole operation. This is the most important condition of the success of the attack.