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An M-4 Tank of an American Armored Division bumps up the road to Gabes.

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the TUNISIAN Campaign

by Major G. R. De Beer
British Army

THE Tunisian campaign is an example of a successfully accomplished plan for the annihilation of the enemy's forces. The plan provided for: first, the approach and build-up of Allied forces; second, the engagement of the enemy; and third, the assault and annihilation of his forces.

Allied Approach and Build-up

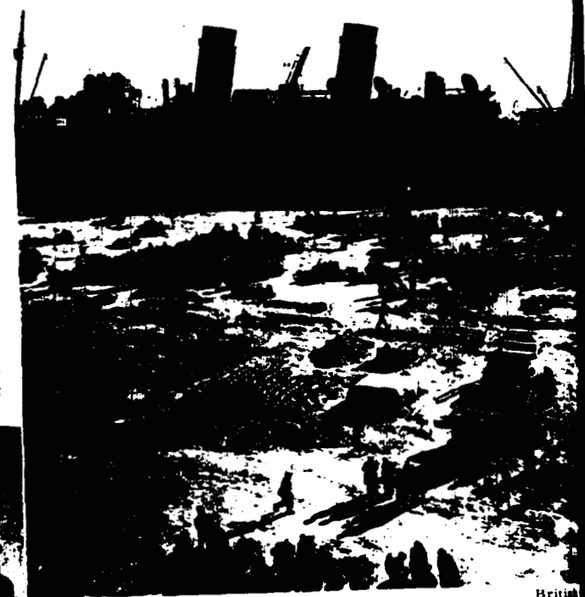
The approach involved two major operations. From the east the Eighth Army, having administered a crushing defeat to the enemy at El Alamein in early November, 1942, set out as rapidly as supply considerations and communications permitted on the 1,500-mile advance to the Tunisian frontier. The capture (January 23, 1943) and organization of the port of Tripoli was of first rate importance in this operation, since it enabled the conveyance of troops and supplies by sea, and endowed the Eighth Army with striking power far greater than that which the enemy estimated possible in the time.

From the west, the plan of approach involved the assembly of forces in America and Great Britain, their convoy over thousands of miles of ocean, their landings in Morocco and Algeria against the resistance of the Vichy French, overcoming that resistance, and finally organizing communications to the east from their landing points. Here again, timing, objectives, and magnitude of Allied operations took the enemy completely by surprise.

Landings in northwest Africa were made at dawn on November 8, 1942, by three task forces; by United States troops in Morocco at Mehdia, Fedala, and Safi; by United States troops in Oran in Algeria, and by combined United States and British troops in Algiers.

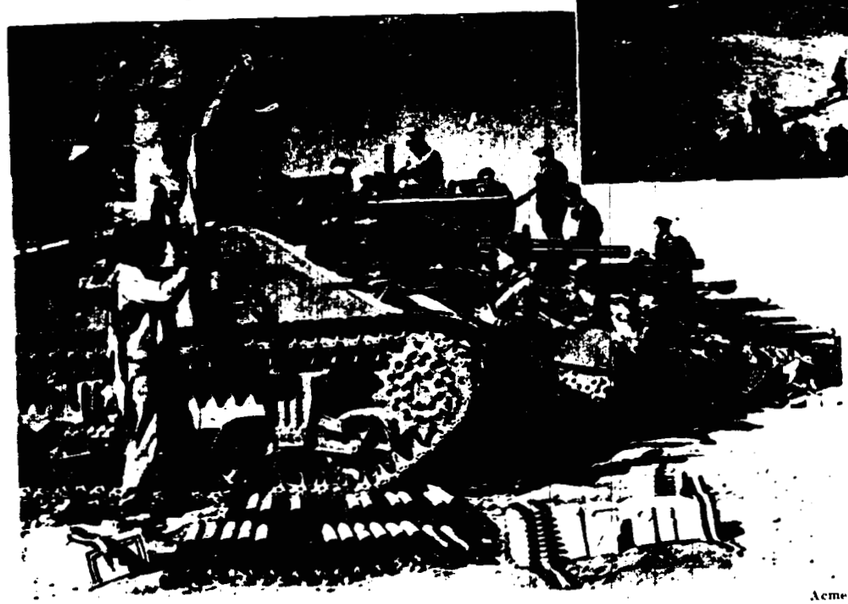
Resistance by Vichy troops was stubborn but rapidly overcome, and on November 11th the local French rallied to the Allied cause.

The fact that Allied troops had to anticipate prolonged opposition played an important part in subsequent operations, for it meant that transports had to be loaded "tactically." In the case of the western landings by United States troops, the first assault part, with a minimum of fighting vehicles, was followed by the main body of troops who were to secure the extended bridgehead. Administrative personnel and all transport etc. had to follow later. In spite of the speedy collapse of Vichy resistance, communications between the Atlantic ports and the eventual fighting front in Tunisia were so long and difficult that the Allied forces were for a long time virtually immobilized. Assault forces that landed at the eastern ports were followed by their appropriate transports, then antiaircraft and administrative personnel. Transport for the whole army did not follow immediately, as the main body of troops was not scheduled to land until a later date.



British

One of the vast armada of transport ships in Algiers harbor unload troops and stores.



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Tanks, landed at Oran, are quickly assembled and rushed to fighting British and American troops on the Tunisian front. Technical work on the tanks is supervised by a civilian Diesel engine specialist.

Balancing metal landing mats on their heads, native laborers help American Army engineers to build a mile-long metal runway at an airport on the West Coast of Africa, near Dakar. Construction of the airport began shortly after the United Nations had occupied the naval base.

Acme

Acme

American Armored Forces at front line observation post prepare for the successful counterattack at Kasserine Pass.

On November 11th, therefore, General Eisenhower was faced with the question of whether to advance eastwards to Tunisia with the Allied forces immediately available or wait until the Allied forces, and in particular the British First Army, had time to build up their strength. He rightly decided in favor of the former alternative, and the 400-mile advance to Tunisia began immediately, despite the facts that the forces available in Algiers amounted to little more than one division, that the rail and road communications were very poor, that sea communications along the Algerian coast were subject to enemy air and submarine attack, and that serviceable airfields would have to be improvised from scratch as and when the Allies advanced.

Meanwhile, the enemy lost no time in flying and shipping forces across the 100-mile wide Sicilian Straits to Tunisia at the rate of about 1,000 men daily, until towards the end of November they had assembled 20,000 men and some tanks. Tunis and Bizerte had good harbors and excellent airfields and, further, could rely on bomber support from permanent bases in Sicily.

Engagement

Contact with the enemy in the hills of northern Tunisia was made about November 15th, and the active operations began. These operations may be divided into four phases: first, the Allies' initial rush to Tunis; second, the enemy's reaction and offensive operations; third, the storming of the Mareth and Akarit position by the Eighth Army; and fourth, the Allies' final offensive. (See map, page 6.)

The Allies' advance into Tunisia from Algeria had as objects: an attempt to carry Tunis by rush tactics before the enemy became too strong; or failing this, to secure positions from which the final assault could ultimately be launched. An additional object was the support of those French troops who had refused to obey Vichy's orders and were valiantly resisting the enemy with the feeble means at their disposal.

By the end of November, United States and British troops had reached points midway between Tunis and Bizerte, but were unable to proceed. The forces that the enemy had been able to concentrate were too strong for the relatively small Allied force opposing them. The phenomenally bad weather and mud had also interfered with the improvisation of airfields and consequent operations of the Allied air forces in support of their ground troops, so the latter had to fall back. They had, however, secured Medjez El Bab, an essential jumping off ground for any subsequent assault on Tunis, and they had rallied French troops and stabilized the front.

The enemy's reaction to the advance of the First Army (still less than two divisions in strength, including advanced echelons of certain United States formations) took the form of a succession of offensive thrusts. The enemy forces consisted of the German Fifth Panzer Army under General Von Arnim, headquarters in Tunis, which was being built up to the strength of four infantry divisions and an armored division; and the Italian First Panzer Army, under Marshal Rommel, stationed in the Mareth position and consisting of the German Afrika Korps, two German infantry and two armored divisions, and two Italian corps.

Five main enemy attacks were launched between mid-December and early March. The first was launched in December against Medjez El Bab with the object of recapturing that strong point. The second was directed in mid-January against the French in the Ousseltia sector in the hope of defeating the poorly equipped French forces. The third, in mid-February, was made against American forces in the Gafsa sector in an effort to widen the coastal corridor of communication between Von Arnim's and Rommel's armies and capture Tebessa, which would threaten the flank of the entire First Army. The fourth attack was launched against British forces in Northern Tunisia in late February with the object of overrunning what the enemy hoped would be the rearguard of the First Army, menaced in the flank from Tebessa. The fifth and last major enemy counteroffensive was launched in early March against the British Eighth Army in Medenine in an attempt to spoil the Eighth Army's preparations for attack on the Mareth Line.

One and all, these offensive thrusts failed. Medjez El Bab was held by the First Army; the French were pushed back but were unbroken; the enemy failed to reach Tebessa and soon had to relinquish the temporary gains at Sbeitla, Kasserine and Gafsa; the attack on the First Army made only slight, slow, and costly progress in the extreme north without forcing the Allies to relinquish their position at Medjez El Bab or Beja; while

the attack on Medenine resulted in nothing but a loss by the enemy of fifty-two tanks.

On February 20th, under the supreme command of General Eisenhower, the Allied Eighteenth Army Group was set up under the command of General Alexander. This comprised the British First and Eighth Armies, the United States Second Corps, and French forces organized into the Nineteenth Corps. Allied Air Forces were likewise reorganized. Responsible to General Eisenhower, Air Vice Marshal Tedder became Air Commander-in-Chief in the Mediterranean. Under him, Air Vice Marshal Coningham was in charge of air operations in support of the Eighteenth Army Group. Also acting under General Eisenhower, Admiral of the Fleet Sir Andrew Cunningham commanded all naval operations in the Mediterranean. Thus, all British, United States and French forces in the African theater were organized into united ground, air, and sea forces, with the individual commanders of each subordinated to one supreme command.

Allied Offensive

The first step of the combined Allied offensive was the attack on the Mareth Line. By March 18th, the United States Second Corps reoccupied Gafsa. The object was, first, to menace the Italian First Panzer Army (now under General Messe) in the rear and to draw off as much of its armor as possible; and second, to guard supply dumps for the Eighth Army that had been accumulated at Gafsa.

The Eighth Army attacked Mareth positions on March 21st by frontal assault on the sector near the sea, and a turning movement was directed on El Hamma on the enemy's right. The frontal assault crossed Wadi Zigzau and the antitank trench, and formed a bridgehead, but it proved impossible to bring up the necessary heavy weapons to repel the enemy's armored counterattack. The weight of the British attack, therefore, was shifted to the left flank, and on March 26th, after the assault by the New Zealand division had gained its objectives, the British First Armored Division passed through and reached El Hamma, which fell to it the following day, when Gabes also was occupied. The enemy had been driven out of the Mareth positions.

Meanwhile, to the east of Gafsa Allied forces had had to withstand heavy enemy attacks which were repelled, and on April 5th, the Eighth Army burst through the enemy's position at Akarit by frontal assault. The First Army likewise broke through the enemy's flank guard at Fondouk on April 10th, and the enemy was now in full retreat to his strong prepared perimeter positions, covering Tunis and Bizerte along the line from Enfidaville through Pont du Fahs to Goubellat and the high ground north and west of Medjez El Bab and west of Bizerte.

The two enemy armies had been driven together, but the Eighteenth Army Group had also joined up to form a continuous front of about 110 miles.

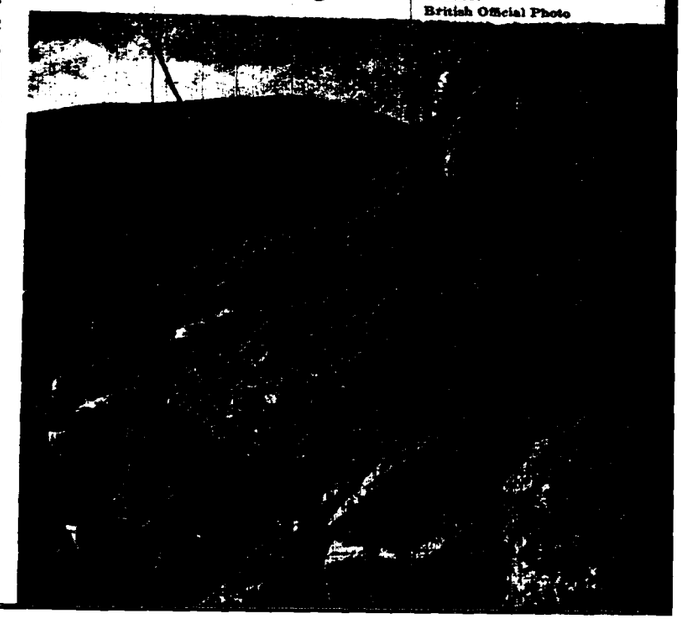
At this stage, General Alexander made the following dispositions: The United States Second Corps moved right across the lines of communication of the First Army to the extreme north of the Allied lines. This move was accomplished with such skill of staff work and execution that although heavy streams of traffic were crossing one another at right angles, it went off perfectly. In their new positions, the United States Second Corps was to press eastwards from Sedjenane and Beja in the direction of Mateur and Bizerte. The Eighth Army was directed to attack the enemy positions near Enfidaville to pin down forces in this area, after which the First Army would launch an attack eastwards along the Bou Arada-Medjez sector.

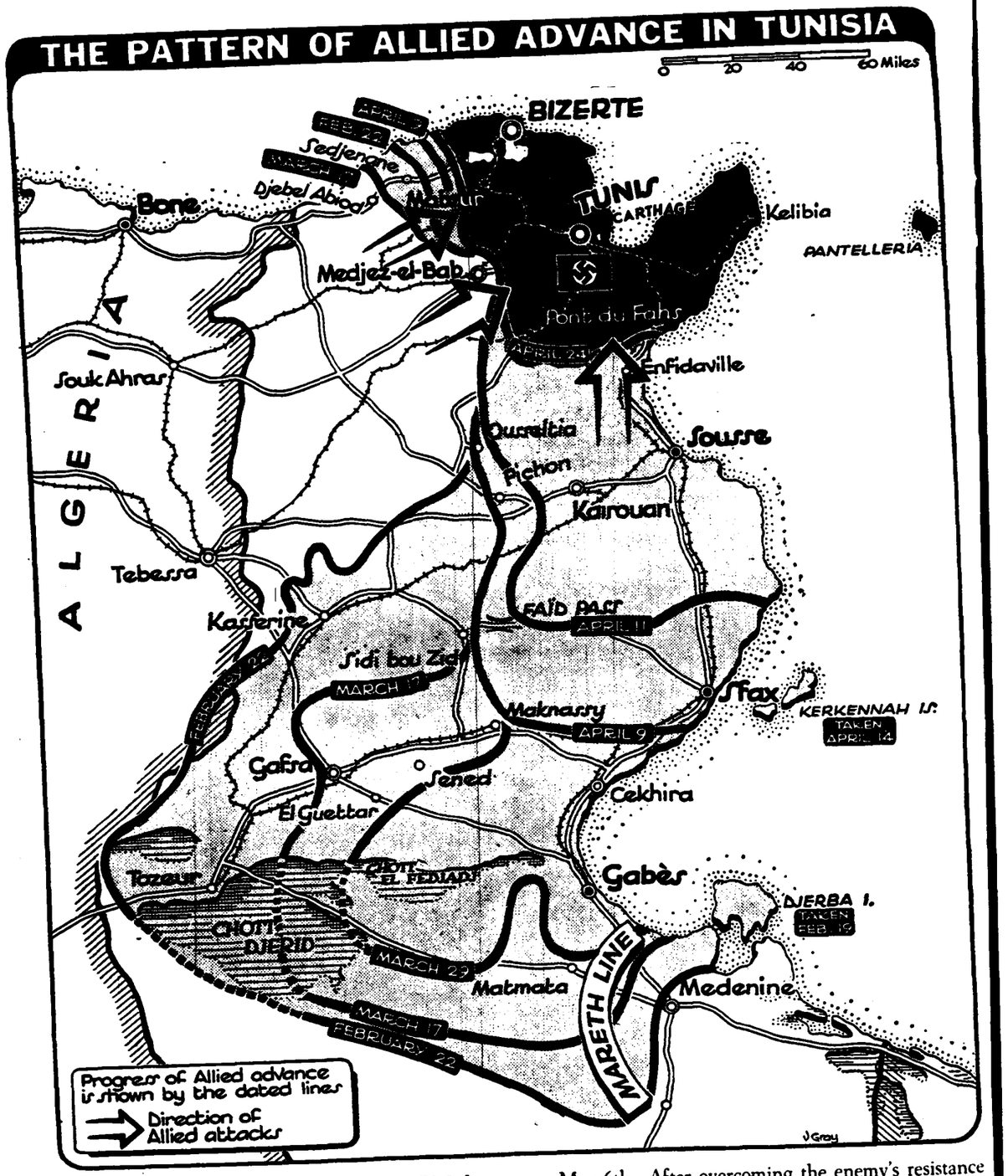
Accordingly, the Eighth Army attacked on April 19th and after very severe fighting, occupied the objectives. The First Army (reinforced by the First Armored Division from the Eighth Army) attacked April 22nd and 23rd. For the ensuing ten days the First Army sector was the scene of furious fighting. Counterattacks succeeded one another day after day and neither side made much headway. But by May 3rd, the United States forces, by dint of hard fighting, had driven the enemy out of Mateur, and the enemy showed signs of withdrawing the northern sector of his perimeter to reinforce the center. On May 5th, the First Army captured Djebel Bou Aoukaz, a key position on the way from Medjez to Tunis, and the following day the final assault was launched.

Taking advantage of the fact that the enemy still maintained the bulk of the Italian First Panzer Army in the south, where indeed his general staff still thought that the greatest danger lay, General Alexander had transferred the Seventh Armored Division and Indian

Infantry of the British First Army rests against a craggy crest above Kelbine after they had taken the height. This was one of the last heights before Tunis.

British Official Photo





Fourth Division from that sector to Medjez El Bab.

Allied mastery in the air was now complete. After intense bombardment of the enemy's forward positions and lines of communication both from the air and by artillery preparation, the British Fourth and Indian Fourth Divisions attacked due east from Medjez El Bab on May 6th. After overcoming the enemy's resistance the British Sixth and Seventh Armored Divisions passed through the gap, and by May 7th they had cut clean through the enemy's defenses and entered Tunis.

The same day the U. S. II Corps stormed into Bizerte.

With these two blows the enemy's main defense

formations were broken down, his forces cut in two, and all those between Tunis and Bizerte were forced to surrender. But the enemy still had a possibility of establishing a restricted perimeter defense line from Hamam Lif on the coast, southeast of Tunis through Zaghouan to the heights north of Enfidaville. In these naturally strong formations, the enemy could have drawn supplies from dumps in the Cape Bon peninsula and replenished them by means of landing jetties which he had established at Kelibia. This contingency had been foreseen by General Alexander and provided for. No sooner had the Sixth Armored Division secured Tunis than it turned southeast and blasted its way through enemy resistance at Hamam Lif, cut right along the base of the Cape Bon peninsula to Hamammet and beyond, and linked up with the Eighth Army in the coastal sector on May 11th. The remaining enemy forces were thereby encircled and cut off from supplies. General Von Arnim was captured near Sainte Marie du Zit on May 12th, and the following day Marshal Messe, with the rest of the enemy forces still intact in their formation, surrendered unconditionally.

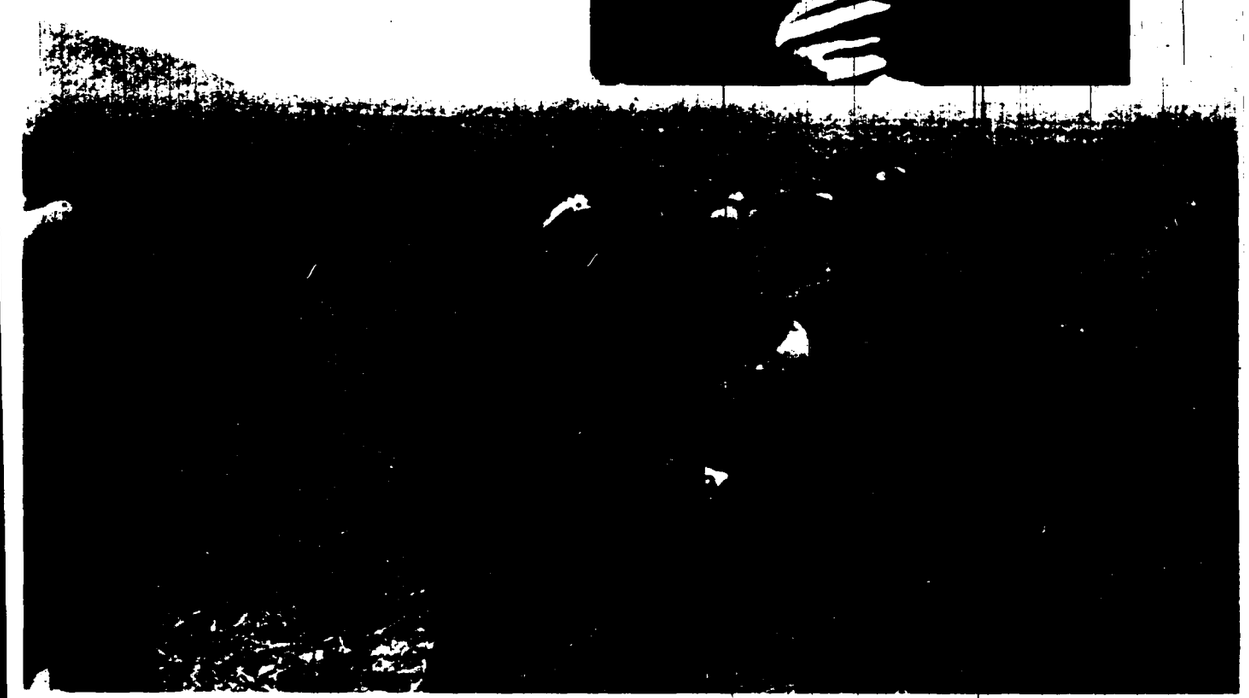
The Tunisian campaign lost the enemy 290,000 prisoners and 50,000 killed, more than 250 tanks, 1,000 guns, including thousands of tons of supplies, 1,700 aircraft shot down and 630 captured on the ground, 137 ships sunk by the Allied Naval forces, and 95 by air action certain, with many more probable.

Such was the well-earned record of the Allies grand strategy, efficient planning, excellent war matériel, indomitable fighting spirit, perfect inter-Allied coöperation of all services, and superb generalship.

British Official Photo

Right: **General von Arnim, Commander of Axis forces in Tunisia is shown as he steps out of a car to surrender to the Allied command.**

Below: **American MP's check in the German and Italian prisoners as they arrive at a prison camp behind Bizerte.**



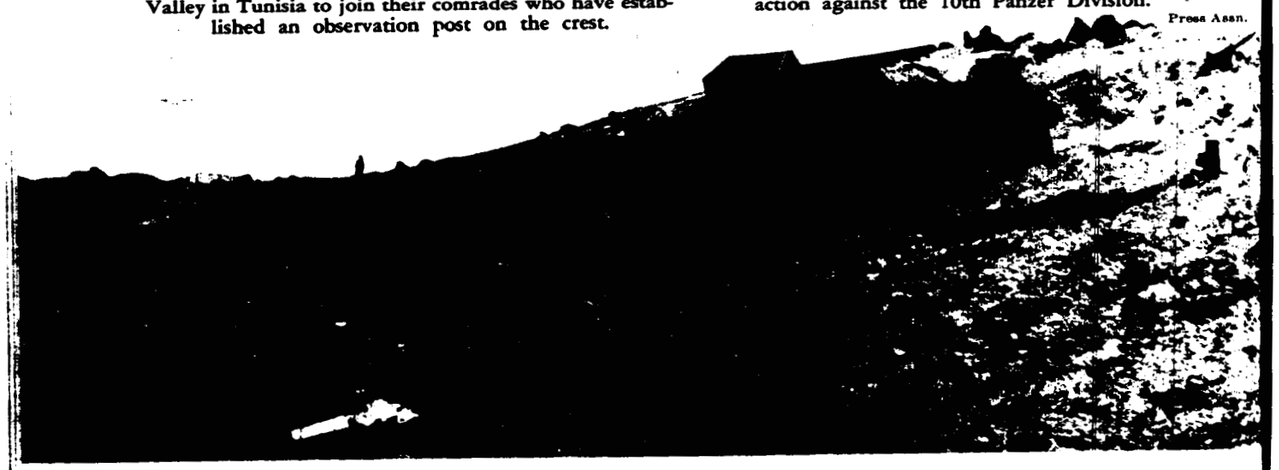
European

U. S. Soldiers in Tunisia

Press Assn.

An American artillery unit files up a hill in the El Guetar Valley in Tunisia to join their comrades who have established an observation post on the crest.

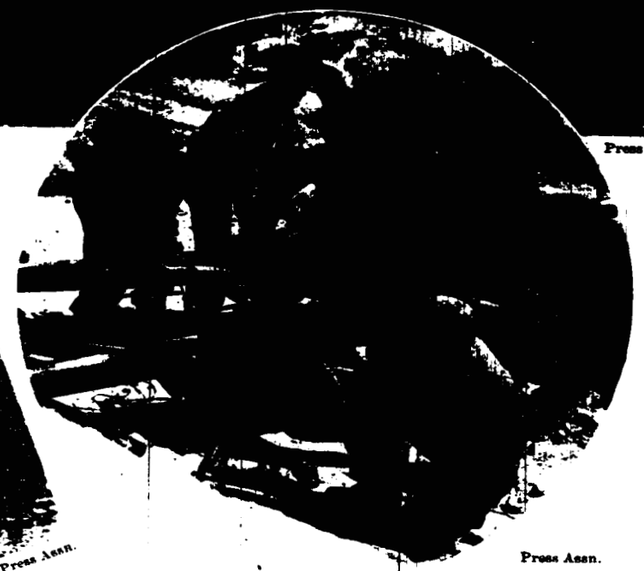
An antitank crew mans a gun in the extreme forefront of the American Line.



A tank destroyer unit shielded by the crest of a hillside, await the word to go into action against the 10th Panzer Division.

Press Assn.

Realistic maneuvers, such as shown in this picture, preceded actual combat. An American half-track (center) crossing a stream is caught between bomb bursts. At left is an amphibious jeep. At right, partly concealed by grass and bushes is a radio jeep.



Press Assn.

During an Allied raid on German-Italian positions in Sened, this U. S. half-track, mounting a heavy gun, and the speedy jeep in the foreground, proved tough and mobile.

Press Assn.

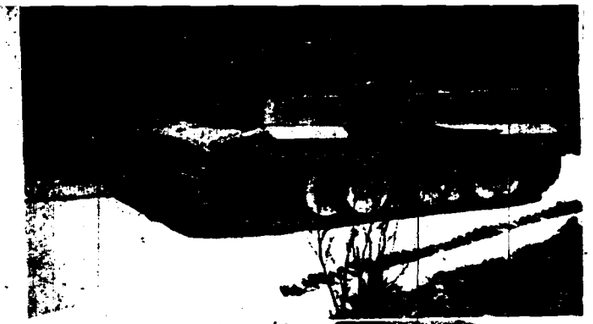
Infantrymen familiarize themselves with a 75mm Italian field gun, captured in action on the Tunisian front. The gun was later used to knock out a German Mark III tank.

Press Assn.

Infantrymen and armored vehicles advance over hilly terrain during their thrust for Bir Marbott Pass, on the way to Gabes. Artillery fire sweeps the ridges ahead.

German Tanks and Antitank Guns Captured in Tunisia

(Pictures by the Author)

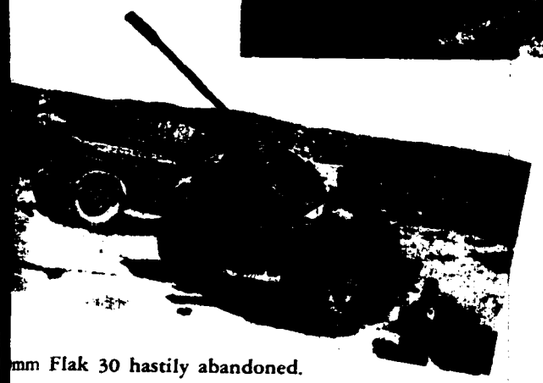


Right: Side view of German Mark VI or "Tiger" tank.

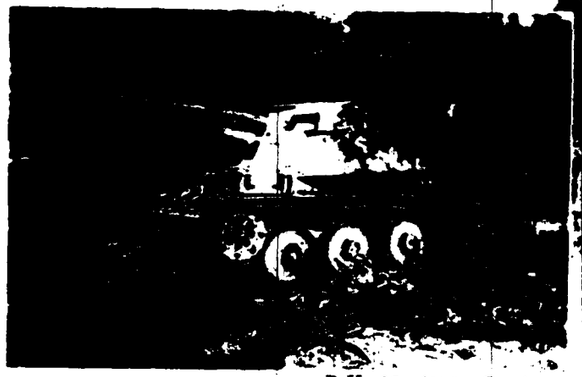
Below: Front view.

Towed 50mm AT gun.

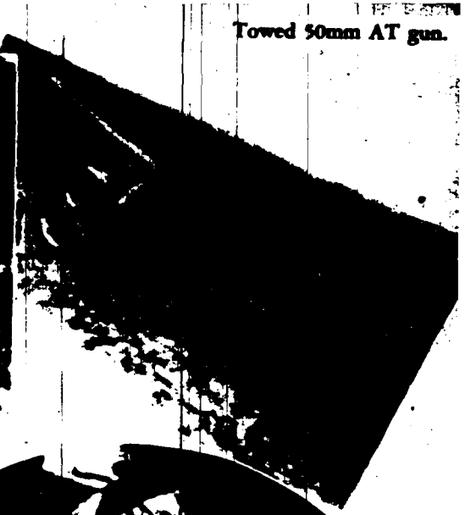
Towed 75mm AT gun with muzzle brake.



mm Flak 30 hastily abandoned.



PzKw38t (1938 Czech tank chassis) with F K.36R—the Russian M1936 high-velocity 76.2mm field gun.



Towed 50mm AT gun.

TANKS IN TUNISIA

by Colonel
*Peter C. Hains III, Cavalry**

ANY discussion of our campaign in Tunisia, from November 8, 1942, to May 9, 1943, must lead eventually to a discussion of tanks, since both the Axis and the United Nations used them extensively.

The U. S. 1st Armored Division, affectionately known as "Old Ironsides," is the only U. S. armored division to have seen extensive combat so far in this war. It furnished combat teams for the initial landings in Algeria and the November push into Tunisia, elements of which reached the 12 kilometer post on the road to Tunis before German armor forced them to retire. Later, in the dark days commencing February 14th, the 1st Armored Division bore the brunt of the German panzer attack through Faid Pass, which finally bogged down in the Kasserine Pass. Elements of the 10th, 15th, and 21st Panzer Divisions were reported in action against it, in this last great drive by Field Marshal Rommel's troops to gain elbow room.

Finally, "Old Ironsides" furnished the break-through south of Bizerte which ended on May 9th with the surrender of the Axis forces north of Tunis, and the disintegration of Axis resistance in North Africa.

It is not the purpose of this article to discuss the strategy and the tactics of the various armies and their components, except as they may bear on the lessons learned during the six months of this campaign. A prominent and successful British commander remarked to me once that he did not consider an officer's training complete until he had experienced defeat. The author feels no twinge of shame in stating that we of the "Bloody First" have tasted to the dregs both defeat and victory, and it is hoped that our experiences may be the source from which other American armored divisions may draw the lessons that will enable them to succeed, without having to retrace our painful steps.

In drawing conclusions from the following lessons, it must be remembered that there will probably be many extensive changes in methods of future employment.

Reconnaissance

In our training areas and in our schools, great emphasis has been placed on reconnaissance, yet it is apparent that we have not yet mastered the subject. All too often our reconnaissance elements knew the subject as taught in a company or regimental school or as practiced on maneuvers, but they were not sufficiently well grounded in details of application to adjust themselves, effectively, to strange terrain and circumstances.

All reconnaissance agencies must master such details as the proper method of establishing and conducting listening posts at night, observation posts in daylight, and night patrols dismounted and mounted. They must learn how to observe properly, how to identify and describe what they have seen, how to plan their reconnaissance, how to locate hostile guns, and how to detect and mark or remove mines. There are innumerable other details that must be practiced until they become second nature.

Reconnaissance on the battlefield is not alone the responsibility of the reconnaissance elements. Every soldier must be alert at all times to the nature and possibilities of the terrain, the weather, the sun, the enemy's activities, and the disposition of friendly troops in his vicinity. Combat troops must have "eyes in the back of their heads and necks like an owl."

At Faid, German tank commanders were seen observing through glasses for minutes that grew into hours. No movement was made until a thorough, careful, visual reconnaissance had been completed. Every next move was studied in detail and so carefully planned that when made, it was always to a selected, defiladed position from which the tank could fight, or within which it could hide.

Colonel Peter C. Hains III and his executive officer, Lt. Colonel Louis V. Hightower, near Tebessa.

At Sbeitla, ten Mark VI Tigers moved rapidly and boldly into a wadi. There they disappeared from sight. An hour later the muzzles of their 88's pushed over the bank and opened devastating fire.

On February 16th, German tanks advanced across open terrain against Djebel Hambra. The advance was painfully slow. When taken under fire, they disappeared in defilade or halted their advance until further reconnaissance revealed the secure position they sought. Throughout the day, the German tanks, keeping just outside of the effective range of our guns, maneuvered, until at 16:00 hours they felt prepared for the attack. During the entire day their reconnaissance was thorough, careful, and continuous. At no time could they have been taken by surprise and counterattacked.

At about 14:00 hours on February 14th, tanks moving east toward Sidi Bou Zid were observed from our

*Colonel Hains commanded a regiment of the 1st Armored Division throughout the entire campaign in Tunisia.

artillery positions. They were barely visible from the battery position. Knowing the dispositions and numbers of our own tanks, however, it was realized that these were probably not friendly. Prompt reconnaissance revealed an attempted envelopment by 15 German tanks. Again the next day, an S-3 became suspicious of what appeared to be half tracks moving east. Careful observation of this movement caused the discovery of a German tank attack, out of the sun, toward the flank and rear of our infantry.

The lessons are clear. All ranks must be keenly alert. No soldier can assume that he will have to perform only his assigned job well. He must realize that in battle every member of the fighting team will be called on to perform a wide variety of tasks. He is in a never-ceasing struggle for existence, in which his constant aim is the destruction of his adversary.

Indirect Fire

With the ever increasing effectiveness of the antitank defense, the tank must be considered more and more to be an armored, mobile gun platform, capable of rapid, crushing, powerful thrusts when conditions warrant. It is also capable of delivering destructive fire from defiladed positions by indirect fire methods.

Reduced to a last analysis, tanks, like bombers, are a form of artillery—another means of bringing destructive fire power to bear on the hostile forces.

The conception of using indirect fire from tanks is not new. The German used his tanks in groups or batteries as artillery, and especially at El Guettar and Maknassy he used them as roving guns in support of his infantry. At Djebel Nemia, Mark IIIs and Mark IVs climbed into the defiles and attacked our infantry. We countered this form of tank employment by using more tanks on similar missions. They remained in the front lines with the infantry day and night.

Destroyers and antitank guns, being vulnerable to small arms and shell fire, could not accomplish the task as well as the completely armored weapon.

Thanks to the foresight of the division commander, Major General Orlando Ward, our medium tanks were equipped with quadrants and M. 1917 MG panoramic sights. The crews were well trained in indirect fire, and even after we lost our equipment, they used improvised methods to fire indirectly.

During the period commencing January 29th, platoons and even companies fired against targets in Faid by using a forward observer and indirect fire. The Germans had a pair of 210mm howitzers that so harassed our artillery that the crews were forced into foxholes. The American tanks, however, would advance to within effective range, and by using dispersion instead of concealment, they would take on targets such as located antitank guns, motor parks, dumps, vehicles and other targets of opportunity. "Jerry" would reply with his 210s, and often a company of tanks would disappear in smoke, but when the smoke cleared, there they would be—unhurt and still firing with as many as sixteen guns.

Once, when the hits seemed to be getting too close, the officer firing was advised that he had better move his company out of range. His reply typified the feeling of his men, "They have to get a direct hit to hurt us, and they haven't been able to do that yet. Watch this one!" Then his company fired a salvo out of the smoke and hit an ammunition dump in Faid.

Later in February, a group of nine "assorted" medium tanks were led into the mountain north of Sbeitla. Then, by using such crude methods as, "so many turns on the hand wheel," they fired against the flank of the German attack. So effective were they, that our artillery received frequent counter battery fire. The Germans never located the tanks, which continued their fire mission until their H.E. ammunition was expended.

Much stress should be placed on the importance of training all personnel to be forward observers. In the training of the 1st Armored Division great emphasis had been placed on teaching crew and squad leaders to adjust artillery or assault gun fires by simple methods. Our rule in Tunisia was: Whoever can see the target and get near a radio, should be able to adjust fire. He had only to call for a round of smoke near a prominent landmark, and then report, "The burst is so many yards north, south, east or west of the target."

Two 88mm AA-AT guns—one at maximum elevation, the other sited horizontal.

Frequently, a doughboy or a tank commander would put the gun on the target in three or four rounds, and our Artillery Fire Direction Center would then bring one or two battalions of artillery in on the target with devastating effect. Natuarlly, the artillery forward observer was used in preference to the others, but sometimes the F.O. was pinned down by hostile fire or was not in a position to see a particular target. As a result of this system and an excellent fire direction center, we never lacked for supporting fires. We often wished for guns with greater range, but within the range limit of our guns, our observer system gave us a perfect team.

Tanks in Support of Infantry—Hill 609

Commanders of tank units must keep an open flexible mind. Too often the situation demands the employment of armor in a rôle totally different from the normal school of thought.

In April, one of my medium battalions was in division reserve near Beja. The 34th and 1st Infantry Divisions had been battling for days in a fortress-like range of mountains against crack, determined, German infantry. Losses were running high, and progress was slow. One particular terrain feature, known as Hill 609 and held by the Germans, was the key to the hostile position. It was imperative that we take this hill. The face of the hill was abrupt rim-rock.

On April 29th, the tank battalion commander received orders to alert one company and have the company commander report to the commanding general of the 34th Infantry Division. Following is an excerpt from the report of the battalion commander:

"We found General Ryder at a forward O.P. from which he could plainly see the hill, held by the enemy, which was holding up his advance. (Hill 609.) He explained the situation fully and pointed out accurately on the map and on the ground, the locations of his own and the enemy troops.

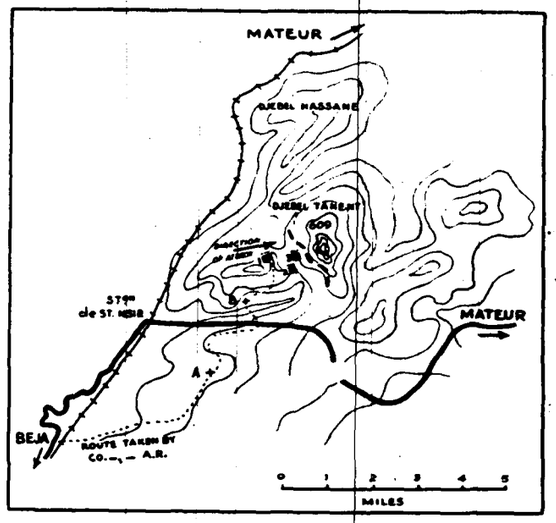
"He gave the tank commander his mission and stated that his own infantry would support the tanks in driving the enemy from the hill.

"The tank officers then went forward to the friendly infantry positions and made a deliberate and thorough study of the terrain. Their plan was submitted to General Ryder, who assembled his artillery and infantry commanders to coördinate the details. The smallest details were worked out—from the construction of a wadi crossing to the identification signals to be used. After agreeing on the time of attack, Captain Gwinn and his officers returned to their company and explained to the men the plans of the operation in detail."

Here is Captain Gwinn's own story of the battle that followed:

"April 30th—Company X, X Armored Regiment arrived at an assembly area behind Djebel el Kerh at 02:30 hours. In order to get to our defiladed positions, we had to descend a very steep hill, cross-country, and cross a wadi at the bottom. This would have been difficult but 'Jerry' obligingly shot a flare which made our task easier.

"We got into our defiladed assembly area, arranged a stand-to for 04:00 hours, and then the men got some sleep. At 04:15 hours we jumped off after contacting our supporting infantry. Lieutenant Adams was to move the 1st Platoon forward and gain a position on a rim-rock to the company's left, from which he could cover by fire the entire operation of the company. On reaching the vicinity of his objective, he found it was inaccessible, so he moved his platoon to an alternate position, where he covered our advance.



"The other two platoons then advanced rapidly—leap-frogging as they neared the objective. Quite near Hill 609 the terrain narrowed, so that there was maneuver room for only one platoon. Lieutenant Riggsby led the 2d Platoon into a defiladed position, while Lieutenant Ruppert continued the forward advance with the 3d Platoon. Thus, although the entire company was under rather heavy fire, Lieutenant Ruppert was protected on both flanks from hostile tank counterattack.

"The infantry advanced with our tanks and on many occasions tried to designate targets. The noise, however, made this almost impossible.

"The C.P. was just forward of the 1st Platoon and came under direct antitank fire from the right. Before any damage was done, Lieutenant Adams located the gun, a ground-mount 75mm, and knocked it out by fire from his own tank. The 2d Platoon ran into difficulties, and Lieutenant Riggsby's tank was knocked out. Platoon Sergeant Neal then took charge of the platoon and covered Lieutenant Ruppert. At this time, one of the 3d Platoon tanks, that of Sergeant Kaschak, was knocked out and set afire by a 50mm antitank gun which scored five penetrations out of six rounds, at about 300 yards.

"Lieutenant Ruppert withdrew his remaining three tanks about ten yards to a defiladed position, from which he continued to fire on enemy infantry and guns withdrawing to his front and right front. His further advance was denied by hostile antitank fire from his right flank. The mission, however, was accomplished as our infantry came forward and took possession of the hill and we were ordered to withdraw to our assembly area.

"Our losses were two tanks completely inoperative,

and two tanks which were repaired and put back into operation a few days later."

It is worthy of note that when his tank was knocked out, Lieutenant Riggsby remained in his tank and, firing until his ammunition was exhausted, materially assisted the advance of the other tanks and infantry.

The attack started at first light and by 09:30 hours, the tanks had reached their objective. Because of the hill's rim-rock faces, some twenty feet in height in places, the summit of Hill 609 was inaccessible for tanks, but they beat down the hostile automatic weapons fire and allowed the infantry to close with the enemy on the objective.

The attack on Company X against Hill 609 is an example of the completely successful employment of tanks in support of infantry. Neither the tanks nor the infantry had had previous experience in this type of action, nor had they operated together before. Success was due primarily to three things:

First—Complete, careful, and thorough reconnaissance was made prior to planning the operation.

Second—Surprise was obtained because movement was made during darkness, and because the terrain was so unsuited to the employment of tanks.

Third—There was complete coöperation between the tanks and the infantry.

Enemy Antitank Defense

Every tank commander should make an intensive study of antitank methods. Only by knowing them, can he hope to outwit or outmaneuver them.

The German is adept at antitank defense. His guns vary in caliber from 47mm to 88mm, with the squeeze bore 20mm as a valuable "side kick." They are all characterized by high muzzle velocity, great range, and a low silhouette. The German is a master at concealment and invariably digs his guns in, often in almost conspicuous places. However, they are very hard to locate, and their muzzle flash is negligible.

Guns are employed in depth in antitank areas and are mutually supporting. Many are sited to cover reverse slopes and to fire at tanks that have passed. Be wary of the gun that opens fire. Look for the supporting guns that will take you in flank and rear, as you attempt to maneuver against the located gun.

A favorite German trick is to fire with several calibers at the same instant, in order to confuse the observer as to range and location. Another trick is to adjust with a 47mm gun and switch to an 88mm to fire for effect.

Each antitank gun seems to have a special detail who dig the gun in. Many alternate positions are used, and after firing from one the gun is promptly moved. This increases the difficulty of locating it and gives the impression that there are more guns than are actually present. I have seen one gun fire from three different locations on about a 500-yard front. We were unable to locate it until our infantry got close enough to discover the defiladed routes it was using in moving to its various positions. It had created the impression that at least two and possibly four guns were firing.

Before attacking an antitank area, the guns must be made to open fire and disclose their location. This will require a reconnaissance in force, for antitank guns will not open up unless forced to do so.

Just such a procedure was followed in the attack against the German positions east of Mateur. The reconnaissance in force cost eighteen tanks, but the locations of the antitank defenses were so accurately plotted that in the attack only one tank was lost, and that one ran over a mine. A heavy smoke screen was placed and maintained on the antitank guns on the [illegible] that their fire was ineffective. Th[illegible]er were neutralized with time fire. Tanks [illegible]anced into the fringes of their own artillery barrage and took over the neutralization. Then the artillery shifted its fires to the next ridge and close-support infantry took over.

This method repeatedly drove the Germans from their defenses, and many guns were captured because the crews were unable to remove them. Actions of this type required additional artillery. By using indirect fire, tanks in reserve can be used to augment the artillery.

Air Power

No discussion of present day warfare is complete without reference to the effects of air power. In the early part of the campaign, we received much attention from the German air force; but in the latter part, our own air force practically drove them from the sky.

The immediate effect of the German air attacks was to teach us to use dispersion, and we required not less than two hundred yards between vehicles, whether on the march or in bivouac. Since estimates of time and space are seriously affected by dispersion, it is essential that our troops train with the dispersion to be employed. It is too late to wait until in combat.

Other than attached antiaircraft, we depended on our .50 caliber machine guns to keep the "Jerries" up and found this very effective. Stukas will dive to within 50 to 100 feet of their targets and drop eggs in your hat, if you do not fight back. But a determined use of antiaircraft weapons will cause them to unload above 1,000 feet—and they proved very inaccurate under those circumstances. Our tanks were repeatedly the targets for Nazi bombers, but their attacks were mostly ineffective.

The airplane had a definite effect on our stowage problems too. After our first fight we removed everything from inside the tank except fuel, rations, water and ammunition. Since a deck load would be cut to ribbons and often set on fire by strafing and artillery, we left our musette bags and rolls in the assembly area to be brought along with the combat train.

The effect of air attack was principally psychological, and after the troops learned how to combat it, this effect was greatly reduced.

"The pattern for victory is clear. If we had set the stage we could not have provided a more shapely defined picture than that offered by the battle of Tunisia. There we had a perfect example of coördinated leadership for Allied action; an assemblage of overwhelming military power—air, land and sea; and the explosive effect of the skilful application of that power."—GENERAL GEORGE C. MARSHALL, Chief of Staff of the United States Army.

A Reconnaissance Squadron in Tunisia

*by Captain Jack H. Ficklen, Cavalry**

April 18:

"X" Squadron, now assigned to the 9th Infantry Division, performed combat missions east of Abiod. We relieved "A" Infantry Regiment occupying defensive positions and observation posts on Djebel Tabouna and low hills to the front thereof.

April 19:

The Squadron was disposed along a general NW-SE line in a zone 10 miles wide, with "A" Infantry Regiment on our left and "B" Infantry Regiment on our right. All these initial dispositions were a distance of approximately 29 miles west of Mateur, a strongly fortified German key point.

April 20-22 Inclusive:

(a) We established observation posts to the east in the vicinity of Melloul and Rhanem.

(b) Day and night mounted and dismounted patrols were made as far as 5 miles to the east of original N-S line as above.

(c) Road patrol from Amara to Aussif. Removed many teller mines thereon.

(d) A great number of mortar battery fire. Missions on north and south flank. Discovered German forward observation posts and artillery positions which were well camouflaged and thoroughly dug in.

During all of above operations, all elements of the Squadron were under frequent artillery fire. All forward elements were under frequent small arms and mortar fire from concealed German positions along a general N-S line in the mountains approximately 16 miles west of Mateur.

April 23-29 Inclusive:

A general attack by all units of the II Corps commenced at 05:30 hours on April 23. The Squadron was still covering a 10-mile wide zone between the 1st and 9th Infantry Divisions.

April 30-May 2 Inclusive:

During these four days the most stubborn enemy resistance was encountered by the Squadron from the same strongly dug-in and fortified German positions. All movements at this time were dismounted, and small arms contact was constant day and night. The Squadron suffered some casualties. We asked for and received our first artillery support during these four days of vigorous attack and resultant determined enemy resistance. It has since come to light that the Squadron was facing a reinforced strongly fortified battalion of the crack Barantrin Regiment.

May 3-May 4 Inclusive:

Patrols during the night discovered and reported that there were indications of a large-scale German withdrawal. Commencing at dawn on the 3rd, all elements started a vigorous mounted reconnaissance push in the direction of Mateur.

No enemy fire was drawn until daylight of the 4th as Squadron was in tactical bivouac outside the town. Squadron received 88mm shelling. Assigned to 1st Armored Division, this date, and the entire Squadron moved to the vicinity of Michaud. Having been ordered to clear Djebel Achkel of enemy troops, we established observation posts thereon. Reports from civilians placed 2 enemy infantry companies there.

May 4th mounted patrols from the Squadron made every effort but were unsuccessful in attempts actually to get on Djebel Achkel. However, much small arms fire was received on all sides of the mountain by these patrols; and from information gained thereby, the Squadron was able to formulate a well coördinated plan of attack.

The patrols also learned that this mountain afforded the enemy thereon a virtual fortress of tunnels previously operated as metal mines under the French. In addition, the entire 4½-mile long and 1½-mile wide fortress was completely surrounded by waist deep swamp, which prevented any known type vehicle from approaching closer than approximately 1 mile. This forced a great disadvantage upon us in that a great many of our vehicular weapons, so badly needed, were eliminated from desired use.

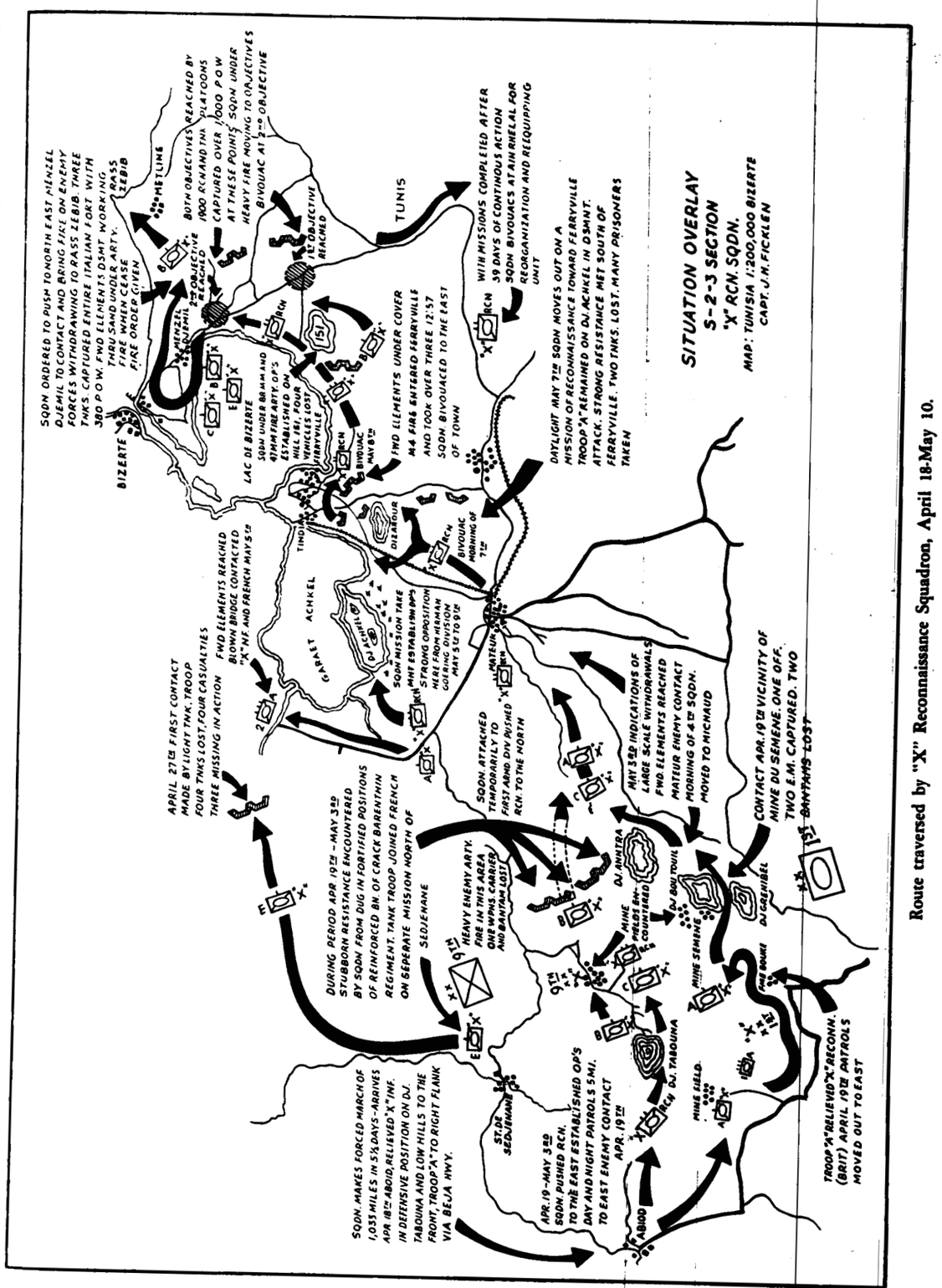
May 5-6 Inclusive:

The Squadron was still engaged in repeated attacks on a concealed, well covered and determined enemy force on Djebel Achkel. About 30 German prisoners were taken; the Squadron suffered 27 casualties. Prisoners confirmed that this well equipped force was of the Hermann Goering Division.

May 7:

At daylight on May 7th, in compliance with orders from the Commanding General, 1st Armored Division, the Squadron moved from Michaud to a mission of reconnaissance toward Ferryville on the general line of the Mateur-Ferryville road. One troop remained on the Djebel Achkel mission.

*S-2-3 of "X" Reconnaissance Squadron.



Route traversed by "X" Reconnaissance Squadron, April 18-May 10.

After encountering stiff artillery, antitank, and small arms resistance south of Ferryville on the road and from the hills to the immediate east of the road, forward elements of the Squadron under the cover of some M-4 fire, entered Ferryville and took over there at 12:57.

The 60,000 French refugees of the town overwhelmed our reconnaissance patrols with cheering and crowding the streets at the arrival of American troops.

The Squadron bivouacked tactically at approximately 2 miles east of Ferryville on the night of the 7th.

May 8:

The Squadron moved at daylight northeast toward the general direction of Munzel-Djemil and came under terrific enemy 88mm and 47mm fire from positions generally in front of Djebel Kechabta. An 88mm versus an M-4 and M-10 battle developed here about 10:30 hours, and the Squadron confirmed its activities and established O.P.'s for artillery fire control. At approximately 18:00 hours one of our tank platoons succeeded in reaching and securing an important RJ 11 miles east of Ferryville on the Bizerte-Tunis highway. Approximately 1,000 prisoners were sent to the rear by this platoon.

At approximately the same time another tank platoon with a reconnaissance platoon attacked, was successful in reaching an Italian held naval six-gun shore battery between Menzel-Djemil and Bizerte. The conclusion of this was the surrender of the battery and all personnel therein—approximately 500 men and officers. That same night the balance of the Squadron moved to a point 3 miles south of Menzel-Djemil on the main Tunis-Bizerte highway.

HEADQUARTERS 1st ARMORED DIVISION

17 May 1943

SUBJECT: Commendation.

TO: Commanding Officer "X" Reconnaissance Squadron.

1. I wish to commend you for the excellent manner in which your battalion performed their assigned duties while attached to this division.

2. I particularly wish to commend you and your organization for their operations during the period May 7 to May 9, the attack which resulted in the capture of Ferryville and subsequently engaged enemy positions to the east thereof. The whole-hearted coöperation of all ranks and the ready response to orders contributed, to a great extent, to the successful operation of this Division.

MAJOR GENERAL, U. S. Army,
Commanding.

May 9:

The Squadron was ordered to push reconnaissance to the northeast of Menzel-Djemil, toward the beaches, to contact and bring fire on enemy forces withdrawing toward Rass Zebib.

Forward elements were advancing dismounted through the sand under enemy artillery fire from the northeast when at 11:10 hours the following message was received from the Commanding General, 1st Armored Division: "Cease firing and hold present position until further orders. Germans have surrendered."

Thus ended 39 days of missions in which the Squadron was constantly active and during which time, it is believed, proved its ability to function efficiently as a reconnaissance team.

Conclusions

1. There must be continuous night dismounted patrolling by each reconnaissance platoon.

2. Safe and secure methods of visual signals must be developed among friendly patrols.

3. No high ground must ever be passed by without scouting the summit with a view to the establishment of an O.P. prior to arrival of platoon proper.

4. Reconnaissance platoon leaders must be afforded the means for requesting and directing immediate friendly artillery.

5. Reconnaissance radio reports must be quick, constant, by voice, and above all, accurate. Time does not permit CW and encoding.

6. As many individuals as possible within the platoon must be afforded a good night's rest. Future planned patrols should rest *before* going out.

7. All individuals of the platoon *must* know maps, sketches and rapid use of the compass—when casualties occur, someone *must* get the information back.

8. In past operations, reconnaissance platoons in general have made far too little use of their 37mm guns and 81mm mortars.

9. Too little planning is done regarding the use of *covered* (not concealed), approaches toward enemy installations.

10. Rapid movement during shelling is essential.

11. The best riflemen within the platoon should be equipped with telescopic sights.

12. When exposed vehicular movement is necessary while under fire, supporting weapons *must* cover this movement with stationary fire.

13. Officers must realize the extreme importance of maps covering the territory in which they are to operate. They should thoroughly familiarize themselves with the area in such a manner that they can throw the map away and still know the country. It is absolutely criminal for any officers to go on a mission without the proper knowledge of the maps and the terrain he is to cover. Noncommissioned officers as well as officers must know how to read maps and report positions by coördinates.

Acme.

Men and armored vehicles of the British First Army move to attack a nest of Axis troops. The above picture shows a Crusader cruiser tank and Bren gun carrier, armed with U. S. Browning M2.

British Tank Attack at Fondouk Pass

by Major C. B. Ormerod, Royal British Artillery

On April 9, 1943, an armored unit of the British First Army was ordered to force its way, at all costs, through a large minefield defending Fondouk, a mountain pass in central Tunisia. The minefield was shaped irregularly, but by chance one troop hit on a lane and got through. That troop was never seen again. Three squadrons then spent the afternoon trying to force their way through, regardless of damage to tanks, or of fire from machine guns or mortars.

Nearly every tank in the leading squadron was disabled, and the squadron leader was shot in the head by a sniper as he left his crippled tank. Three or four tanks struggled through and knocked out several enemy antitank guns that might have seriously held up the advance. The remainder persisted until blown up by mines. Each successive troop extended, at the cost of its own tanks and lives, the lane opened up by its predecessors. Thirty tanks were disabled, though many of these were later recovered and repaired.

When it was clear that the attempt could not succeed, another armored force was ordered to try to find a way around the minefield via a wadi on the left, which was also mined. Eventually, a squadron did this, and got around to the rear of the town. The remainder followed, and the infantry secured the heights to the north. The enemy then evacuated Fondouk.

This action illustrates very well both the limitations and the advantages of modern armor.

We are not told the circumstances under which it became imperative for the British armor to attempt the passage of the Nazi minefield before a way had been cleared for it, but it may be assumed that the matter was urgent, and that delay might have seriously interfered with the development of the Allied commander's plans. At any rate, in spite of what appears to have been a very determined attempt, this direct assault by tanks on the strongly prepared position failed.

Once a way had been found around the minefield, and the pass was forced, the tanks were out in the open and were able to demonstrate their particular functions—outflanking enemy rearguards, meeting and driving off counterattacks by enemy armor, and breaking in upon the retreating transport vehicles.

After the capture of Fondouk a start was made for Kairouan on the morning of April 10th, and for the next two days the armored cars showed how such a unit should operate. They reconnoitered far and wide and took at least 700 of the 1,500 prisoners captured in the operation.

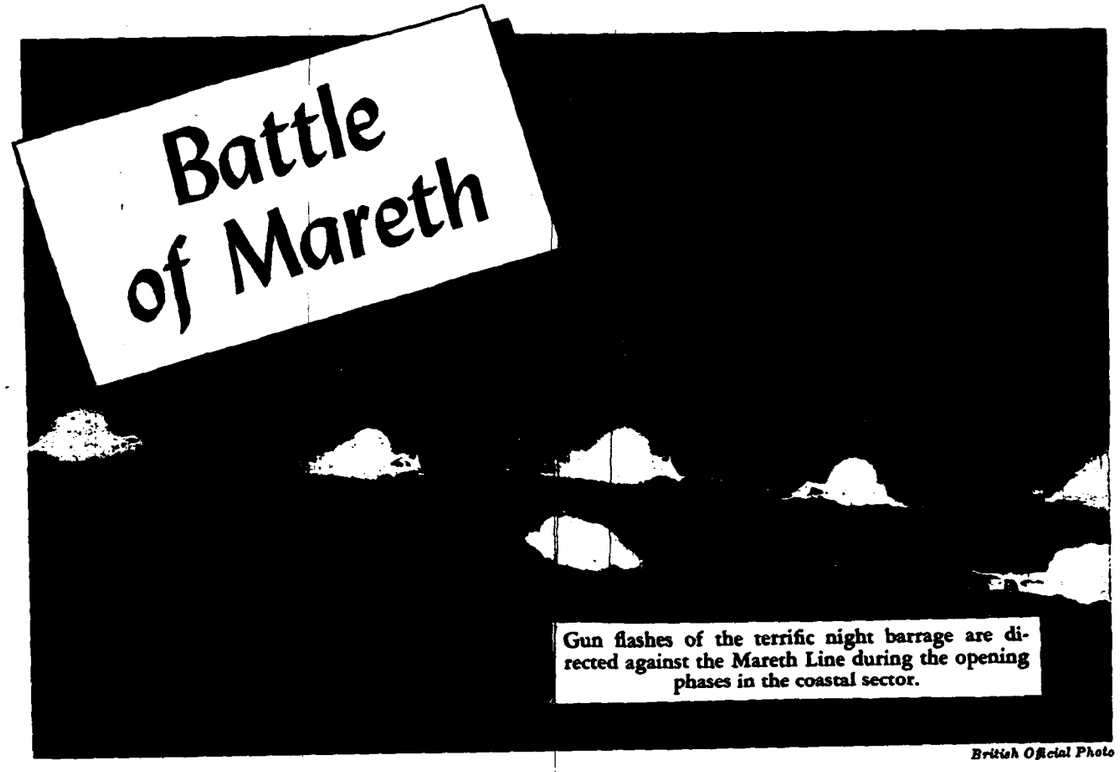
About midday, on April 10th, the armored units of the First Army repelled, in two hours of battle, the 50 tanks remaining to the 10th and 21st Panzer Divisions (a part of the original *Afrika Korps*), that had been sent up hurriedly from the south to cope with this flank attack. By drawing off this armor, the First Army materially helped the Eighth Army's advance. Having drawn them off, they destroyed 13 of the tanks, 15 self-propelled guns, 20 antitank guns, and forced the remainder to withdraw.

The next morning, British armored cars from the First Army entered Kairouan and contacted the Eighth Army. Even before that, however, the armor had swung northward and was driving the enemy before it. At 1 P.M., about 12 miles north of Kairouan, it met an enemy rearguard of a weak infantry battalion with field guns, self-propelled guns, and 25 tanks well posted on high ground with their flanks protected. The British attacked, and after four hours of fighting, the enemy tanks began to withdraw.

Meanwhile, some of the British tanks got around the left flank under cover of the enemy's smoke barrage and did great damage among his transport, destroyed 40 vehicles, 12 tanks and decisively broke the rearguard.

This account omits all reference to the activities of the Allied, or Axis air forces, but from contemporary newspaper reports it is believed that, during the period in question, the Allies had effective air control over the area in which the fighting was taking place.

Battle of Mareth



Gun flashes of the terrific night barrage are directed against the Mareth Line during the opening phases in the coastal sector.

British Official Photo

THE British Eighth Army, under the leadership of General Montgomery, can now add the word "Mareth" to its list of battle honors. This engagement will undoubtedly rank close behind that of El Alamein in strategic importance and tactical brilliance.

In brief, the Battle of Mareth was a brilliant example of a successful turning movement following on a temporary frontal attack.

The initial attack began on March 20th with the establishment of a bridgehead over the Wadi Zigzau. After the infantry had fought its way across the Wadi Zigzau to the ridge beyond and bridged the Wadi with brushwood to enable vehicles to cross under the most appalling fire, they met a series of heavy counterattacks. At first they held their ground under the most difficult conditions, and a break-through appeared imminent; but after some 36 hours the enemy brought such pressure to bear that they were forced back, with very heavy casualties. By Tuesday, March 23rd, the enemy had regained most of the ground that he had lost at the coastal end of the Mareth Line. When this news was first announced, it looked like a very serious reverse. Now that it can be fitted into the picture as a whole, this frontal attack on the eastern wing has all of the appearance of an experimental probe.

On March 22nd the British attack was switched further inland, and the infantry occupied some ground south of Wadi Zigzau about three miles north of the Mareth-Medenine road. Meanwhile, continued intense air and artillery pressure began to tell on the enemy. At the same time an exploratory column, consisting of tanks, motorized infantry and guns, was sent on its daring trek around the enemy's western flank.

Various pieces in Montgomery's tactics now begin to come together in closely-knit unity. Two probes were driven into Rommel's heavily fortified quadrilateral—one frontal, and the other enfilading. The frontal assault tested the possibility of a direct break-through along the coast and also compelled Rommel to bring a large concentration of his troops and armor to the southeast corner of his position. Similarly, the enfilading probe toward El Hamma tested the feasibility of throwing a proportion of the Eighth Army against the enemy's rear, and obliged Rommel to face west as well as south and so to dissipate his strength.

While the frontal drive was pushed back, the enfilading probe made good by fixing itself deep in the enemy's flank. Under the cover of darkness a force, consisting of New Zealanders and one armored division under General Freyburg, moved rapidly around the western slopes of the Matmata hills. Then, striking north along the jolting track, they made for El Hamma, which they reached on March 24th.

An attempt to outflank the Mareth Line had been fully expected by Rommel. Even before the Allied command had announced that the Eighth Army had begun its resumed offensive, the German communiqué had stated that a British column had moved around the Mareth Line positions and was advancing "to the northeast." This column was confronted by a strong force, in-

cluding German armor; and it was only after stiff fighting that it was able to establish itself in the area between Djebel Tebaga and Djebel Melab, and along the foothills on both flanks.

Rommel then switched everything he could afford, including armor, against this daring and dangerous thrust against his rear. But there was no letup in the relentless pressure along the front of the Mareth Line positions. Rommel, with this threat to his flank, had no alternative but to withdraw to the previously prepared Akarit position. The action at El Hamma lasted from March 24th to 29th, when British troops entered Gabes.

The operation which finally broke the crust was launched on March 26th. Three regiments of British tanks attacked the enemy on a front of 600 yards beyond the Roman wall.

The enemy had batteries of antitank guns arranged in depth, supported by German tanks—some dug-in, some mobile. Field and medium guns were also directed with great accuracy from wonderful observation posts in the hills.

British tanks advanced in extended line, like a cavalry charge of old. In front of them rolled a creeping barrage.

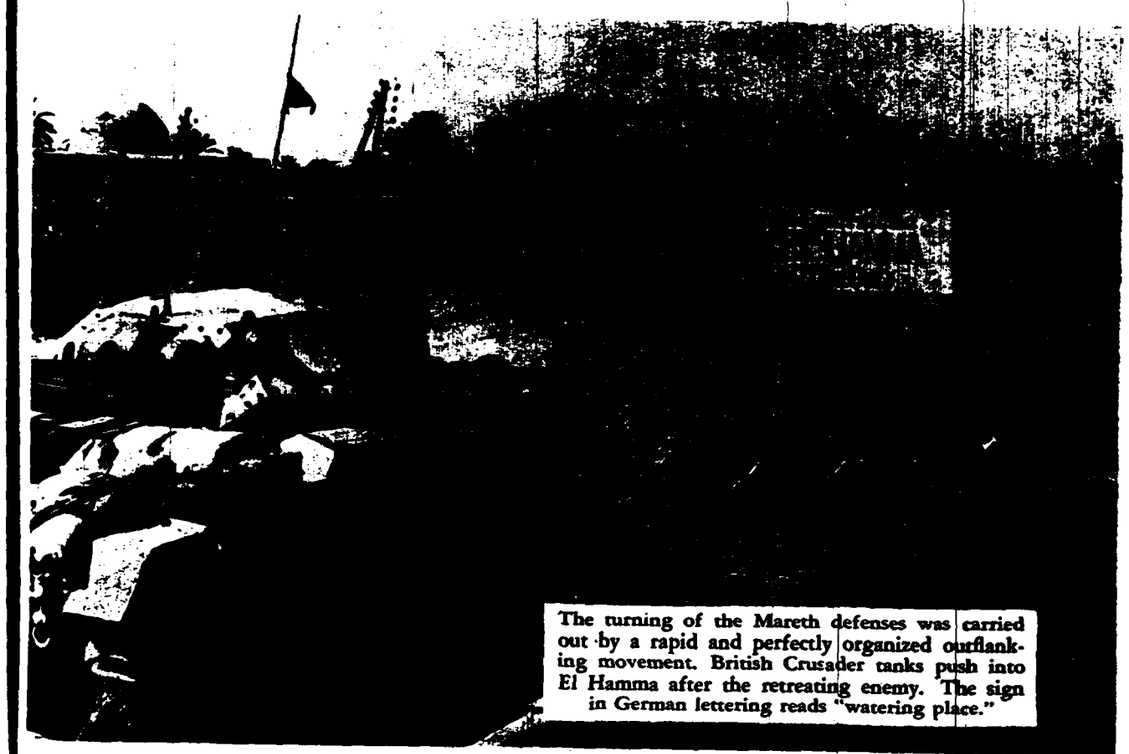
The tanks charged the antitank guns, which opened up from the front and from either flank. Many fired at point blank range. Some of the tanks were hit; others came on. As they passed the antitank gun positions, the men leaned out of their tanks and annihilated the gun crews with hand grenades. Machine guns on tanks were busy too.

By dusk the tanks as well as the infantry, were established beyond their objective. The force for El Hamma was already well on its way.

The blow to the enemy, so far as their part of the front was concerned, was mortal; and history will probably decide that it was the "beginning of the end" of the African Campaign. Though our losses were severe, the enemy's were heavier. Eight thousand prisoners were taken, and one panzer division almost entirely destroyed.

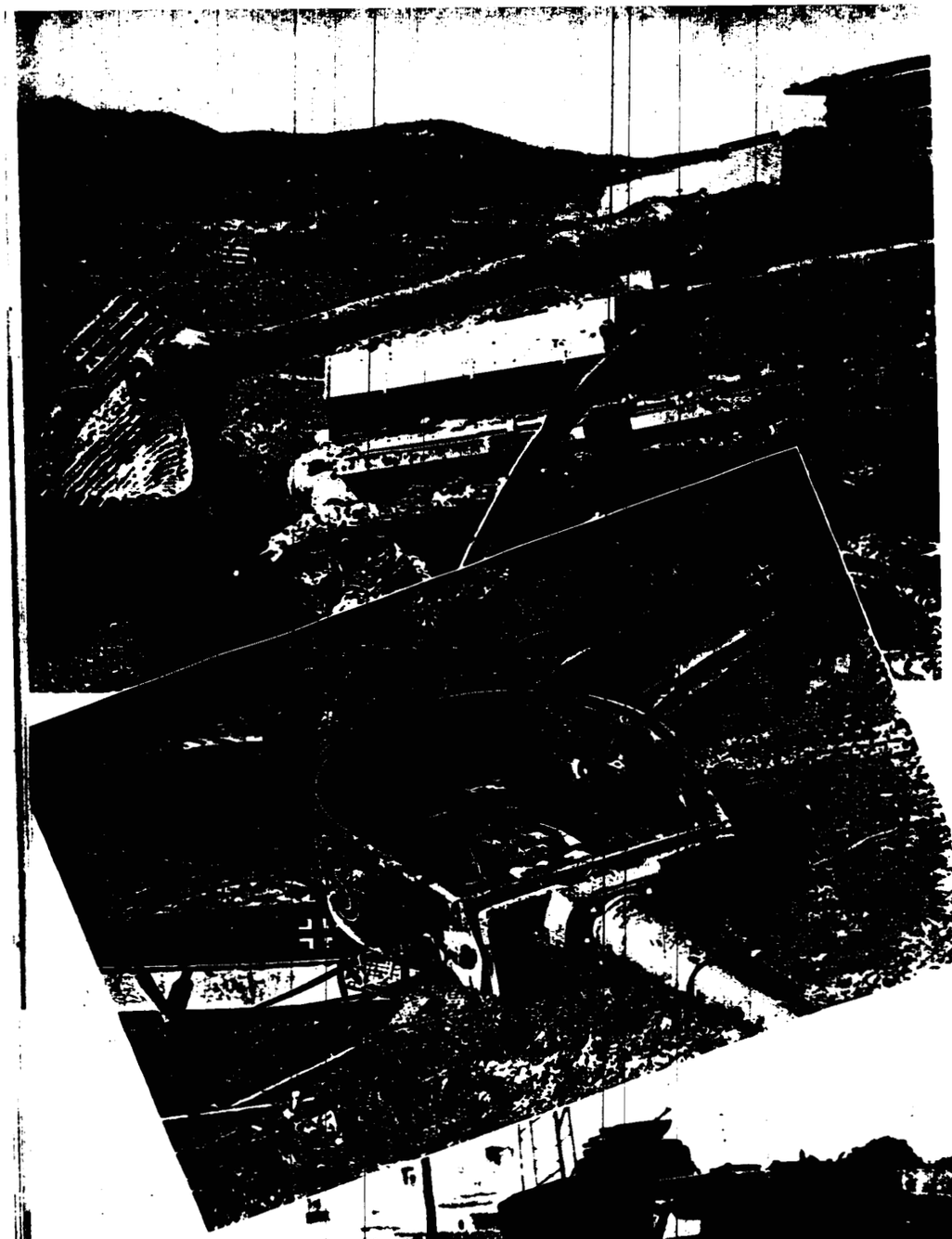
The retreating Rommel was forced to make a stand. He was out-maneuvered, out-gunned and out-fought. With the ever present threat of the Americans on his flank, he retreated to the hills and abandoned, as usual, his Italian allies.

The rest of the story is well known. The last battle of this war on African soil has been fought. Americans, British, and French all had their share in the final victory, but the Battle of Mareth will well deserve its place in history. Perhaps because subsequent events moved so rapidly, this first of the series of Tunisian victories has received too little mention.



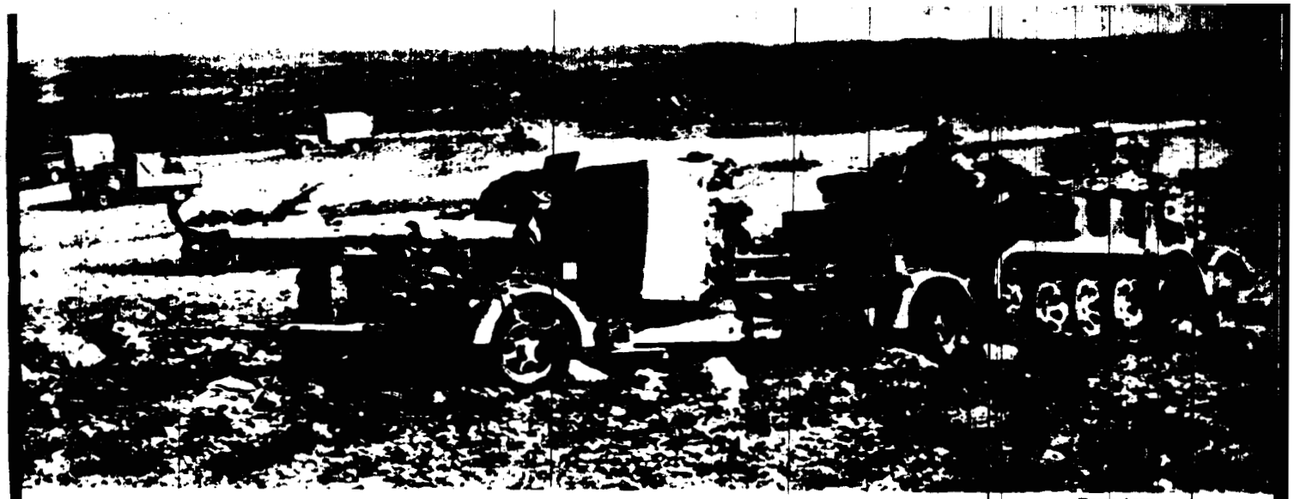
The turning of the Mareth defenses was carried out by a rapid and perfectly organized outflanking movement. British Crusader tanks push into El Hamma after the retreating enemy. The sign in German lettering reads "watering place."

British Official Photo



These two shattered tanks resemble the Mark VI "Tigers" but are really the newest Mark IVs. Parts of a Mark VI lie between them.

British Official Photo.



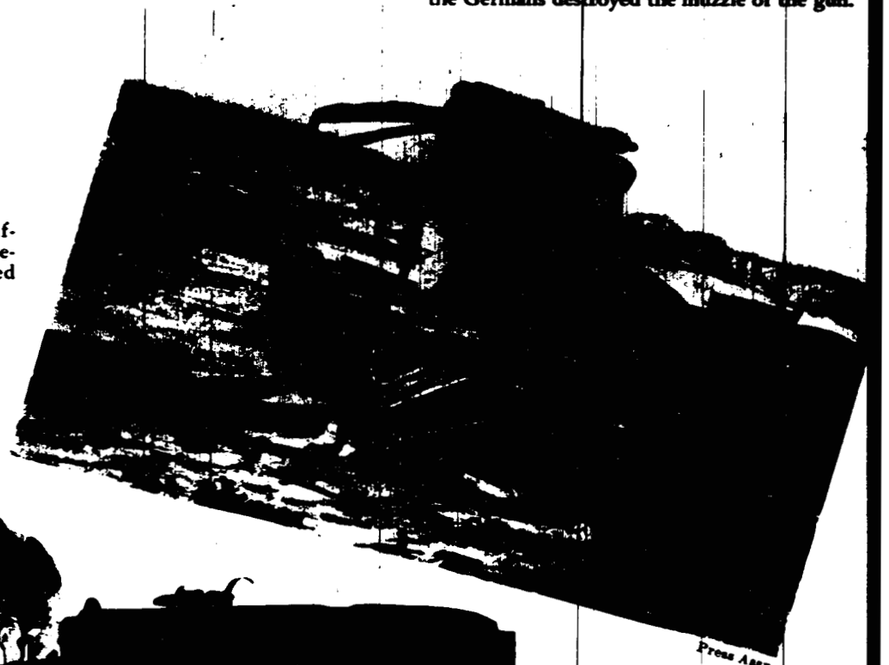
Press Assn.

This Flak 41, new super high velocity 88mm dual purpose gun and its tractor was captured near the Mareth Line. Unable to get it away, the Germans destroyed the muzzle of the gun.

Axis Matériel

This gun turret from a 60-ton Mark VI "Tiger" tank has been torn completely away from the tank.

British Official Photo.



The wreckage of this Italian self-propelled antiaircraft gun left behind in Central Tunisia, is inspected by American soldiers.

Press Assn.

At right is a Mark III tank, which now mounts a long 50mm gun as standard equipment. Note the "spaced armor" layer held well in front of turret face and of face in front of driver.

British Official Photo.

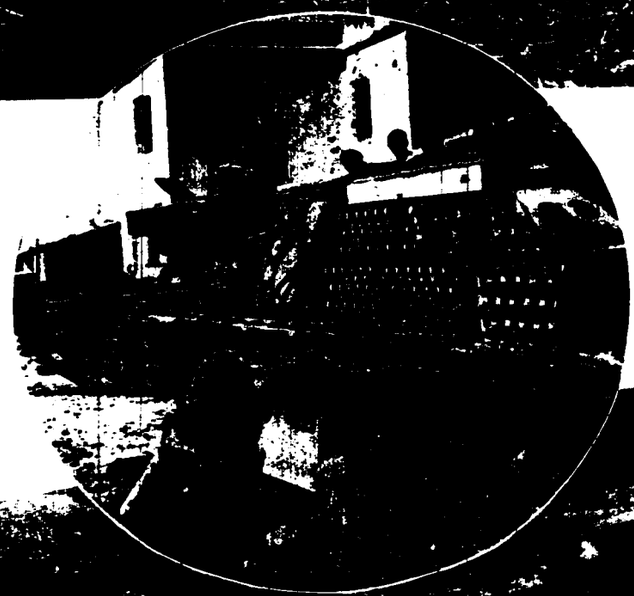
Closeup of the 60-ton Mark VI "Tiger" tank.

European

Captured Tunisia

Acme.

This German antitank gun captured near Medjez-El-Bab has high explosive bomb projector.



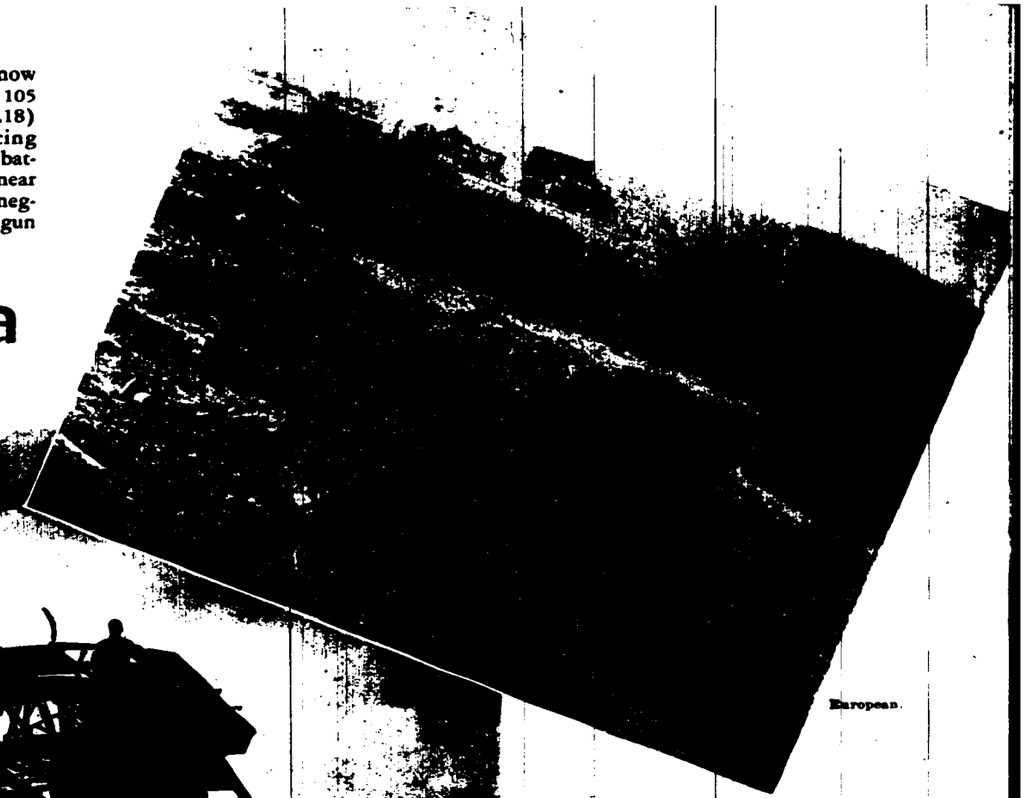
European.

This British tank and ex-French munitions carrier were re-captured at Porto Farina, where the German 10th and 15th Panzer Divisions were trapped.

This Mark II tank rests by the roadside near Mateur.

Acme.

The Germans have now fitted their standard 105 mm howitzer (z.f.h.18) with a recoil-reducing muzzle brake. This battery was abandoned near Tunis. The Germans neglected to blow up the gun tubes.



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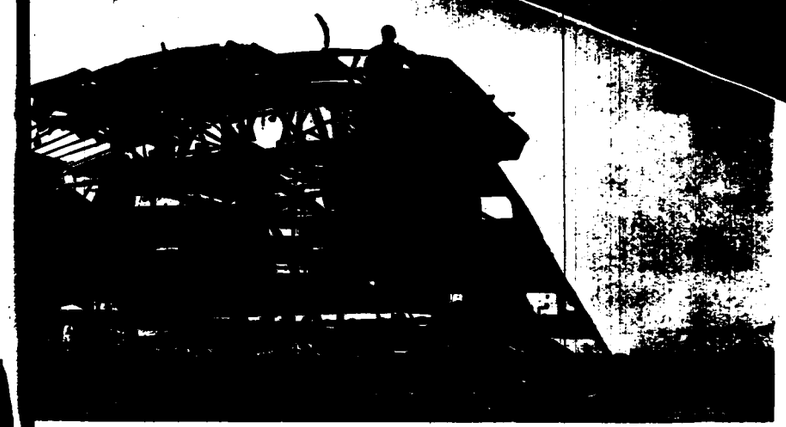
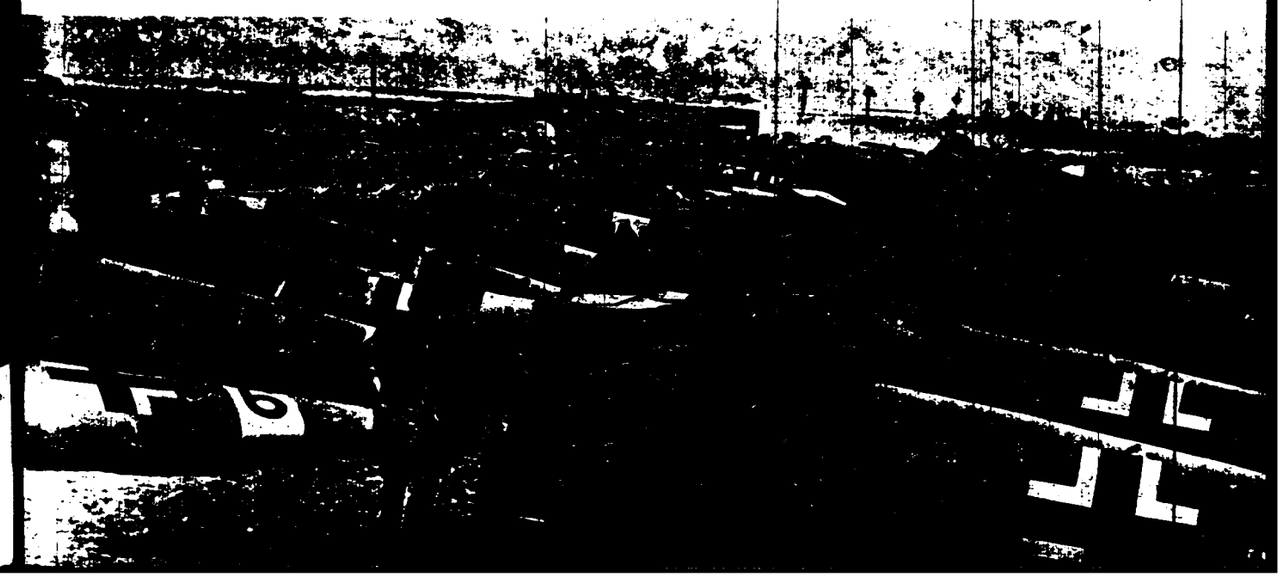
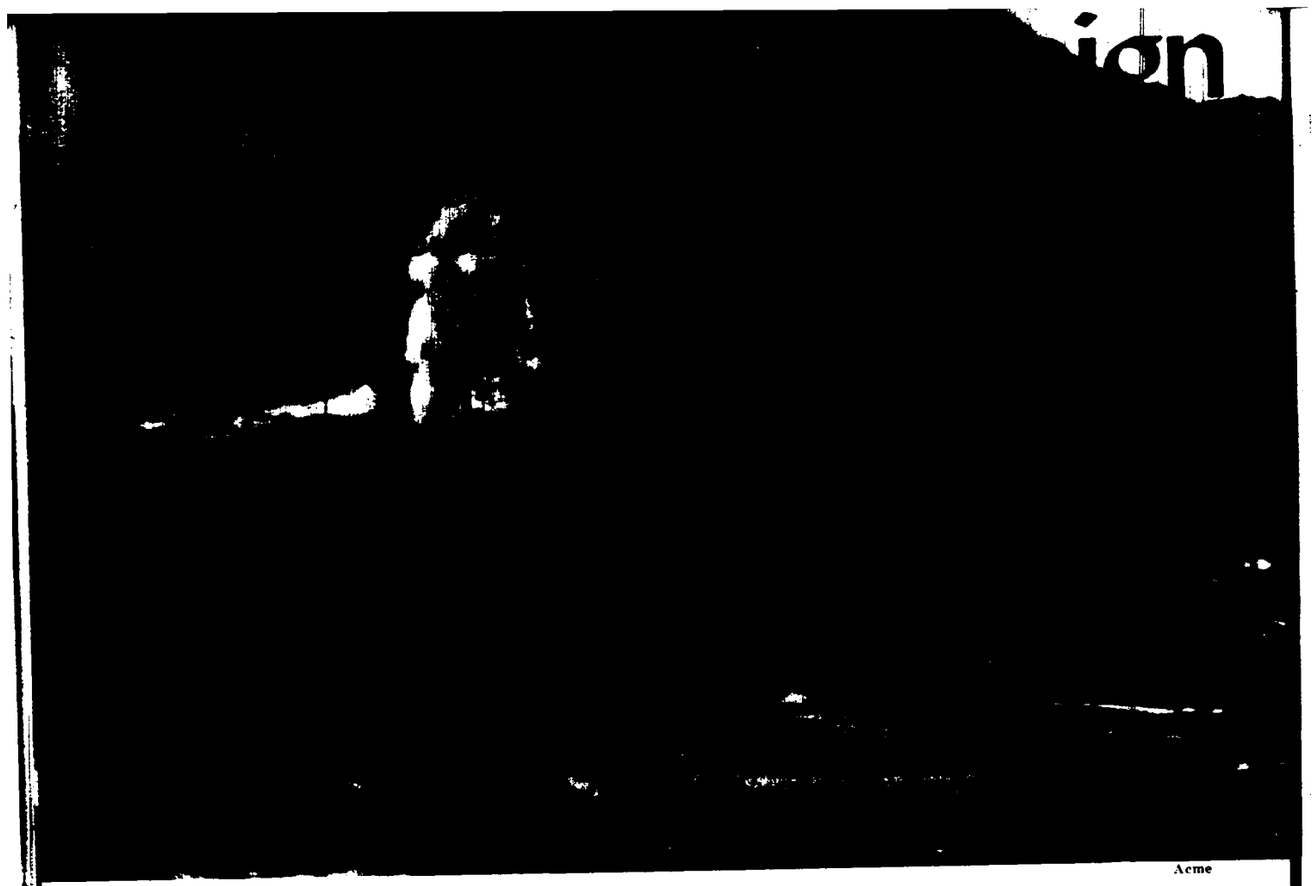


U. S. Air Corps Photo.

This wrecked hull found at the Tunis Airport is believed to be the remains of an Me-323, 6-motored transport plane converted from a glider.

More than 100 enemy aircraft which had been put out of action by our bombers were found on an airfield in the Daba area. Here are scores of Messerschmitt Me109 fuselages collected by the units as soon as they occupied the airfield. Many more remained to be collected.





Acme

Hong Kong under Japanese attack.

The First Day of Attack

At dawn on December 8,[1] 1941, a squadron of Japanese light reconnaissance bombers took off from an airdrome on the outskirts of Canton. Ten minutes later when they appeared over the Kowloon airfield, they found the RAF Hong Kong detachment (some four or five old training planes) and the entire commercial fleet of the China National Aviation Corporation drawn up for inspection in front of the hangars.

Cruising leisurely about over the field, the Japanese airmen bombed these targets with no more difficulty than if they had been at bombing practice on a range in peacetime. When they left, half an hour later, the hangars were on fire, most of the planes on the ground had been damaged or destroyed, the China Clipper had been sunk, and one of the huge oil tanks of the Standard Oil Company was blazing furiously. There had been no serious antiaircraft fire, and the dive bombers returned to their base without the loss of a single plane.

As the first bombs were dropping on Kowloon, the leading units of the Japanese ground force crossed the border of the Leased Territory. These were the advance guards of the 9th Division, attacking from the north, and the 103d Division, pushing southeast from Canton. Resistance at first was negligible; in fact, except for a few patrols acting as frontier guards, no contact was made with the British until late in the morning. The Japanese gave as the reason for their slow and cautious advance their expectation of stiffer opposition and their suspicion that the enemy was trying to lead them into a trap.

As the advance guards of the two columns neared the "Outer Line" (the first defensive position stretching from sea to sea about a mile inside the border), they took up an approach march formation and moved forward as though expecting to be fired on at any minute. A mile or so in rear, with the heads of the columns just about at the border, the two main bodies rested quietly along the road until their advance detachments developed the situation sufficiently for them to move out once more. With no enemy air force to fear, the troops were allowed to relax almost as if they had been on a peacetime practice march.

It soon developed that the "Outer Line" was undefended and contained only a few observer groups which withdrew well in advance of the Japanese columns, and the march was resumed. Messages dropped on the columns by reconnaissance planes informed the commanders that there was great confusion on the roads

[1]Dates in this area, west of the International Date Line, are 1 day advanced over those used in the United States

leading north from Kowloon; that British troops were moving into the "Inner Line" (about two miles from Kowloon); but that there was no evidence of any real activity in the neighborhood of the "Intermediate Line," a previously prepared defensive position lying half-way between the "Outer" and "Inner" lines. The Japanese, however, refused to believe that some sort of resistance would not be offered along this second position. Once more they halted their columns, deployed the advance guards, and cautiously felt out the line; their advance guard artillery even threw a few shells into the position in an effort to stir up some activity among whatever forces were in their front.

By the time that the Japanese had satisfied themselves that there was in fact nothing opposing them, it was late in the afternoon. Word came down from Force Headquarters to halt along the line generally occupied by the troops at the time, and to establish a strong outpost line about one mile south of the former British "Intermediate Line." This extraordinarily cautious attitude was strangely out of keeping with the dash and *élan* shown by Japanese troops in other sectors, and it is possible that in this campaign they had been somewhat misinformed by their Intelligence agencies as to British intentions.

These troops, too, had been engaged for the last two years in operations against the Communist Fourth Route Army in China, and there they had learned that too hasty an advance frequently led to disaster. Several references in personal experience articles written by officers of this unit to the effect that "the situation greatly resembled a Communist guerrilla trap" would indicate that this consideration was at least in the minds of many of the officers, and may have carried some weight in influencing the attitude of the expedition commander.

Attack on Mainland Positions (Dec. 9th to 13th)

Still concerned about the British, with whom as yet they had not even made contact, the Japanese established two very strong outposts. They reinforced the advance guards and sent out a number of strong patrols. Each consisted of one or two platoons, which operated in the flat country stretching between their outposts and the line of hills where the British "Inner Line" was located. Fully expecting to contact British patrols the Japanese combed the area all night, but without result. Not even a flare went up from the heights which the British had occupied, and, as one young officer put it, "The continuing quiet created a strange feeling of apprehension. It was impossible that the enemy would let us come so far without a fight. Something was sure to happen." But nothing did. When at dawn the planes went out to reconnoiter, it became evident that the British were planning a purely passive defense, and that the Japanese would not meet interference until they actually attacked the British line.

Even so, the Japanese had a formidable task ahead of them. The line, which was about three miles long, consisted of a number of strong points made up of concrete pill boxes located just below the crest on the forward slope of a range of hills that stretched from sea to sea. Because the hills rise steeply out of the flat plain, the troops could avail themselves of virtually no cover as they advanced toward the British lines. The two roads along which the Japanese were advancing climb steeply over this range through narrow passes, one near each end of the line.

The Japanese spent the next two days in reconnoitering and developing the defensive position. They kept their main forces well back out of artillery range and shelled the British forward positions at extreme range, so that their own artillery was not greatly interfered with by the guns on Hong Kong island. Small patrols carefully reconnoitered the country over which the troops would have to attack in their final assault.

The Conquest of Hong Kong from the Japanese point of view.

Like the two installments of "Philippine Campaign," written by Colonel Babcock, this account of operations in the Hong Kong Campaign is based on information drawn entirely from Japanese sources: official bulletins, news reports, speeches, radio commentaries, magazine articles, and personal experience accounts written by officers and men at the front. The only Allied bulletins used were those quoted in the Japanese press.

Colonel Babcock says: "While confined to the compound of the American Embassy in Tokyo from the outbreak of war until June 17, 1942, I was cut off from any outside news. Consequently, the preparation of this paper has not been influenced by information received through any but Japanese sources. It should also be remembered that all dates are one day advanced over those used in the United States."

On the afternoon of the 10th, three offensive patrols the size of a company were sent out to gain contact with British advance posts and to capture some prisoners. They encountered little resistance, for the outposts fell back promptly under cover of a machine gun barrage from the main position. A few Indians, influenced by handbills scattered over their lines by Japanese planes, stayed behind and surrendered when their detachments withdrew. These furnished the Japanese with the first prisoners of the campaign.

From these prisoners and from reconnaissance patrols, the Japanese learned that the position in their front consisted of a single line of concrete pill boxes manned by one British battalion (the Royal Scots) and two Indian battalions, and that close-up artillery support was furnished by one six-gun battery of 25-pounders. Plenty of wire had been laid on the slopes in

front of the pill boxes, but, according to Japanese accounts, the organization of defensive fires was very weak; there were far too few machine guns for the size of the sector, and only two places where interlocking bands of fire were used.

On the next day (December 11th) the Japanese carried out what they refer to as a "reconnaissance in force," but just what it was intended to accomplish is not clear. They used three battalions in this operation and preceded the advance with a thirty-minute artillery preparation which seems to have pretty thoroughly broken up the British wire. The force used was not strong enough to do much more than again drive in the outposts, and the Japanese appear to have withdrawn without gaining any important results. They admit that on the morning of the 12th all of their troops were back in their original positions.

By this time the Japanese seem to have come to the conclusion that the key to the enemy position was Shin Mun, the strong point on the right of the sector occupied by the Royal Scots. This battalion was on the left of the line, so that the pill box was about one mile in from the western shore of the peninsula. On the reverse (British) side of the hills, a long ravine running down from Kinchan to the southwest, opened out into the plain close to the shore and about a kilometer behind the lines. Once in possession of this strong point, the attackers would have a covered route leading well into the British area and would be in a position to assist the general frontal attack by pressure from the flank and rear. Aerial reconnaissance had shown that this ravine was the chief British axis of communication.

British antiaircraft guns in Hong Kong. This picture was made when Hong Kong seemed an impregnable fortress.

European

Cutting it would add greatly to the confusion still evident behind the enemy lines.

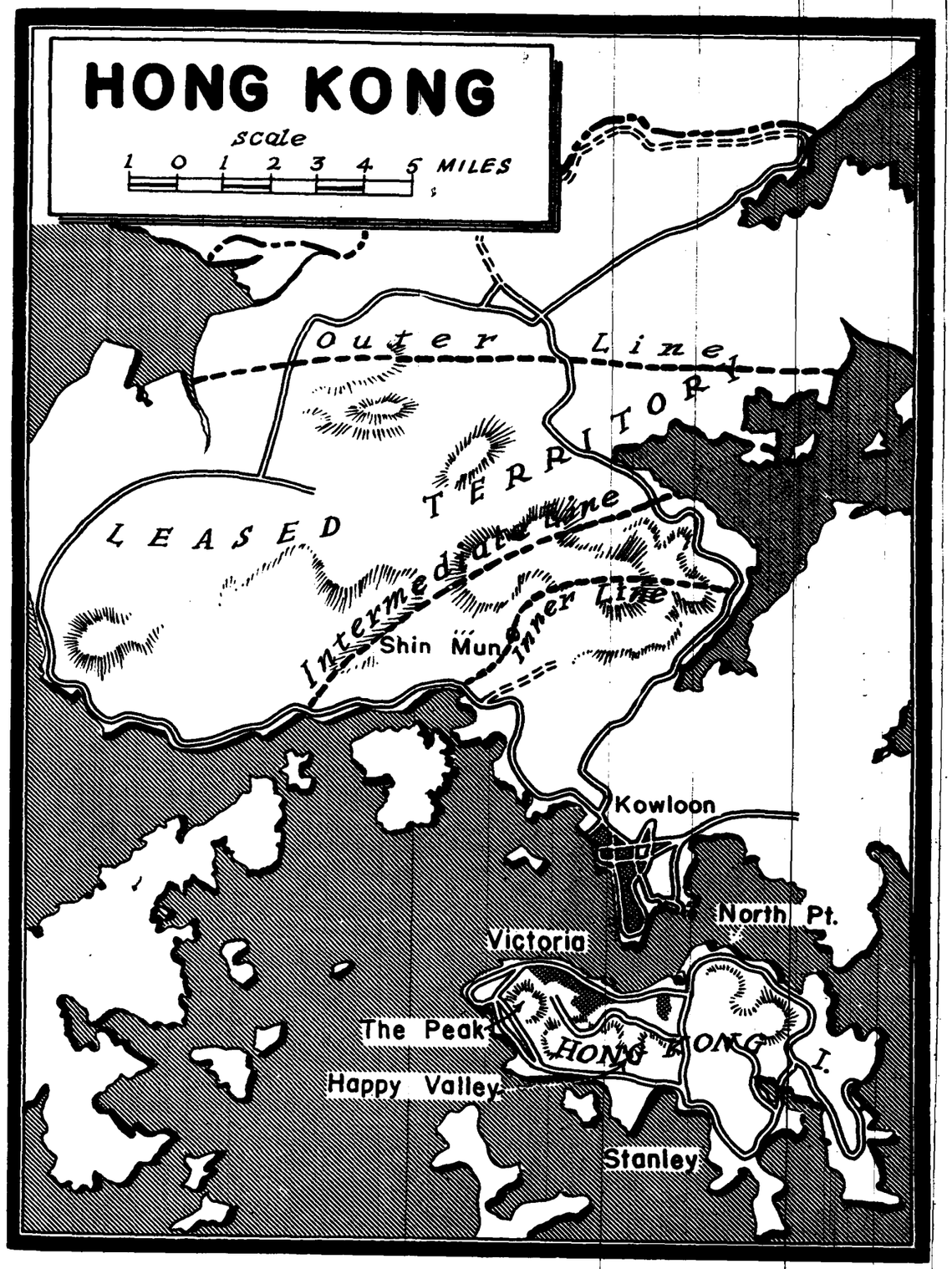
On the 12th, the Japanese staged a night attack with a battalion of infantry reinforced by a company of engineers. There was no artillery preparation, for this was intended as a surprise attack, but the batteries had all ranged in on their targets during the afternoon and were ready to put down their barrages whenever called for. With the engineers out in front clearing the way through the wire, the troops worked their way through the darkness toward the crest of the hill. Not until the Japanese had advanced to within less than a hundred yards of the pill box did the British send up their first flare. Once they were discovered, the Japanese abandoned all caution, called for artillery support (which came down as a box barrage at the head of the ravine), ripped a way through the remaining wire with grenades, and attempted to storm the position in one wild rush.

The British fire was too heavy, and after nearly half the engineers had been wiped out, all the machine guns, light and heavy, of the battalion were brought up and their fire concentrated on the gun ports of the pill box. Under cover of this fire, small groups of Japanese worked up close enough to use flame throwers and grenades on the ports, while other units cleaned up the supporting machine gun nests and rifle groups in the vicinity. A very few minutes with the flame throwers sufficed to make the garrison surrender. The Japanese then worked feverishly to reorganize the captured position in preparation for the counterattack which they momentarily expected.

But no attack came. During the night a few shells from one of the forts at Hong Kong fell in the area, but otherwise all was quiet. By daylight the Japanese not only had organized the area for defense, but had brought up two fresh battalions and were ready from this position to attack the flanks and rear of the British forces on their right and left, in coördination with a general attack all along the line which had been planned for eleven o'clock that morning.

Although the Japanese were in a strong position and were sure that they eventually would drive the enemy out, they were planning on a three- or four-day fight, and expected a lot of opposition before they accomplished this result. The artillery preparation started at dawn. Shortly afterwards a number of light bombers flew out to add their loads to the bombardment. A few minutes later, Headquarters was astounded to receive a message from the planes that the British had abandoned the entire position and that their columns were in full retreat. One British battalion was deployed as a covering detachment on the outskirts of Kowloon, and the rest of the force had practically completed the move across the narrow strip of water to the island.

Orders went out at once for the troops to advance, and the Japanese infantry pushed forward and up the heights as rapidly as possible, but for some reason no effort was made to cut off the British or to pursue them



into Kowloon. From their observation points on the crest of the captured hills, the Japanese could clearly see the British rear guard withdrawing towards the ferry, but they made no attempt to interfere with it and contented themselves with throwing a few shells into the outskirts of the city. They finally entered Kowloon about four o'clock in the afternoon and took over the job of policing the city, which they say had been in a state of wild disorder ever since the withdrawal of the British troops that morning.

The Attack on Hong Kong Island

During the next few days, the Japanese were occupied in "restoring peace and order in the Kowloon peninsula"; collecting all the small boats they could find between Canton and Kowloon; "securing and protecting the oil farms" on the peninsula, none of which had been destroyed by the British; and establishing gun positions on the captured heights from which they could shell the fortress of Hong Kong. They bombed gun positions and other military objectives on the island once or twice each day, but they used only a few light reconnaissance bombers at a time. Apparently no attempt was made to lay down any heavy concentrations during this period.

According to Japanese accounts, the British were even more inactive. Little if any attempt was made to interdict the passes over the hills north of Kowloon, and the invaders poured troops down into the plain, in full view of the observation posts on Victoria Peak, with very little interference and with a minimum of casualties. Not a single round was fired at the oil farms in Kowloon, although a battery could have set the entire place ablaze in fifteen minutes of good shooting. On the day before they crossed to the island, the Japanese shelled the Victoria waterfront all afternoon with trench mortars set up on the Kowloon docks, without eliciting any answering fire from the British positions.

On the night of the 18th, the Japanese crossed the straits and landed on Hong Kong at North Point. Artillery fire during the afternoon and evening had put the British pill boxes in that area out of action and set fire to a number of oil tanks located there. There was very little fighting.

The confusion caused by the smoke from the burning tanks seems to have prevented the British from realizing what was happening, and two companies of the leading Japanese battalion were already ashore before they came under fire. There was a short fire fight but no counterattack by the defenders, and when the other two companies landed, the British withdrew about a kilometer to some high ground at the base of the little peninsula. From some prisoners captured in this engagement, the Japanese learned that the troops opposing them were a battalion of the Middlesex Regiment.

All day long in full view of the British observation posts, the Japanese ferried men and matériel across to North Point. As the successive increments of reinforcements arrived, they enlarged the beachhead, and gradually forced the British back towards the hills in the center of the island. Until late in the afternoon, when the beachhead had been enlarged sufficiently to provide plenty of maneuver space, the peninsula of North Point was, by the Japanese' own admission, a scene of terrible crowding and confusion. The area was well within the range and field of fire of at least three batteries of fortress guns, and the Japanese frankly admit that they accomplished their mission with so few casualties only because the British failed to bring a sufficient concentration on this sector during the first and second days after the landing.

From this time on until the surrender, the battle consisted, for the Japanese, of a slow but steady enlargement of their beachhead. They concentrated their main strength in such a way as to drive south towards the center of the island in an atempt to isolate the defending troops stationed in the eastern part. The advance was slow, for the terrain was difficult and the British defense stubborn; but progress was steady, and was rarely hampered by counterattacks.

The British failure to counterattack puzzled the Japanese throughout the campaign. It was not until after the surrender that they found out that defense plans provided for only a limited number of reserves, so that when the line was once broken sufficient troops to retake the lost ground simply were not available. The absence of reserves, and the lack of depth in all their defensive positions, indicate that the British placed excessive reliance on the ability of their line of pill boxes to repulse any attempted landing. Japanese criticism of the British defense was that it lacked flexibility, and, once pierced, was difficult to reorganize.

By the 21st the British, realizing that their garrisons at Stanley and other parts of the eastern and southeastern shore were seriously threatened by the Japanese push southward from North Point, withdrew all troops from those areas and established a new line which swept in a large semicircle around the skirts of the Peak. Here they dug in for their final defense, and the Japanese say that the severest fighting of this little campaign took place during those last three or four days.

It was, however, only a matter of time. Powerless to stop the constant stream of troops which poured in to reinforce the attackers, the British were pushed farther and farther up the slopes of the Peak. On the 23rd an unopposed landing was made at Stanley (abandoned by the British two days previously), and additional pressure was brought against the defensive ring from the south. The General Officer in Command was in favor of surrendering at this time, but the Japanese demand was refused by the Governor. The next morning the Japanese put down a heavy concentration on the sector manned by one of the Canadian battalions at the head of Happy Valley, and later in the day followed it up with an infantry assault. As the leading Japanese battalion jumped off, a squadron of light

bombers came in low over the Canadians, strafed them with light fragmentation bombs and machine gunned them. The troops stood their ground well and evidently brought down one of the machines, for the Japanese account refers to "an intrepid Wild Eagle who, deliberately dashing his plane onto the ground, caused it to explode within the enemy ranks and threw them into utter confusion."

The Canadians had been pretty badly mauled, for they were not dug in sufficiently to withstand such prolonged artillery bombardment nor an attack from the air. When the Japanese infantry moved into the position early in the afternoon, they found many casualties lying in the shallow individual "fox holes," which were the only protection the troops had made for themselves. The lack of even the simplest kind of shelter trench shows the disorganization of the defending troops in this final stage of the battle.

The surrender came the next morning, on Christmas Day. The persistent, uninterrupted advance of the Japanese, the confusion behind their own lines which made it impossible to organize and launch a counterattack, and the realization that further resistance would only postpone the inevitable and cause serious loss of life among the exhausted troops, finally convinced the Governor of the hopelessness of the situation and caused him to surrender the island and the forces under his command.

On the 26th the Japanese staged a formal triumphant entry into the city of Victoria. Lining the streets were thousands of Chinese, waving little Japanese flags and cheering the long columns of tanks and guns and marching men. In what the Japanese described as a "never-to-be-forgotten ceremony, the first of the Anglo-Saxon strongholds of imperialism in the Far East fell to the advancing champions of the New Order."

JAPS MARCHING INTO HONG KONG

The Japanese title on this picture said it showed victorious troops marching into Hong Kong after the British Citadel fell. Along with mounted army officers are seen two Japanese naval officers. This picture came to the U. S. by way of Brazil.

Stalingrad—the Modern Cannae

For many years we have been reading and discussing the pros and cons of the double envelopment in battle strategy. It is well known that this was a favorite with the German General Staff and very probably influenced them, at least to some small degree, in their tables of organization.

The late Count von Schlieffen, whom the Germans practically idolize as one of the military geniuses of his day, believed that the principle employed at Cannae (complete annihilation and extermination of the enemy by encirclement) was just as feasible and effective in modern warfare as it was when Hannibal surrounded the Roman troops under Varro. The Roman troops were partially annihilated and the rest taken prisoners.

Since the late Count's day, German military experts have bragged of the time when they would pull a "Cannae" on Germany's enemies. It is quite probable that many attempted imitations of Cannae can be found in German military history, but as yet it is difficult to find the real classical example of mass encirclement and annihilation.

Of profound interest, therefore, is the hand of destiny which reached out at Stalingrad and pulled the trick on the Nazis themselves. It was Hitler's fair haired boys who thought that they were the "real McCoy" as exponents of the art of encirclement. Yet it was the Soviet High Command who played the part of Hannibal, and Colonel General von Paulus who was forcibly obliged to be the Terentius Varro in the modern version of Cannae.

Nikolai Tikhonov gives us an interesting story in the official account of the Battle of Stalingrad in which he states:

"Lieutenant General Waldemar Erfurt, Senior Quartermaster of the Military-Historical Department of the General Staff of the German Army, has written a special treatise entitled, *Victory Entailing the Complete Annihilation of the Enemy*, in which, after examining all of the military operations recorded in history similar to those of the Battle of Cannae, he makes the following observation: 'The course of the Battle of Cannae, provides no clue to the way a modern general should surround and exterminate his adversary.' He then proceeds to analyze the operations of the German Army during the last World War, but is forced to the melancholy conclusion that none of the battles that might have been a Cannae actually turned out to be such.

"He even extols the Abyssinian campaign conducted by the Italian Marshal Badoglio, who with a vast and well equipped army tried to surround the poorly armed Abyssinian forces. But in spite of Mussolini's comic opera parody of the order of former great captains—"Surround the enemy and destroy him!"—Badoglio utterly disgraced himself. The Abyssinians calmly withdrew beyond the reach of his blows.

"The present war, however, has already provided the German Command with a classical example of Cannae. The future students of German military history will not have to go far for an illustration of Schlieffen's famous proposition. The Count may turn in his grave, but that will not alter matters. Hereafter, the word "Stalingrad" will cause the German generals to look round in fright to see whether the specter of Cannae is following them.

"Erfurt was right: 'The course of the Battle of Cannae provides no clue to the way a modern general should surround and exterminate his adversary.' The clue will be found in the course of the Battle of Stalingrad.

The Red Army has administered a stern lesson in history to the swashbuckling adventurers of the German General Staff, and has added a chapter to history upon the reading of which all of Hitler's generals will gnash their teeth in impotent rage. The Red Army has shown the whole world what Cannae really looks like, and how to achieve its objective—the annihilation of the enemy."

Thus Spake Der Fuhrer

Hitler's long silence during 1943 is a more significant barometer of the course of the war than were his perfidious braggings of previous years. The following choice selections, taken from speeches and proclamations made by *Der Fuhrer* in the past, were collected and published by *News Week* last year.

December 30, 1939: "May 1940 bring a decision. Come what may it will be our victory."

September 4, 1940: "Whatever may come, England will break down. I recognize no other termination. The people of England are very curious. When the British say, 'He doesn't come,' my answer is, 'Keep your shirts on—he is coming.'"

December 31, 1940: "The year 1941 will bring consummation of the greatest victory in our history. The year 1941 will see the German army, navy and air force powerfully strengthened and with improved armaments. Under its blows the last phases of the war criminals will then collapse. We give assurance that for every bomb dropped on us, a hundred will be returned."

November 8, 1941: "Never was a great empire smashed and destroyed in shorter time than was Soviet Russia. (Leningrad) is surrounded and it will fall into our hands. At the end of this year we probably can say

this greatest danger (from Russia) already has been averted. We can have no doubt that the destiny of Europe for the next 1000 years has been decided."

September 30, 1942: "In my eyes, the year 1942 has behind it the most fateful trial of our people. That was the winter of '41 to '42. Nothing worse can or will happen. Either all (of us) must survive victoriously together or be destined for extermination together. Under no circumstances will we ever capitulate. That they ever will beat us is impossible and out of the question."

In a recent order, purportedly issued to troops just prior to the 1943 summer offensive against Russia, Hitler produces new phrases of evasion and contradiction. He says that the 1943 Russian offensive "must be the decisive turning point of the war. The battle will be difficult, but it's the last one for victorious Germany." He neglects to explain just when or where Germany found it desirable for the war to have a "turning point" or just how, in one last battle, she can subdue the whole of the armed might opposing her from south and west as well as east.

Hitler's Strategy Turned Against Him

The peace of Europe depended on an incomplete system of collective security. To destroy this system, Hitler followed the teaching of Clausewitz; first divide the forces of your opponent, then destroy each force singly, one after the other.—MAJOR F. O. MIKSCHE, *Attack*.

The Atlantic Wall

As the Axis reels under increasing Allied blows, the German propaganda ministry boasts ever louder of the wall of fortifications erected along the west coast of Europe as a protection against invasion.

For a change, the Germans seem to have neglected their military history. Fortified walls have never been invulnerable against a determined foe. It is not necessary to go back beyond the present war to find examples of strong prepared fortifications that failed miserably when put to the crucial test. It was, in fact, the Germans themselves who pierced the Maginot line at its "hinge," poured troops through the breach, and quickly took the fortifications from the rear. They even turned the fortress guns on the French army that previously had manned them.

More recently, on the border between Tripoli and Tunisia, Rommel utilized the fortified Mareth Line for a final stand against the British Eighth Army, only to be outflanked when the British penetrated the difficult terrain to the south and reached the rear of the Mareth fortifications almost in time to cut off the German retreat.

These striking examples of the inadequacy of fixed fortifications should warn the Axis that an Atlantic wall is not enough. There are ways around and over walls.

Not only have fortified walls proved inadequate defense in this war, but natural barriers have become less formidable. Mountains have been crossed, a desert conquered, and the Allies have now accomplished successful sea-borne invasions in the South Pacific, on the North African Mainland, and more recently (with a fleet of 2000 ships), the Italian island of Sicily.

The American Military Institute

Admiral Mahan once described his fellow Americans as "combative and warlike but the reverse of military." Among the great powers, the United States is the only country in which the civilian study of military problems has received no official support.

For many years the American Military Institute, a non-government association organized in 1933 under the laws of the District of Columbia, has attempted to fill in this gap. Its mission is to promote the historical study of war and military power, especially as these problems relate to the security of the United States.

From 1936 onward the American Military Institute has published *Military Affairs*, the only scholarly publication dealing with the military subjects in the United States. It has published this well-edited journal at a loss and needs the support of all men in the service and civilian life who see that our national welfare is intimately connected with military matters. It is particularly important that the American Military Institute receives enough support to enable it to carry on its vital functions in the post-war period when the temptation to "get back to normalcy" and "forget the army" will be great.

Membership in the Institute is "elective" but is open to those in the armed services and civil life who appreciate the importance and desire to encourage the study of military power and institutions in these critical times. Those who wish to become members should send their names to Dr. Harold Sprout, 3 Dickinson Hall, Princeton, New Jersey. Annual dues are $3.00 which includes a subscription to *Military Affairs*. Life memberships are $50.00 and a Founder membership can be established by contributing $250.00 or more.

Institutions or individuals who are not in a position to become members may subscribe to *Military Affairs* at the membership rate. Gifts to the working funds of the American Military Institute are urgently needed.

The officers of the American Military Institute are:

Dr. Robert G. Albion, President
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Some Comments on Training for Combat

A DISTINGUISHED officer, who has already had a lot of fighting experience in this war, has given me a short list of observations on handling and training troops that correspond so closely to my own conclusions, drawn from experience in campaign and in training, that I present them briefly here in my Notes.

Loading troops on transports without regard to organization and with noncommissioned officers separated from their men is faulty. Boat drill, police, and control in case of torpedoing and bombing, are all greatly improved by preserving the integrity of units.

Sizing companies for the sake of appearance breaks down organization.

Fatigue details should not be made indiscriminately without regard to organization. The numbers of men necessary should be found by detailing squads, platoons, or parts of such units rather than by detailing individuals from a company list without regard to the organization of the company.

In an attack, the soldier has many things to discourage his advance—enemy fire of all kinds, barbed wire, difficult terrain, fatigue. In training, the soldier must be taught to use accidents of the ground as cover for his further advance. When he halts, he should remain no longer than necessary to get his breath and determine the spot of cover to which his next dash forward will carry him.

This instinct for self preservation can be overcome by training—teaching the soldier team-play with his comrades, instilling a sense of duty toward the small units on his right or left, and by inculcating a desire to close with the enemy. This can be done by practicing exercises across ground in simulated attacks. It cannot be done by lazy, careless advances in erect postures while carrying out tactical exercises or maneuvers. Squad and platoon leaders especially should be careful to keep up the forward impulse and to avoid by every possible means that inertia which can develop so quickly in a small command.

In all exercises, the team play between squads and platoons must be kept in mind constantly. To this end, the integrity of the squad and platoon must be preserved in all training, combat exercises, marching, camping, fatigue duty, and even in games.

In our national sports there is always a substitute, fresh and ready to take the place of a tired or injured member of the team. In battle, however, there is no rest, no replacement. The job of the unit must go on despite casualties to men or equipment. A lost leader must be replaced at once, not by some leader sent up from the rear, but by some man in the unit who voluntarily takes over the leadership. Further, the unit must go on with reduced numbers and reduced equipment. This also can be practiced in tactical exercises.

Mixture of small units in combat must be regarded as inevitable. Such mixture must be practiced deliberately so as to learn how to bring order out of confusion quickly. This practice, both day and night, brings great dividends in actual campaign.

Thus, we should practice, not only the preparation for combat and the advance to combat, but also the combat itself (as this friend of mine expressed it) the tail-end of a combat. Losses of numerical strength, loss of leaders and equipment, confusion in the combat groups, mixture of units, general fatigue, and a powerful inertia must all be expected, faced, and overcome. This can be done only by anticipating these things and then training to overcome them.

Good shooting with guns of all calibers is the first essential in training. The next essential is that the soldier and small unit leader know and practice the skilful methods of using the ground to avoid casualties.

Leaders of larger units must see and study the ground over which they contemplate advancing their troops. Ground on which there is absolutely no cover from aimed enemy fire should be avoided for advancing troops for long distances—say more than one hundred yards in successive stretches. This can often be done by narrowing the fronts of various units and increasing their depth of deployment.

Cover from high angle fire or from airplane bombing can seldom be found in open country, but cover from aimed small arms fire is often provided by ridges, gullies, and water courses. Cover from observation is important even though no actual cover from the flight of projectiles or bombs is possible.

By means of training and discipline, the men and machines can be made to avoid bunching. This fault of bunching is very noticeable in our maneuvers and is seen very often in photographs of troops actually under fire in battle.

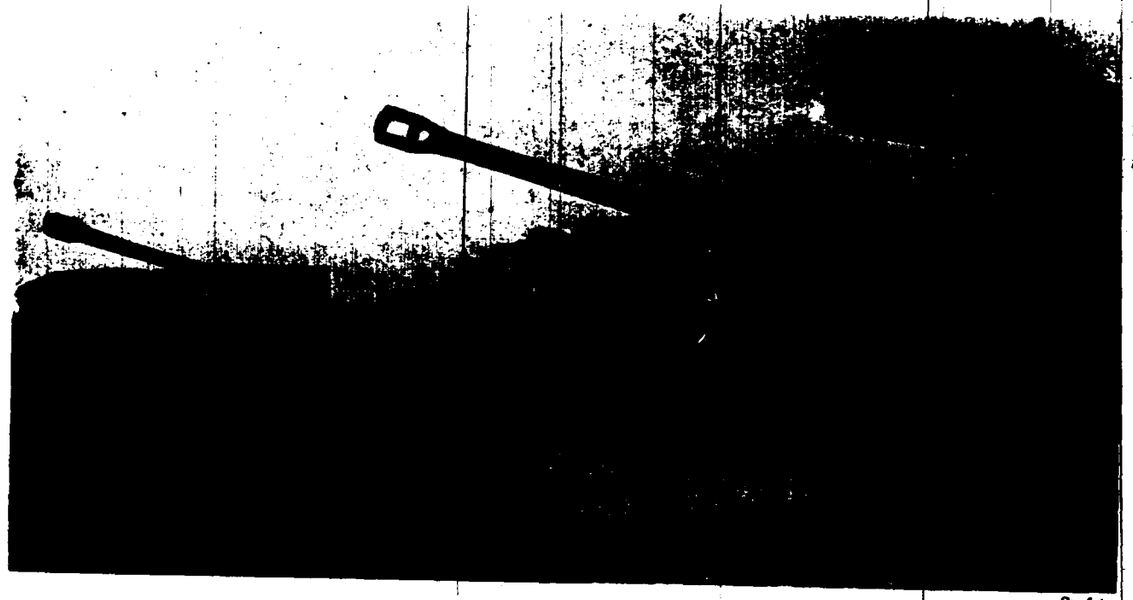
The desire to get forward and close with the enemy will be much enhanced if the men realize that it can be done without excessive losses and if they have been trained so as to know how to do this. Furthermore, if the men realize that their leaders, of large as well as small units, will not commit them to ground where they have no chance whatever to survive, they will respond with a determination to close with the enemy as quickly as possible.

German Ordnance Captured Near Stalingrad

Sovfoto

The gun in the right foreground is probably a 25mm French Hotchkiss magazine-fed AT-AA. Note the lunette wheels lying against the 75mm Pak 97/38 and the Pak 38. The Hotchkiss has a big flash hider. The Pak 97/38's brake is also a flash hider. Note the double shield on the Pak 38s and 97/38s.

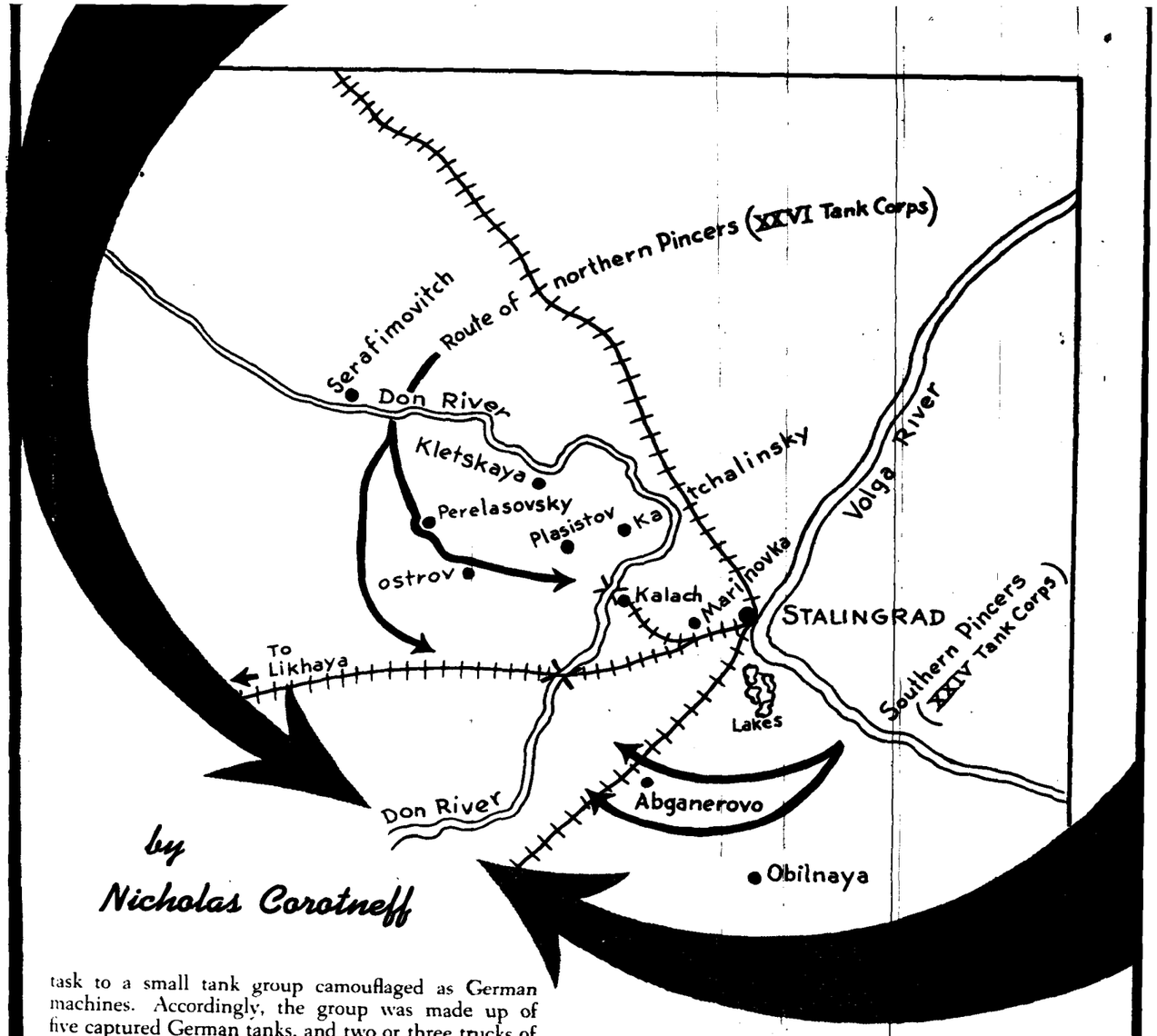
At right is the French Model 1897 (their and our standard 75mm gun) mounted by the Germans on their split-trailed, low-silhouette 50mm Pak 38 antitank carriage. This has been made possible by the addition of a muzzle-brake, which preserves stability without the necessity of a heavy carriage because it cuts the recoil. The muzzle brake (seen in picture below) looks more French than German. This new combination is designated the Pak 97/38. It fires HE as well as armor-piercing shell. Apparently the rounds are now semi-fixed. The complete weapon adds a third wheel to the lunette and is light enough to be man-handled by three men.



Sovfoto

Encirclement at Stalingrad

This double flanking maneuver around the German Sixth Army was spearheaded from the north by tanks — from the south by tanks and cavalry in coördinated day and night assault.



by *Nicholas Corotneff*

THE plan of the Russian High Command in the great winter offensive of 1942-43 was to break through the German lines simultaneously in two places, northwest and southwest of Stalingrad. Then the two massive pincers, curving deeply through the German rear, would come together somewhere near the railroad line from Stalingrad to Likhaya, and thus completely encircle the German Sixth Army, which occupied the whole area west of Stalingrad to the Don—roughly, about 50 square miles.

One of the most important features of this plan—vitally important for the success of its initial stage—was to *launch the northern blow along the right, on the western bank of the Don.* The blow was timed to fall before the Don would freeze solidly and when only two crossings would be available for tanks and heavy vehicles—one, the bridge at Kalach; another, the railroad bridge on the Likhaya line farther south. The brittle, thin ice on the river made any crossings with heavy loads out of the question.

It follows then that a successful break-through, starting on the western bank from the Serafimovitch bridgehead, could sweep down the bend without much danger of being stopped by a quick counterblow of the Sixth Army, whose maneuver would be tied up by the formidable natural obstacle of the Don, and the Russians would have to reckon only with the German forces located in the bend of the river. Considerable as they were, they were far less redoubtable than the powerful concentrations of the Sixth Army beyond the river. This was the reason why, for many weeks, when Stalingrad's plight was growing daily, the Russians continued to fight with the utmost tenacity for this bridgehead and never fell for the temptation of diverting their considerable reserves in this area to the assistance of the besieged city. It is hard to understand how the German Command could have missed so completely the significance of this fighting.

For the success of this plan, two factors were vital, outside of the possession of the bridgehead:

(1) After the break-through, the sweep down the western bank had to be accomplished with the utmost speed. That made it necessary to spearhead the offensive by powerful tank formations, and *these formations had to advance and fight day and night without interruption*, until the first important objective—the Kalach crossing and the Likhaya railroad—were reached. Leisurely, all-night stop-overs, under the guard of motorized infantry, as advocated by the pre-war doctrine, were clearly out of the question.

(2) If, in the first stage of the operation, the mechanized thrust from Serafimovitch succeeded in capturing the Kalach crossing intact before the retreating Germans could blow it up, then the junction of the two pincers (the northern one moving along the western bank, and the southern one moving up from Abganerovo to the eastern bank) would be much facilitated, and the encirclement of the Sixth Army virtually assured.

The means necessary to insure the first factor were obvious—careful preparation covering every detail, and arduous, specialized training of the units assigned to the task. During this training, which went on for many weeks before the raid, the greatest stress was placed on night actions.

The tanks of the XXVI Tank Corps spent endless hours driving without lights through stretches of terrain exactly similar to the one to be encountered in the Don bend—steppes criss-crossed by a maze of gullies and ravines—some of them shallow, some of them deep, all with cliff-like banks. Steering was done by compass only. Replicas of antitank obstacles most widely used by Germans in this sector were strewn all over the training grounds, and tankmen and engineers acquired experience in detecting them in the darkness and removing them quickly.

Two days before the beginning of the offensive, a war game, in which all commanders participated, was played at the corps headquarters over the projected route of the road. Then battalion commanders organized war games for the junior officers, with objectives correspondingly reduced.

A solution of the second important problem—the capture of the Kalach bridge—was also reached. It was clear that the undertaking would succeed only if the element of surprise were overwhelming. The Russian Command knew that the bridge was mined just for such an emergency and could be blown up instantly. The only way to beat the Germans to the draw was to seize it in one lightning move. That could be done only by a small, fast-moving mechanized force that could slip through the German lines unobserved, or at least unimpeded.

The solution was logical and simple—to entrust this task to a small tank group camouflaged as German machines. Accordingly, the group was made up of five captured German tanks, and two or three trucks of the type used by their motorized divisions. Sixty specially trained tommy gunners completed the force. Some of them rode atop the tanks, the way the Russian and German landing parties do; the rest rode in trucks which were armed with several machine guns. The detachment was commanded by an experienced and resourceful officer, Captain Philipov. The tanks bore swastikas and other German insignia. Whether the deception was carried all the way through and the crews and tommy gunners were clad in German uniforms, the account does not mention.

The break-through operations began at dawn on November 19th, in the usual way, with infantry, artillery and engineers blasting the way for the tanks. A thick fog, dense as milk, according to some accounts, reduced visibility greatly. However, there was no hesitation in launching the tank attack, as everybody was completely confident that they would keep to the appointed course and get through. As previously decided, guides, recruited from local inhabitants, were put in the leading tanks.

The first German line was completely smashed and left without resistance. The second line was broken through without much trouble, and with the corps moving in two columns the advance continued at a somewhat increased speed.

First Night

The columns moved off the roads right over icebound terrain, and spent considerable time in crossing gullies and ravines, but despite all difficulties continued on the course. Lights were switched on, and the

going became easier. A strong wind gradually reached the strength of a blizzard. Tanks steered by compass had to stop frequently to clean the port-holes from snow and check the bearings. The first landmark, a burning state farm, was reached and passed.

After some artillery fire was heard on the right flank, lights were switched off. In the middle of the night, a short stop was made for re-fueling. A tank column, moving on a parallel course, but in the opposite direction, was observed at that time on the left flank. Assuming that the column was German, it was decided not to molest them and let them advance to their inevitable doom. Scouts that were sent out to check up on the column, returned shortly and reported that the tanks were German ones.

At daybreak, some real fighting took place around four villages. The first three villages were attacked right from the march and quickly taken. In the fourth one, Perelasovsky, a more stubborn resistance was encountered because of the presence there of a German army corps headquarters. The village was turned from both flanks by motorized infantry and successfully stormed.[1] The few hours left of the night were spent there under the protection of an all-round advance guard of motorized units which repulsed two German counterattacks. Early in the morning, the advance was resumed and, with intermittent fighting, went on all day, registering a progress of over 40 kilometers for the day.

The Second Night

The corps stopped for the night in a large village. Ostrov, which was taken some time in the evening. A strong reconnaissance was sent towards the Don, and a report came soon that the main defense zone of the enemy was located within about 20 kilometers from the village. In the meanwhile, in order to obtain as much information as possible on the Kalach crossing, many village inhabitants were questioned.

The commander was elated when the intelligence officers succeeded in locating a peasant woman from Kalach who had just come into the village to buy food. She was immediately brought to the headquarters, and the interrogation brought out several important facts. Apparently, the Germans at Kalach had not grasped as yet the full significance of the break-through and did not show any particular signs of alarm. Local inhabitants still could cross the bridge freely, without even showing their documents to the sentries. German tanks and automobiles still crossed the bridge with lights.

This information augured well for the success of Philipov's assignment. About 5 o'clock in the morning, still in complete darkness, his small detachment left on its dangerous mission. He was instructed to proceed in regular German marching formation with all lights on.

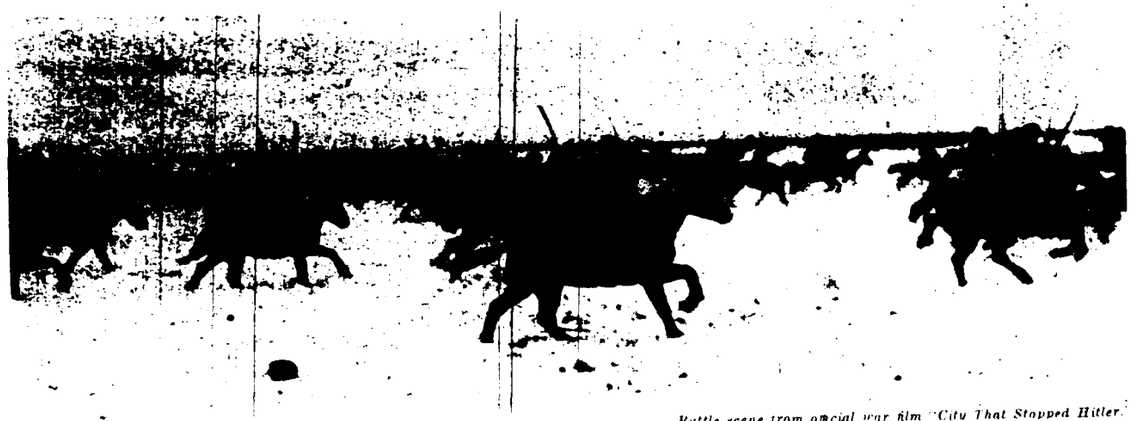
About half an hour later, the main columns of the XXVI Tank Corps also moved out. The German defense zone was soon reached and here, at daybreak, the most stubborn fighting of the raid began. One after another, the numerous German strong points were subdued, and several villages in the fortified zone were stormed by the left column of Major Philipenko.

(These two Commanders, Philipov and Philipenko, with their similar names, created a good deal of confusion in some of the Soviet accounts. Philipov commanded the advance detachment of five captured German tanks sent ahead to secure the Kalach bridge. Philipenko commanded the left column of the main spearhead formed by the XXVI Tank Corps.)

The two most important villages — Plesistov and Katchalinsky—were taken by Philipenko's column in deep turning movements. By the middle of the afternoon, the German resistance was broken.

The tension at headquarters, though, was not relieved. Hours passed without any report from Philipov, and the anxiety for the fate of his detachment mounted. Finally, it was surmised that his mission must have met

[1]For a more detailed account of this particular action, see General Rodin's article, "Tank Operations in the Enemy's Rear," January-February CAVALRY JOURNAL.



Battle scene from official war film "City That Stopped Hitler."

This picture shows cavalry in action south of Stalingrad where it was used with tanks to form the southern pincer.

Battle scene from official war film "City That Stopped Hitler."

Tank reinforcements are shown moving to the front during the Stalingrad offensive.

with failure, and Philipenko's column was ordered to proceed to the crossing immediately and to relieve his group, if it were not too late.

At 5 o'clock Philipov's report finally came in, and the spirits in headquarters soared. His raid was a complete success. The small detachment had gone through the German lines with perfect ease, without eliciting any suspicions, and made a non-stop run from Ostrov right to the bridge. Neither were they stopped by the sentries at the crossing. The leading tank, with lights blazing, was midway across when the tommy gunners from the following tanks jumped off and took care of the German sentries. As a matter of fact, this achievement proved to be the easiest part of Philipov's task.

After the bridge was captured, Philipov immediately organized an all-round defense and none too soon. The baffled Germans quickly recovered and launched a counterattack from Kalatch on the eastern bank of the Don. At the same time, some German units, retreating down the western bank, much to their surprise found the Kalach bridge in Russian hands and attacked from the western bank of the Don on Philipov's rear. From daybreak until the middle of the afternoon, the little group fought alone. Then Philipenko, breaking through from the west with the left column of the XXVI Tank Corps, joined forces and the fight continued until darkness.

The Third Night

The main forces reached the Don soon after darkness. By that time the German counterattacks from Kalach, directed against the little group defending the bridgehead, began to weaken. The arrival of the main column of the XXVI Tank Corps* broke them up completely, and fighting ceased shortly after midnight. The rest of the night was spent in organizing the attack on Kalach, getting artillery into positions, etc. Early in the morning, the attack on the town started with Philipov's and Philipenko's units still in the vanguard. Kalach was taken shortly after 10 o'clock in the morning, and the German garrison began a hasty and disorderly retreat. The first stage of the break-through was completed.

*The XXVI Tank Corps was later changed to the I Guard Tank Corps; and the XXIV Tank Corps to the II Guard Tank Corps.

Advance of the Southern Pincer

The advance of the southern group, whose spearhead was the XXIV Tank Corps,* which started almost simultaneously with the northern group, was equally successful. On this sector, the main German defense zone was sited along the chain of lakes which run in an almost straight line south of Stalingrad.

The two raids were very similar in their main features. Such fighting as took place at night was invariably successful, and the main German base in the southern sector — the town and railway station of Abganerovo—was reached and successfully stormed, according to plan, at just about the same time that the northern group near Kalach. The amount of matériel captured at Abganerovo was enormous.

Although few details are yet available, it is known that one factor, which was absent in the northern part of the offensive, played an important rôle in the advance of the southern group. The tanks of this group were closely followed by large cavalry formations which, according to the Soviet's accounts, brilliantly fulfilled their task of securing the territory gained by the mechanized thrust and completed the German rout.

Exact accounts of what happened on the next day are not available. It seems, however, that both Corps, which blazed the trail for the great encirclement, were relieved by other formations almost immediately upon reaching their key objectives. It is known, at least, that two pincers around the German Sixth Army came together either late on November 23rd, or in the early hours of the 24th, somewhere south of the village of Marinovka, west of Kalach.

Red Cavalry Plays Vital War Role

by Cyrus L. Sulzberger*

The most powerful cavalry on earth, combined with air and armor in summer, successfully combats enemy panzers—and drives en masse in winter in pursuit and defeat of retreating Germans.

THE Red Army had at the start of this war, and still possesses, the most powerful cavalry force on earth. Strong as it was at the start of hostilities, it is today in even better shape, thanks to its extensive reorganization, accompanied by the widespread introduction of more powerful weapons and the increased use of motor transport.

While in many armies world-famous cavalry units with long and honorable traditions have been mechanized during this war and have abandoned horses, the contrary is true of the Red Army, which has maintained the cavalry as one of its most important arms.

Cavalry Vital In Pursuit

Cavalry has been exceedingly useful, not only as a scouting element both for ordinary reconnaissance and for combat reconnaissance, but as a pursuit force in the winter offensives, which perhaps have furnished its most dramatic rôle.

Main bodies of cavalry have not usually been mixed with other branches of the army, but have been held in reserve for pursuit at the ripe moment, when, after Soviet tanks and infantry have smashed the enemy line, saber-bearing horsemen have ridden after the fleeing enemy.[1] There have even been cases where Soviet cavalry has successfully attacked armored forces.

The Axis does not have any cavalry comparable in quantity to the Russians. When the Moscow counter-offensive opened in December, 1941, Soviet horsemen, plowing through snowfields and woods, were able to out-maneuver the enemy who were limited to the highways.

Air-Armor-Cavalry in Collaboration

Pursuit operations are somewhat more limited in summer than in winter, and at this time of the year have far more favorable chances of success in wooded areas, where cover is available.

However, as one of the movements toward making Red cavalry more efficient since 1941, it has been trained to work with armor, and now on many special missions horsemen and tanks are collaborating and both are receiving air support. This has produced the combined use of two of the newest and one of the oldest branches of the military service, in what the Red Army reports to be a most effective fashion.

Such forms of mixed collaboration are employed by the Red cavalry, especially in summer, when armor is not so limited to road communications, and these strange triangular combinations of air, motor, and horse have more than once given battle with success to enemy panzer units. In such instances, the Russian horsemen, bearing long-barreled antitank rifles as lances while mounted, dismount and become antitank units.

Reconnaissance Behind Enemy Lines

On many reconnaissance parties, Red cavalrymen using radio transmitters, have been able to penetrate far behind the German lines and, working almost as guerillas, have caused considerable havoc and transmitted important information to their headquarters. In such cases, the Red air force frequently assigns a few planes to keep an eye on them.

"Numerous examples of well-conducted mounted reconnaissance have insured the success of major operation," one Soviet military expert says. "The most important factors in its favor are the great mobility of the light mounted force, as well as its ability to penetrate far deeper into the enemy's positions than any infantry scouting detail could."

Remarking that even heavily held sectors are not proof against Red cavalry penetrations, he decribes one guerilla-like operation in which a large cavalry formation was ordered to break through to the Germans' rear and straddle and disorganize their communications. The operation was preceded by several days' scouting afoot by cavalrymen probing the mine fields and other defenses. Then they slipped through one night as a mounted force.

After locating the enemy's main concentrations and headquarters and radioing the information to their command, the scouts conducted a raid on the enemy headquarters as British Commandos do. The operation was successfully carried out on foot with machine guns and hand grenades. Then the Cossacks remounted and returned to their own lines without a single casualty.

Other operations of similar type have been reported in which mounted machine gunners and mounted sappers—both pertaining to cavalry units—have conducted raids deep in enemy territory and blown up bridges and railway communications. In some instance such raiding forces have taken along artillery as well as small arms.

New Organization and Modern Weapons

Since the start of the war, many new weapons have been distributed wholesale among cavalrymen. These include thousands of tommy guns, many of them American models. The cavalry has received quantities of heavy machine guns and automatic rifles similar to the American Garand. Also in use are vast quantities of *"tachanka"* carts, drawn by three horses and bearing machine guns.

One thing that has greatly improved the power of Red cavalry is the widespread introduction of antitank guns, both heavy and light. The latter type—long-barreled antitank rifles—are carried by horsemen in the same fashion as the old lance. Sometimes there is confusion among persons seeing the Red cavalry from afar or in newsreels. Other antitank weapons used are the 37mm, the 45mm, and the new 50mm guns mounted on wheels.

Cossacks Still Heart of Cavalry

The heart of the cavalry is composed of the famous Cossacks of the Kuban and the Don, but it includes many horsemen from the eastern Soviet republics. The cavalrymen's eastern ponies of Mongol type are tough, stocky horses that can endure much hardship. The ordinary Russian and Cossack stock has Arabian blood in it. When necessary, both types of horses can live off the country for long stretches, except when the ground is covered by snow.[2]

Red cavalry remains a separate force, well handled generally and used en masse only in winter and at the right tactical moment. The old cavalry, hampered by horse-drawn baggage trains, has been largely eliminated by the gradual introduction of motor transport. Today, within a range of 150 miles, it can be just as mobile as any other troops, thanks to trucks. This new tactical mobility is a big advantage.

EDITOR'S NOTE

This excellent article on Red Army cavalry has been compiled from two press releases, wirelessed by Mr. Sulzberger from Moscow to the* New York Times *(June 14 and 15, 1943), with whose gracious permission the combined material is reprinted here.

Mr. Sulzberger has represented the* New York Times *in Russia since July, 1941. His observations and keen analyses of the phenomenal rôle of cavalry in the successes of the Soviet fighting machine are a valuable contribution to the annals of modern war.

*Moscow correspondent of the *New York Times*.

[1]See "Encirclement at Stalingrad," page 38 this issue.

[2]See "The Campaign Horse," May-June, 1943, issue, The Cavalry Journal.

Cossacks attack in the area west of the Don. Such attacks are often supported by tanks and air power.

Sovfoto.

Employment of Cavalry in Battle*

A Cossack antitank crew on the move. Note long barrel antitank rifle.

by
Colonel General
O. Gorodovikov

Although the modern Cossack may also be a mine layer, an artilleryman or an antitank gunner, he is still an incomparable scout. This picture shows a Cossack patrol setting out on reconnaissance.

THE domination of the motor in modern war, the development of aviation and mechanized forces, and the increased fire power of all arms, naturally have affected considerably the tactics of cavalry and the methods of its employment in battle. To a certain extent, cavalry lost its operative independence. Still, as the progress of the war has shown, it continues to play a prominent and important rôle on the battlefield.

Independent Missions

In the past, large formations of cavalry carried out operative assignments independently. Often it broke away from its main force as far as sixty to seventy-five miles and raided the enemy's rear for days, and sometimes for weeks. Now, to gain the greatest amount of success, cavalry fights in constant contact with other troops in a combined frontal effort. Usually, cavalry is thrown forward to distances of twenty-five to thirty miles, to strike the flanks or the rear of the enemy. Good examples of these tactics are the actions of the large cavalry formations of Generals Bolov, Dovator, Kruichenkin, and Kirichenko.

It is possible sometimes for large cavalry formations to carry out independent operations even farther away from the main forces; but in such cases, cavalry must be heavily reinforced by other arms—motorized infantry, tanks, artillery and aviation. In the absence of such reinforcements, there must be a certainty that the enemy is sufficiently disorganized and unable to maintain a stubborn and well-knit defense.

The experience of past wars has shown that the main tactical principle in the employment of cavalry should be *the use of large formations for massive blows at the enemy*. This has been confirmed by the experience of the present war. In its first period, we had several examples of simultaneous employment of large cavalry formations on one hand, and of separate cavalry divisions on the other—divisions frequently lacking in fire power and team work.

Sometimes these divisions were given to army corps or army commanders to carry out assignments of secondary importance, such as protecting the flanks and providing security measures on some sectors or directions. This method of using cavalry seldom if ever brought positive results. Scattered cavalry quickly lost its hitting and staying power. Even in the initial period of the present war, it became clear that the only correct employment of cavalry is the use of large formations, reinforced by combat teams of all arms.

Frontal Attack in Coördinated Action

In offensive operations, these formations are most effectively used on the flanks for a blow at the enemy's main group, with a view to penetrating into his depth up to thirty miles. A close coördination with other arms engaged in the frontal offensive is absolutely necessary. The general idea of such tactical teamwork is to strike simultaneous blows from different directions. Examples of successful actions of this kind are the offensives of General Belov's corps from Kashira to Stalinogorsk, and General Kruichenkin's corps from the area of Kastornaya to Livni and Rossosh. By these blows, the main groupings of the enemy were shaken, rear organizations and ground centers disrupted, and the advance of our forces engaged in the frontal assault was greatly facilitated. Eventually, by combined efforts, the main German group was annihilated. In both instances, cavalry actions were continuously coördinated with the frontal advance of our troops. This was the most important factor for insuring success.

After the hostile defense is broken through by the infantry, the success is best developed by throwing into the gap a powerful mobile group of cavalry and mechanized forces. The battle in the depth of the enemy's defense must be planned so that the contact and coördination of the mobile group with the elements engaged in the frontal advance is continuous and uninterrupted. Practice shows that mobile groups which lose this contact are usually unable to achieve tactical success.

The break-through should be from nine to twelve miles wide, and after cavalry and mobile groups move in, the elements engaged in the frontal advance should strive to widen the gap and to repulse the enemy's counterattacks from the flanks.

It is one of the most important duties of the command to see that cavalry groups going into the break-through should be reinforced adequately by antiaircraft defense and units of engineers. Care should be taken to insure the flow of supplies and matériel, and the maintenance of liaison with the rear. To leave the advancing mobile groups without ammunition, food, or fuel is to doom them to destruction. To rely on local supplies only is out of the question.

Mobile Reserve

In long drawn out and stabilized defense operations, cavalry is best employed as a mobile reserve of the front commander. Together with other reserves, it may be thrown into action to liquidate the enemy's hostile forces which succeed in breaking through, or it may be kept on hand for future offensives. In the First World War, cavalry was successfully used in this fashion on several occasions. Similar examples can be found in the present war. In the summer of 1941, when the Germans broke through at Pervomaisk, the Second Cavalry Corps rushed from another sector, made a sixty mile march, and struck the advancing Germans a surprise blow of such power that their drive was checked at once and then turned back at Balta. Another excellent piece of work was a similar action of General Dovator's cavalry corps in the approaches to Moscow.

In a maneuvering defense Cavalry fights for important boundaries, protects the flanks of the armies, and covers important operative directions.

During the 1942 summer campaign on the southern front, the Cossack corps of General Kirichenko gave a brilliant example of well organized and active maneuvering defense. Skilfully combining a stubborn defense with bold and determined counterattacks, the Cossacks not only succeeded in checking the enemy on the boundaries held, but inflicted heavy casualties and captured booty and prisoners. The Cossacks fought under adverse conditions and against a numerically superior enemy. In these engagements, cavalry once more proved its ability to fight successfully against mechanized forces.

In every engagement, cavalry must preserve its mobility. This mobility is greatly impaired when cavalry fights in a frontal line with other troops. A frontal

Cossack machine gunners move to a new position on foot. Cossacks often fight dismounted. These are identified by their uniforms.

*Translated from *The Red Star* by Nicholas Corotneff.

command which puts cavalry into the line deprives itself of mobile reserves capable of executing a swift maneuver, often necessary to liquidate a break-through or to switch to the offensive on some sectors of the front.

In the course of successful development of large offensive operations, cavalry can be used to create an advantage for the pursuit and annihilation of the retreating enemy. Instances are known, however, when under such circumstances, cavalry commanders, carried away by their enthusiasm in pursuing the enemy, did break away from the main advancing group, which could not keep pace with them. As a result, the coördination was disrupted, the pursuit gradually died down, and some cavalry units found themselves in a critical situation.

Maneuverability Aids Surprise Actions

The present war abounds in examples of successful use of cavalry in the enemy's rear. This method of using cavalry necessitates its equipment with special technical means and matériel. The trains must be light and cut down to a minimum; mortar and automatic arms greatly increased.

Cavalry units are not tied down to specific areas and inhabited points. Flexibility and concealment in maneuvering are most important because this enables them to surprise the enemy and appear unexpectedly to strike at his most vulnerable spots. Surprise actions, especially night raids and ambushes, are the basic methods of fighting in the enemy's rear.

To choose the best and most advantageous direction for penetration to the main objective often decides the success of an operation. In this respect, engagements of General Kruichenkin's cavalry corps in the operations of Eletz are most interesting. The cavalry went into action on the sector where the Germans had rather weak forces, and had no fortified positions. This insured a complete freedom of maneuver. The corps had no difficulty in penetrating into the rear, and thus its mission in the first stage of the operation was successfully fulfilled. At the next stage, the cavalry became engaged in a thickly populated area where numerous inhabited points were solidly fortified and held by substantial hostile forces. The maneuvering ability of the cavalry units thus was cramped and the corps became involved in a series of indecisive actions, tied down to the same area for several days.

Both Mounted and Dismounted Action

It must be taken into consideration that, if in former times cavalrymen went into action mostly in mounted formation with a cavalry charge as an ultimate objective, now they maneuver on horse, but fight, as a rule, in dismounted formations. This does not mean that bold cavalry charges, swift and unexpected, have become impossible. When the enemy is taken by surprise, when his fire system is not yet organized or is already disrupted, when the enemy is demoralized by our fire and held by frontal actions of infantry and dismounted cavalry, then cavalry can and must charge daringly and, supported by tanks, aviation and artillery, must annihilate the enemy by fire and saber.

The Guard Cossack Division commanded by Major General Toutarinoff was assigned to hold an important defensive boundary. The advancing Germans had considerable numerical superiority. Discovering the junction between the advancing German units, during the night the Cossacks left a small covering force, on the front, while the main striking force of the division penetrated into the rear of the enemy's main group. At dawn, they went into a dashing cavalry charge, cut off the German infantry from their tanks, and, supported by our other units, they completely smashed a (SS) unit and a fourth regiment of mountain rifles. Three thousand German officers and soldiers were killed in the charge.

Many other examples of skilful cavalry charges were made by General Kirichenko's forces in the fighting on the Southern Front. Several times the Cossacks cut their way through the enemy's formations and inflicted heavy casualties. This shows how important it is to combine skilfully the fighting on foot with cavalry charges, and to be able to switch quickly from one to the other. This is one of the most important secrets of successful cavalry leadership on the battlefield.

Conclusion

In engagements of a maneuvering character, the mobility of cavalry must be exploited fully with a view to striking surprise blows at the most vulnerable spots. For instance, it always brings good results, after breaking off the battle suddenly in one sector, to regroup the cavalry under the cover of darkness in an area eight to ten miles away, and then strike quickly an unexpected blow on the enemy's flank from a new direction.

Experience shows that the main forces of large cavalry formations should not become entangled in long drawn out engagements in the same sector, as this paralyzes its mobile power and dooms it to tactically passive actions.

Security in general, and antiaircraft defense in particular, is of especial importance for cavalry. Its most dangerous enemy is hostile aviation, especially in an open country. Cavalry must be trained in the use of every possible method of concealment, and should be able also to disperse quickly. When the enemy's aviation attacks cavalry on the march, all means of fire power, antiaircraft guns, machine guns, antitank rifles, and rifles must be used fully.

As far as antitank defense is concerned, the experience of the latest campaigns shows once more that even with their own means only, cavalrymen can successfully repulse motorized attacks if such means are skilfully used. If the cavalry is reinforced by tank units and artillery, it is capable of striking very telling blows to stop the enemy's advance, and hurl it back.

Tanks in Night Combat

by Nicholas Carotneff

German "Tiger" tank knocked out in night combat.

FOR years before the war, one of the most controversial questions of the mechanized tactics of the Red Army, endlessly discussed and argued about, was the question of the feasibility of using tanks in night action.

The majority of officers of the mechanized forces steadfastly maintained that the use of tanks in night combat was extremely dangerous and that, great as its moral effect on the enemy might be, it was more likely to lead to a disaster than to success. As one of the Russian tank commanders put it—"A tank in night combat has no more chance than a blind man in a street brawl."

The difficulties of mechanized operations in darkness, or under conditions of poor visibility, are, naturally, obvious. On the other hand, many tank units in the Red Army, over a period of years, conducted tests and experiments to show the possibility of successful tactical operations by mechanized units at night.

Probably the most painstaking and successful experimentation was carried on by the Siberian Army, or as it is officially called, the Far Eastern Red Banner Army. Their tank formations were almost exclusively recruited from local inhabitants—nearly all of them experienced hunters and trappers—who felt perfectly at home in the Siberian wilderness under any weather conditions and at any time of day or night. Night drills and maneuvers were widespread in Siberian tank units and their drivers accumulated vast experience in night movements across the country.

This experience proved to be an invaluable asset in several engagements which these tank units fought with the Japanese during the so-called "border war" of 1938-39, following the occupation of Manchukuo by Japan. Some of these actions were mere skirmishes; some, pitched battles involving divisions and army corps. Officially, all of them, however, were classified as "border incidents."

The most important of these "incidents" was fought on the river of Khalkin-Gol, near the Mongol-Manchukuo border, August 20-28th, 1939. The Japanese who were decisively beaten, lost 18,000 men killed and wounded and a large amount of matériel. To a great extent the Russian success was due to their mechanized units. According to orthodox logistics, these units, being several hundred miles away in the Chita district, could not possibly get to Khalkin-Gol in time. Siberian logistics, however, proved to be quite unorthodox. They were based on day and night marches, over a most difficult country—marches which the Japanese considered unfeasible. The appearance of the Russian tanks on the battlefield in large numbers came as a complete surprise to the Japanese command, and contributed greatly to the Russian victory.

However, successful as some of these experiments

were, they failed to convince the majority. Army regulations pertaining to mechanized operations—stressing the importance of developing the ability to execute long marches and movements at night, with and without lights—practically left out tactical operations by dismissing them with a few vague generalities.

In 1934, a remarkable treatise on mechanized warfare was published in Germany by a former Austrian Artillery General, Ritter von Eimannsberger, under the title of, "The Tank War." It made a great impression both in German and Russian military circles and, to a certain extent, considerably influenced the development of mechanized doctrine. Eimannsberger's influence, however, was more organizational than tactical. His tables of organization for panzer divisions no doubt played a considerable rôle in the final makeup of these divisions which emerged on Poland in 1939. With a few deviations, their elements bore a striking resemblance to Eimannsberger's blueprints.

Eimannsberger also laid the groundwork for the modern antitank defense, although, naturally, at that time the concept of antitank defense was purely along artillery lines. The possibility of fighting tanks with close combat weapons was not even considered. The Spanish Civil War brought the first pioneer efforts in this field.

On the other hand, the tactical views presented by Eimannsberger were unanimously rejected by the German tank experts. He failed completely to grasp the most important principle underlying the *blitzkrieg* tactics, which is a battle, or rather, a series of battles, on a narrow front, each one devised so that the full weight of the armor could be concentrated against a weak spot in the enemy's defense and just as quickly changed to another spot if the resistance at the original point of thrust proved to be unexpectedly strong. Fluidity and flexibility in a tactical sense, combined with the idea of encircling the enemy by means of two or more converging attacks, can be called the essence of the *blitzkrieg*.

Eimannsberger's battle is titanic in scope, but hidebound and pedestrian in its tactical and operative concepts. In his blueprint of a great tank battle of the future, he concentrates 5,000 tanks in the break-through echelons alone, with many more in the exploitation force, followed by 10 to 20 motorized divisions. All this takes place on a front 20 to 30 miles wide and is conceived as an operation on diverging lines. In other words, it is just a mechanized version of the great artillery break-through attempts of the First World War. In his description of this battle of the future, Eimannsberger confronts his supreme commander with the necessity of quickly solving two vitally important problems which come up just before and during the battle. A dense fog hangs over the battlefield on the morning of the break-through when all the preparations are made and his thundering torrent of steel and fire is about to deluge the enemy's line. Should he go through with the attack, or wait for the fog to lift? Unhesitatingly, he decides to wait: and the greatest mechanized army ever assembled – in human imagination – remains in frozen immobility for almost three hours until the fog lifts completely.

The break-through is a complete success. Motorized divisions begin to pour into the gap made by the giant battering ram.

The battle, delayed by the fog, rages all day. Darkness falls over the battlefield, and the forward echelons of panzers, far behind the smashed lines, are fanning out and completing the rout. What shall the commander do—order them to keep on going, or stop them until daylight? He decides upon the latter, and the pursuit is stopped entirely all over the battlefield until the next morning.

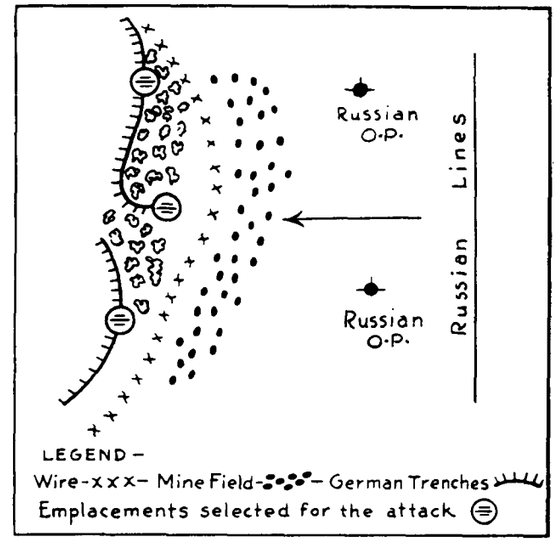
Eimannsberger's description is characteristic of the viewpoint that prevailed in his time in both the German and Russian Armies. He has no doubts or hesitations in gambling his huge tank force on one stake and cheerfully disregards the fact that in case of failure, his mechanized hordes could not be disengaged without courting total disaster. He boldly puts all his eggs in one giant basket. But he is convinced that darkness or fog are insuperable handicaps for tanks and there is no use of taking any chances.

Eimannsberger's book, translated into Russian in 1936, sold over 60,000 copies and was much discussed in the Red Army. Several of his ideas on the organization of antitank defense were carefully noted by the Soviet High Command and, to a certain extent, reflected in the Field Service Regulations of 1936, which were still valid when the Red Army started to the war. There is no doubt that the prejudice against the use of tanks at night was also strengthened by his book's influence.

The beginning of the war, apparently, saw no changes in this viewpoint. At least no reports of mechanized night operations in 1941 are available.

Beginning from the summer of 1942, however, a definite change in the Russian attitude seems to have taken place. The question of mechanized night actions has been reconsidered in the light of the actual war experience and the tremendous development of night combat in general. The trend now is in favor of using tanks at night extensively and exploiting to the full the overwhelming element of surprise inherent in the mechanized attack in darkness. The time when tanks operated only between daybreak and sundown is definitely past.

The first night actions we know of bear the earmarks of careful, well planned experimentations. They are laboratory tests laying the preliminary groundwork for bigger operations to come. It is also interesting to note that, as far as we know, these actions were carried out on almost every front, except the Stalingrad sector where, in November, the great break-through took place. Apparently, on this front, the Russian High Command was bent on building the element of surprise to its greatest possible extent and did not want to put



the Germans on the alert by giving them a foretaste of the new mechanized tactics to come.

In the change of attitude on the question of employing tanks in night combat, one factor, undoubtedly, played a considerable rôle. The great difficulties attending the operation of tanks in darkness were even increased in the Red Army. The main stumbling block of night operations—the difficulty of keeping on the course and locating targets—was rendered even more difficult by the inadequacy of Soviet radio equipment. At the beginning of the war, it proved to be one of the main technical weaknesses of the Russian Army. Radio equipment was insufficient in quantity, and a great many commanders were completely unfamiliar with it. Therefore, they were sometimes reluctant to use it even when it was put at their disposal.

Only the minority of Soviet tank formations were equipped with radio sets in 1941. In the units assigned to work with infantry, even tanks of company and battalion commanders often lacked them, and only in the summer of 1942 was this deficiency gradually eliminated.

By the beginning of the 1942 winter offensive, all independent tank formations were equipped with radio sets. Still, the reform was not complete. As late as in November and December of last year, several reports in the military press clearly indicated that many infantry tanks still operated by visual and sound liaison alone. For instance, in one report describing the combined operation of infantry and tanks, the failure of the latter to execute their mission is traced to the fact that it took the tank battalion commander 45 minutes to transmit his orders from his advanced O.P. to his companies a few thousand yards behind. It is clear how the element of chance is increased at night under such conditions.

Following are translations of two accounts dealing with these first experimental night actions, with strictly limited objectives:

I. A Trench Raid

On one sector of the Western Front, several Russian attempts to capture prisoners for purposes of information (called in the Red Army, "control prisoners," or "tongues") failed consistently. The German defense lines were strongly fortified, extensively wired, and had mine fields in front of them everywhere. Their troops were alert, and an excellent system of sound and light signals spread the alarm all along the line as soon as one of the Russian raiding parties approached. It was decided to try a new expedient—a trench raid by a tank landing party. This method promised the benefits of a completely unexpected blow whose moral effect was likely to be stunning.

The drawbacks, on the other hand, were equally obvious. To drive a tank in darkness through a mine field and aim at one particular spot in the enemy's line was no easy matter, and a most careful preparation was needed to insure the success.

After a study of the terrain and the enemy's forward line, the objective for the raid was selected—a machine gun emplacement, with a shelter for the crew, sited on the skirt of a small wood in front of the German trench lines. A continuous day and night observation was established from two points. Officers in charge of the preparations supervised the two scout pairs and paid them frequent visits. The carefully kept logs were collated each day, and the officer in charge of the raid spent a great deal of time at both O.P.s.

It was established that the garrison consisted of five Germans. Usually only one of them stayed at the machine gun; the rest, except for the usual occasional errands, stayed in or behind the shelter. The latter was well built and equipped with a stove, which the Germans kept going all night from dusk until dawn. Behind the shelter a deep trench running to the north, connected the emplacement with the rest of the defense system. There was no trench to the south, which led the Russians to believe that the emplacement was a junction between two separate units. (See map.)

It was observed that shortly before 19:00 o'clock all of the Germans invariably gathered in the shelter and stayed inside for some time, apparently enjoying their supper. It was decided to make the raid at this time. It was the darkest hour of the evening, and the raiders could be sure of finding everyone at home.

Two tanks were assigned to the action, and a landing party formed of eight picked men, all experienced in scouting and close combat. Then preparations for the raid started.

Reconnaissance parties of engineers covered by infantry scouts spent three nights establishing the exact location of the mine fields in front of the enemy and de-mining them. On the last night the engineers were

joined by tankmen who went carefully over the proposed route of the raid, studied the landmarks which could guide them in the dark and made a detailed map. They also spent a whole day at the O.P.s studying the objective and the Germans' everyday routine.

In the meanwhile, preparations went on in the rear also. There, a section of the terrain was selected similar to the one to be attacked and a replica of the emplacement, shelter, and part of the trench was built. Then a painstaking training of the tank crews and landing party began. Every stage of the operation was gone over and over again—mounting, dismounting, the dash across No Man's Land, assaulting the shelter, mounting again, and then the final dash down the home stretch. The signal system was gone over till every participant knew it by heart. Finally, as each stage of the operation was worked out to perfection, a dress rehearsal with live ammunition and grenade-throwing, took place on the last day.

On the day before the raid, the battery commanders and the commanders of the mortar units were summoned to the observation point. They were shown the targets which they had to suppress before the raid and were made to study the time-table and system of signals to be employed during the operation.

As the result of all these activities, the plan of the raid, containing detailed instructions for all participants, gradually fattened and grew to the size of a miniature manual. Here is the outline of the plan: The opening signal, "series of red rockets," would be fired from the company's C.P.; then the supporting artillery, reinforced by two companies of 80 millimeter mortars, would open a 3-minute barrage on designated targets to the right and to the left of the objective. At the same time, one tank with a landing party would rush toward the objective at full speed, while the other tank would follow behind to a landmark approximately half the way across and would stay there to support the attacking tank, if needed. The landing party would assault the shelter, capture the "tongue," fire the signal, "series of green rockets," and retreat to the tank. At this moment, artillery and mortars would open another barrage. This time, a part of them would fire at the same targets, while the other part transferred its fire to the depth of the German defense. On their way home, the tanks were to be guided through the mine field by two lighted torches placed at the end of the mine-free corridor the minute the second barrage was opened.

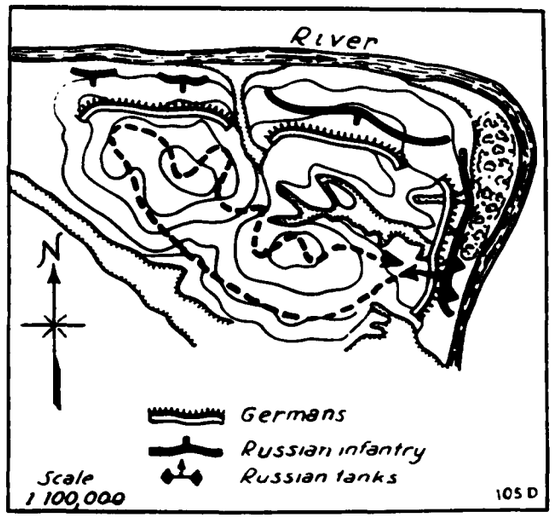
Everything went "according to plan" and fell only one minute behind shedule. The forward tank crossed No Man's Land and reached the objective in 1 minute, 30 seconds. A hail of hand grenades fell upon supping Germans. The first one to rush out (a corporal) was captured. The rest of the post was wiped out. The whole operation took exactly 15 minutes. The Germans were completely overwhelmed by the surprise and swiftness of the assault.

German Artillery opened up a minute after the landing party returned. After that, apparently anticipating a large scale Russian attack, they kept up an intensive fire in which all weapons joined all along the sector for almost 20 minutes. No casualties were inflicted by this belated retaliation which, in fact, proved rather helpful in establishing the German fire system in greater detail than had been known before. The landing party had two men wounded.

It was agreed that the complete success of the raid was due entirely to careful preparation and painstaking attention to the smallest detail.

II. Night Attack On A Fortified Position

On a sector of the Central Front, where a period of stalemate had existed for several weeks, the Germans occupied tactically important heights on the right bank of a river, while the Russians held a narrow strip of this bank down in the valley. (See map.) The German positions afforded an excellent field of vision of both river banks and a good field of fire. Tactically, this situation was rather typical of the Eastern Front, as the majority of Russian rivers run North and South and, as a rule, the western bank is the high one. The Germans, in their advance to the East, always had this advantage.



Several times the Russians tried to break this stalemate, but every attempt to take the height was repulsed. The Russian Command finally decided to try a night attack in which tanks participated. At night a tank unit was ferried across and concealed in the woods in the bend of the river. (See map.) As usual, in Russian accounts, the size of the unit is not specified, but judging from the description of the action, it can be assumed to have been a battalion.

All of the next day was spent in studying the terrain to determine the battle course for the tanks, organizing

the liaison and the signal system, and perfecting the plan of coördination between the different arms assigned to the action. In determining the best course of attack for the tanks, the morale factor was considered to be of prime importance. In order to enhance the element of surprise and confusion which, in the estimation of the Russian Command, the unexpected night attack by tanks was likely to create, it was decided to launch them on a wide-sweeping curve to the south and southwest to create the impression in the minds of the defenders that they were being encircled by large mechanized forces.

The tanks were deeply echeloned. The first echelon consisted of heavy tanks; the second, of light tanks with landing parties of 4 to 5 tommy-gunners on each. The tanks of the third echelon had infantry guns and anti-tank guns in tow. Their gun crews mounted the tanks. Shells were also carried on the tanks.

Before the attack, the Russian artillery opened a barrage at the forward edge of the German defense, and the fire then gradually crept into the depth and covered the possible roads of retreat. The signal for opening the barrage was given 30 minutes before darkness fell. This was considered to be just sufficient time for the tank echelons to pull out of the wood, reach the departure line of the infantry units, and take their place in the van of the attack.

A full moon facilitated the movement of the tanks. As soon as they reached their assigned place in front of the infantry, they opened up with all weapons. Outside of firing at the flashes of German guns, they were also helped by the light signals of the infantry which designated some of the targets.

Unfortunately, the Russian account[1] is somewhat vague as to the course of the battle. It states: "Pressed simultaneously from the front and the flanks, the Germans started a hasty withdrawal. The infantry following the tanks destroyed the retreating enemy and his fire means. The German artillery kept up a disorganized, unaimed fire, sometimes firing at their own infantry. Not a single tank was hit." Immediately after, however, the account states that the battle lasted for four hours until finally the tanks and the infantry gained complete possession of the heights. After that, ". . . the tanks maneuvered along the south and southwest slopes of the heights to give the infantry the opportunity of consolidating and fortifying the newly-won positions."

Apparently, the German retreat was not so panicky after all, as four hours seem a rather long time for a "local withdrawal"; and the cruising of the tanks after the battle tends to show that the Russian Command expected immediate counterattacks. These attacks, as the account itself reveals later on, did in fact materialize, were numerous and are described as varying in strength, sometimes up to a regiment. It seems, however, that they came after a considerable interval, possibly even the next day. All of them were repulsed.

Apparently, tanks did not participate in these subsequent actions. They retired to the woods for refueling and replenishing ammunition after it became clear that the position was securely held. They found there a maintenance detachment and supply trucks which had been ferried across the river while the action was in progress. The account states that the Germans left several hundred dead on the battlefield and a great deal of equipment. Prisoners (whose numbers are not specified) stated that "the attack was completely unexpected, and the surprise was over-whelming. The Germans thought they were completely encircled, and whole units became disorganized and took to flight."

Russian casualties are not mentioned, except for the fact that no tanks were disabled.

Vague as the account is, there seems to be no doubt that a decisive tactical success was attained; that the use of mechanized forces was the factor that insured it and thus broke the stalemate which repeated infantry attacks along more standardized lines had failed previously to achieve.

It is also stated that in the ensuing days, several similar attacks were made on this and several other sectors of the front and that all of them were successful and achieved results with negligible tank casualties.

The experience of these actions leads the Soviet reviewers to the following conclusions:

(1) Night attacks should be staged on moonlit nights when it is easier for tanks, as well as for infantry, to orient themselves and when the latter can help the tanks to locate targets and keep on the right course.

(2) Tanks should be deeply echeloned. Movement on a narrow front is not only easier in darkness, but creates in the mind of the enemy the impression of a great concentration, as they cannot estimate the number of tanks employed as easily as they can when dealing with a linear formation.

(3) Upon reaching the final boundaries of the attack, the tanks should not stop, but should continue to cruise around occupied positions to give the infantry the necessary time to consolidate.

(4) In night action, tanks need the assistance of infantry much more than in the daytime. Therefore, they should stay with the infantry throughout the engagement and, under no conditions, break away from it.

These two accounts illustrate how the first experiments, involving the new tactics of mechanized operations around the clock, were carried out.

From such unfortunately meager material as is available, it seems evident that lessons learned from such experiments as these were later applied in the great Stalingrad offensive, where tanks in night combat played a most important and decisive rôle.

[1]Written jointly by Major Jeguillo and Major Katzenelson

German Aerial Reconnaissance*

EVERYTHING that will shorten the time required for reconnaissance and preparation must be utilized. The aerial photograph is one of these things. It can be of great assistance to the commander of troops. It shows changes that have been produced in the surface of the terrain, either by nature or by the enemy, in time of war or peace, that are not or cannot be shown on the map made earlier. . . . Poor and old maps especially need such supplementary information. But if there are no maps of the proper scale available, then it is only the aerial photograph that can be had in relatively short time to take its place.

Hence, generally speaking, the aerial photograph possesses the valuable characteristic of being able to supplement and, in exceptional instances, to replace the map. Reconnaissance by means of aerial photography offers itself as a supplement to or substitute for ground reconnaissance. As a rule, aerial reconnaissance by means of photographs will be possible at a time when ground reconnaissance is out of the question, and on the basis of it, certain measures can be taken at a very early point in the operations. This early information may later be supplemented by ground reconnaissance.

It might also happen that a considerable number of reconnaissance missions would have to be started at the same time. In this case a previous division of effort into aerial photographic and ground reconnaissance will be advantageous, or in all instances, previous reconnaissance by means of aerial photography may be carried out and then after the elimination of the cases in which the aerial photograph suffices, the principal terrain to be covered by ground reconnaissance may be chosen. There is always, however, a gain of time and a saving of forces—factors that are particularly important. . . .

The advantage of aerial photographic reconnaissance in comparison with ground reconnaissance, lies mainly in the rapidity and timeliness with which it can be carried out within the limitation set by the type of plane used, and the distance at which the object to be photographed is situated. (Among other things, it may still be in the hands of the enemy.) But aerial photographic reconnaissance also has its limitations. It is well to have a clear idea of what may be expected of it and what must be left to ground reconnaissance.

In Connection With Battles for Rivers

We shall now consider in detail these limitations as far as they affect reconnaissance. As a river sector is approached, the commander will desire to know at an early moment whether any bridges exist or whether known bridges are still intact; which bridges are destroyed and the nature and extent of damage that may have been done to them; and the location of suitable bridge and crossing sites. The presence or absence of bridges can be told from the aerial photograph, as well as the extent of the damage in case the bridges have been blown up, especially when the photographs are taken at a sloping angle or when shadows are being cast from directly above the object. In both cases, the construction of the bridges and the absence of important works, particularly piers, is to be noted so that from this the type of repairs to be made may be considered, the material and labor that is going to be required calculated, and march and transportation movements initiated.

The aerial photograph also gives us information concerning the width of a river, the level of the water, the bank characteristics, possibilities for cover, the routes leading to and from a position, stores of construction material, etc. *On the other hand, any information regarding the velocity of the stream, depth, nature of the bottom, and the load capacity or preparations that have been made for the destruction of a bridge is not available from an aerial photograph.*

Barricades and Highways

Also in battle at barricades and on highways, aerial photographic reconnaissance comes to the aid of the commander since, in choosing highways for the advance of the troops or for supply columns, those that show the least and most easily passable barricades may be chosen in advance.

It is also easier to find in the aerial photograph opportunities for circumventing these barricades. Discernible in an aerial photograph are nearly all types of obstacles such as shell craters, mountain roads on steep slopes that have been blown up, tree-trunk barricades, concrete walls, obstructions in streets caused by the debris of wrecked houses, road blocks, etc., *but not, however, mines planted on highways, or mine fields forming obstructions which bar progress over the terrain.* Other terrain obstacles such as concertina type entanglements, stake barricades, antitank ditches, inundation, are usually not difficult to detect.

Most of these terrain obstacles are built in connection with field or permanent fortifications. The course followed by the obstacles gives a clue to the location of the fortifications. Paths made over the ground by persons on foot, and cable trenches poorly grown over by grass offer further clues. Also, such centers of resistance as bunkers, fortifications, battery positions, etc. are more or less easily recognized in an aerial photograph. This depends on the degree to which they are camouflaged and the thoroughness of the work.

Bicycle reconnaissance troops are greatly limited in their ground reconnaissance by distance and the situation of the enemy—factors which do not affect aerial reconnaissance.

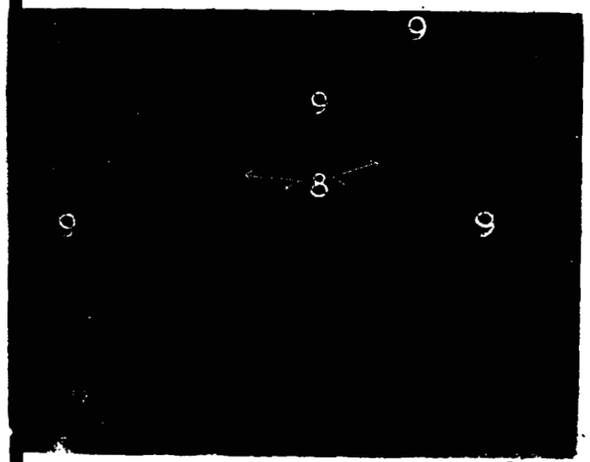
Conclusion

Hence we see that in preparation for the advance and the attack, aerial photographic reconnaissance is an almost indispensable help. We should not forget to make use of it in defense, as well. An examination of our own camouflage measures, especially those protecting our fortifications, is certainly profitable. The preparations and assembly points for attack over defended water courses and on our own obstacles and positions, can be recognized by the enemy at an early stage and he may take measures against them.

*Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Colonel Rossmann in *Militär-Wochenblatt* October 16, 1942.

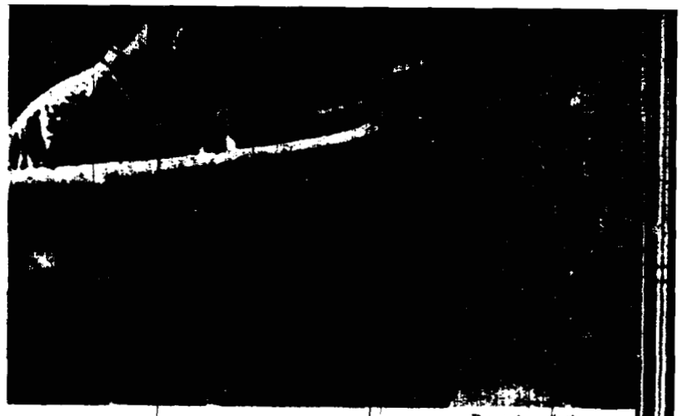
Black Star

This German photo shows an interesting view of Kiev, the capital of the Ukraine. In addition to the road bridge across the Dnieper, there can be seen preparatory works for another road bridge, also a ponton bridge in construction.



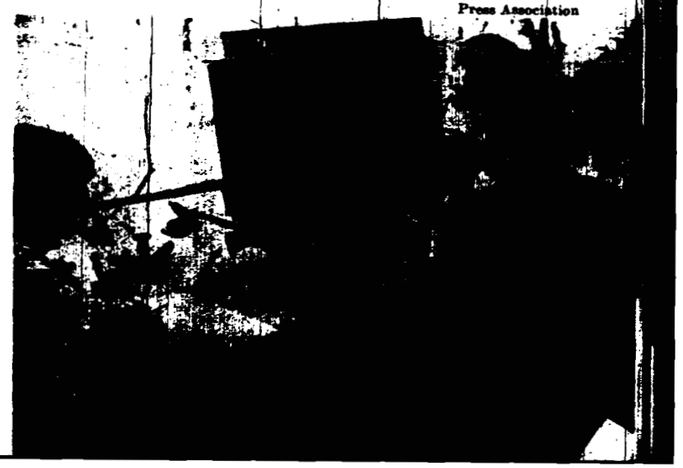
Black Star

This German reconnaissance photo, received from neutral sources, shows English antiaircraft defense before Tobruk. Ramparts of sandbags three meters thick (8) and light antiaircraft guns (9) protect the heavy antiaircraft batteries. The German caption on this picture says that a few days after this air survey, some direct hits were made on this position and all guns were silenced.



Press Association

Pictures of London taken from German long distance reconnaissance planes, are studied by these German airmen. Film is spread out of doors for drying prior to picking out the best film for reproduction.



Press Association

This German officer sitting before a special apparatus is making practical use of the photos taken by reconnaissance planes over enemy territory.

A Panoramic Impression of a German Panzer Division Moving Into Action, 1940*

Drawing by Captain Bryan de Grineau

ONE of the gravest errors ever made by our (British) War Office was the neglect of tanks, whose force and power were only tardily recognized when the Germans released their full fury against the Low Countries, although many years ago we worked out effective schemes of attack with fast moving tanks combined with close-support aircraft.

The Germans built up a force of some fifteen armored divisions, each consisting of about 400 tanks of mixed types, with accessory units. A *panzer*, or ironclad, division is a completely self-contained unit. In addition to the tanks, there is a squadron of supporting aircraft to each division, a mechanized reconnaissance unit, consisting of motorcyclists and light armored cars, a field artillery detachment mounted for swift and mobile operations, an antitank battalion, an engineer battalion for the maintenance of roads and bridges, and a mobile repair and supply unit with traveling workshops.

When a panzer division proceeds into action, as demonstrated in Captain Bryan de Grineau's panoramic impression of the advance of a panzer division in Greece, the real weight of the onslaught is sustained by the four battalions of 100 light, medium, and heavy tanks.

At that time the most numerous type in action was the medium and very fast tank of about 20 tons, armed with a 37mm gun, two machine guns, and with armor about ⅛ of an inch thick. It was operated by a crew of three.

The normal heavy tank carried a 75mm gun, 2 machine guns, a crew of five, cruised comfortably at 30 m.p.h., and shipped a formidable load of ammunition.

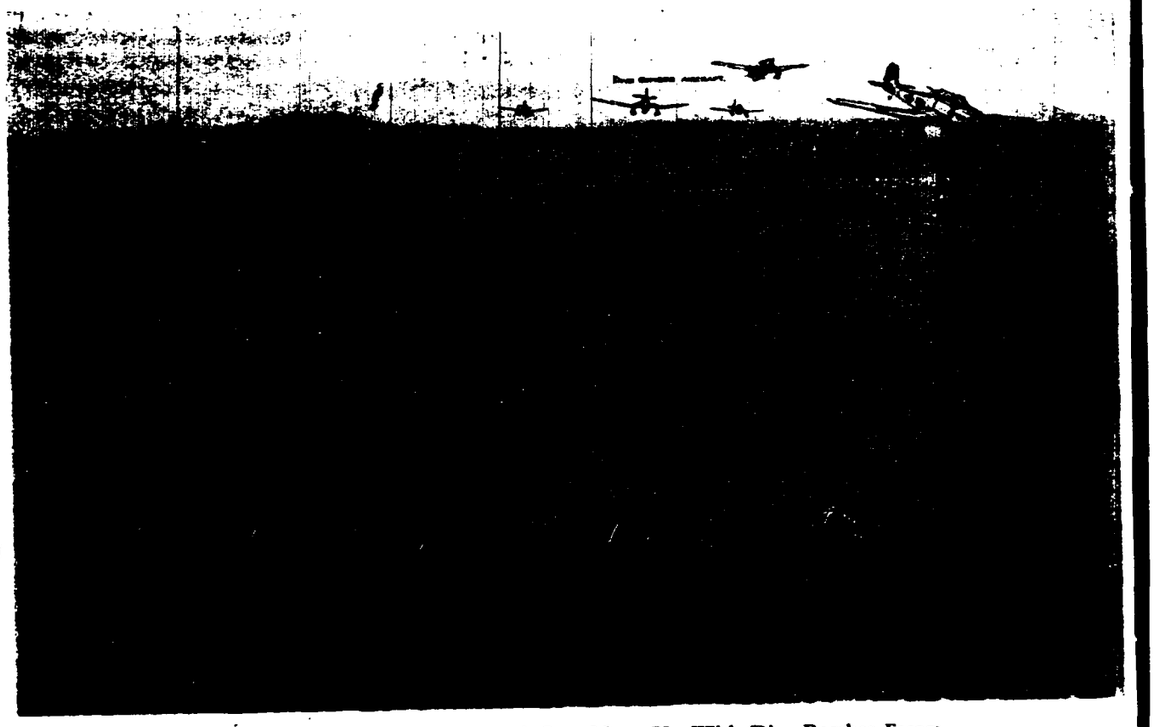
Most dangerous of the monster tanks encountered at that time was that weighing about 36 tons. It had a quarter-inch of armor, carried two 105mm guns able to fire high explosive, and a 47mm antitank gun. It had a crew of eight.

When the panzer divisions attacked the Low Countries and Greece, the primary object was speed. Stukas bombed and machine gunned enemy positions, and, in fact, took the place of the artillery barrage of the last war. Meantime, the advanced scouts, on motorcycles, armed with tommy guns, light machine guns, and grenades, reconnoitered openings to find the weakest spot. Once a wedge was driven in, the light tanks penetrated as deeply as possible, struck at communications, gun lines, and headquarters, and sent back wireless information to the heavy tanks, which swept through like a giant battering ram.

It is doubtful if any of the heavier German tanks were put out of action during the Battle of France.

Captain Grineau's panorama, showing all units in action, explains itself. The motorcycle scouts advance on a position, and all other units of a division move forward in support—tanks, guns, infantry in lorries, with petrol and ammunition lorries bringing up the rear, and the dive bombers acting as escort and in action.

*Courtesy *Illustrated London News*.



Tanks, Motorcycles, and Armored Cars Move Up With Dive Bomber Escort

Tanks vs. Fire Power, 1942-43*

ROMMEL lost a large proportion of his tanks in North Africa. The Allies pursued his forces with tanks. In Russia, Poland, France and elsewhere, the panzer divisions thrust forward as the spearhead of the attack. The Allies have learned the lesson of the panzer divisions, but have the Nazis any surprises to spring?

In considering the use of the tank, it seems to be indicated that the second great tactical revolution of the war has taken place, for the original panzer formation has undergone profound modifications.

Two factors have apparently been responsible for changing the original formation of close-packed tanks headed by scouts and accompanied by supporting units of all arms.

First, there was the counter-tactics of the Russians; and, second, the German necessity of countering tank attacks in North Africa. The panzer has become a defensive as well as an offensive formation. The change was effected mainly by increasing the amount of infantry support, and by a greater use of artillery.

It is a most significant change, and not only because of its encouragement to those who regard Germany's conquest phase to be now at an end. Far more important to serious military minds is the aspect, in relation to the coming task of attacking Germany ourselves, that the panzers may well prove as formidable in defense as in offense, especially if we don't move quickly with the times and understand clearly that the days of fast-moving, independent tank formations are nearly at an end.

The Russians carefully studied the German campaigns in Poland and France. They were temporarily upset by a surprise change of German tactics at the beginning of the Russian invasion; instead of sending panzers in deep thrusts across the country, as in France and Poland, the Germans used their armored columns in Russia like whips, penetrating so far, then turning back in attempts to encircle whole armies.

The Russians, on their part, concentrated on cutting off the speeding panzers from the main German infantry and artillery formations behind.

This led to all sorts of German dodges planned to hold territory till the infantry and guns came up—notably the digging-in of tanks and converting them into steel fortresses from which groups of infantry could set out to keep communications clear and resist counterattacks.

When such counterattacks were delivered by heavy Russian tanks, the Germans had to improvise even more drastically. They found that the ordinary small antitank guns with which the panzers were equipped—3.7 cm. and 7.5 cm.—were quite inadequate to keep the counterattacking Russian tanks at bay.

It was then that they brought down the muzzles of some 88mm antiaircraft guns, and used them to some effect at close quarters as antitank weapons.

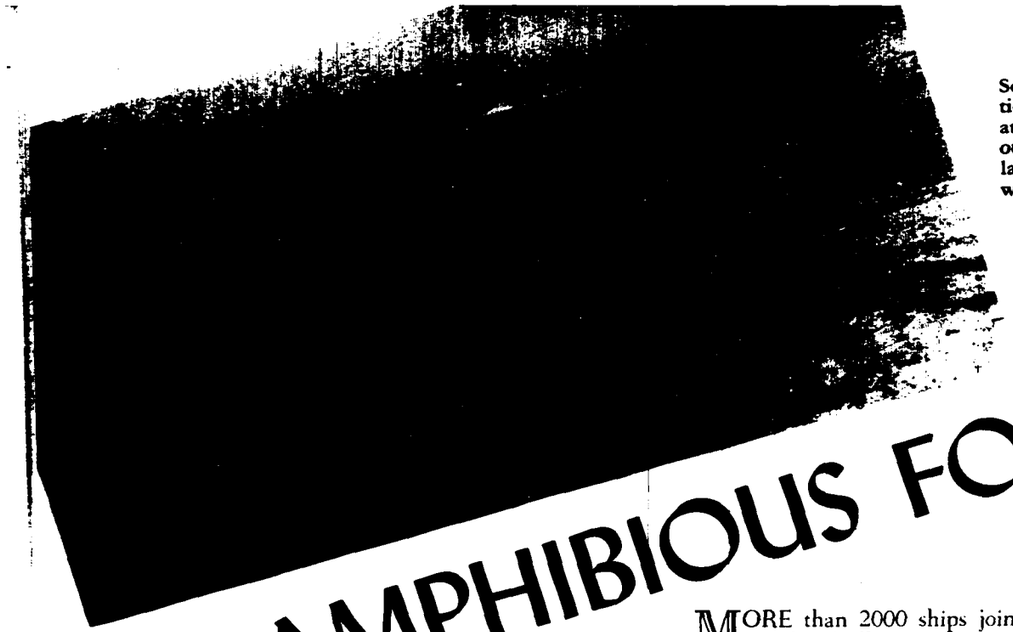
The German General Staff has a rule whereby tactical lessons such as these are embodied at once in Field Regulations. In other words, there is *no gap between the lesson and its adoption in general practice throughout the Nazi army*. Thus Rommel in Africa was apprised of the Russian antitank tactics and advised to make suitable dispositions accordingly when the British attacked.

At first, our armored brigades set out very much like the original German panzers, as if expecting to encounter similar enemy formations. They *did* meet German tanks, but these were often decoys, leading them straight into the close range fire—hidden by artificial smoke and other stratagems—of the German guns. These were of a greater caliber than the ordinary antitank gun that our tanks had been designed to meet, and many tanks were destroyed by them.

It has been demonstrated that powerful artillery, provided it can be mounted on tractors and brought quickly to strategic points, has the measure of today's tanks.

The tanks of tomorrow, indeed, may have sufficiently strong armor to resist big guns. *It will be a race between tank armor and gun-power.*

*Reprinted from *United Services Review*. (See also General *Haukins' Notes*. Jan.-Feb., 1943.)

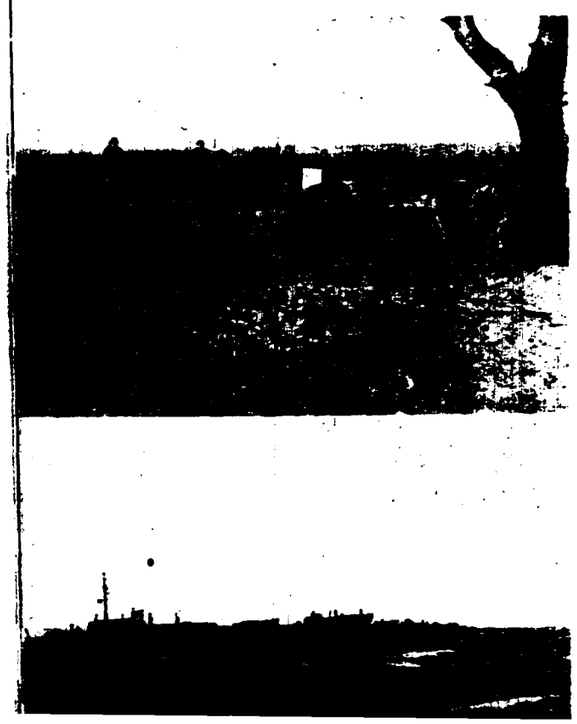


Soldiers unload ammunition from a landing barge at an East Coast amphibious training base as other landing craft move in towards shore from a Navy transport.

U. S. AMPHIBIOUS FORCES

Official U. S. Navy photographs

An Army jeep rolls off a landing barge and onto a specially built wire net road at an Atlantic coast training base.



MORE than 2000 ships joined in the greatest armada of all time to speed the United Nations invasion of Sicily.

Beachheads were established by fighting forces from the radically designed and highly-specialized fighting ships, many of which pushed their way across the Atlantic under their own power.

For some time, a unified invasion force, composed of picked Army and Navy officers and men, has been training for assaults on enemy territory.

Because of the complex nature of amphibious operations, the training program is both broad and intensive. Every officer and man in the Force must understand not only his own task, but the part that will be played by the other units involved.

Naval personnel assigned to the "Amphibs" are selected on the basis of outstanding records in service or in the classroom, and for excellent physical condition. The result is a group young, enthusiastic, and capable of meeting the extraordinary demands of its dangerous assignment.

They are sent to one of the bases of the Amphibious Force, where they begin their specialized training. They study seamanship, piloting and navigation; they drill in gunnery, ship and plane identification, and the highly intricate communications methods necessary to carry out a landing with dispatch.

At the same time, the Army selects units which have already had thorough training in the infantry or the armored forces, and assigns them to the Amphibious Force.

The enlisted men are given a tough conditioning course to prepare them for the hard task that lies ahead, and then receive basic amphibious training. They learn to clamber over the sides of ships and down into the small boats pitching below; they are taught to come ashore from the landing craft through rough water and still keep their equipment dry; they study the tactics of surprise attacks.

The sturdy ocean-going LST, with the lighter landing craft mounted on its decks, plies its way across the Atlantic bound for North Africa.

This landing craft is called a "crocodile boat." Here a tank rolls down the steel ramp to the beach during training maneuvers.

Meanwhile, the Army officers go to another base, where, with Navy officers, they learn the art of amphibious operations. They study strategy and tactics, and the proper methods of liaison between the many organizations involved. Great stress is laid upon communications.

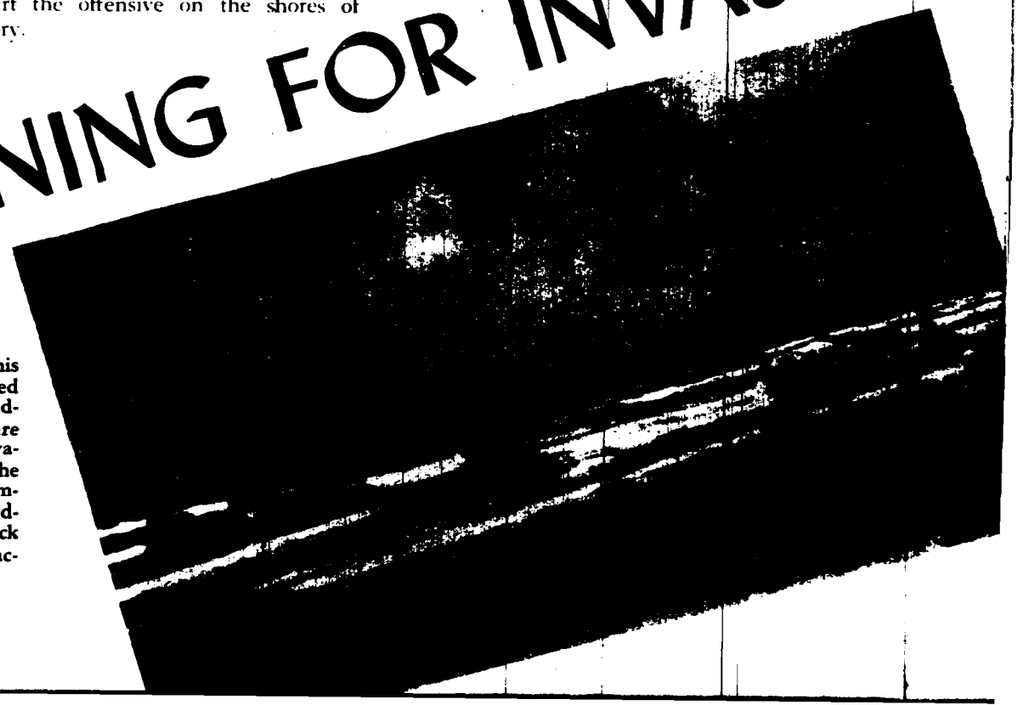
Working with large scale models of the ships attached to the Amphibious Force and also scale models of the equipment that will be used, the Army transport officers work out the intricate problems of so loading the ships that the equipment may be unloaded swiftly and in the proper sequence when the landing is made.

When all units have completed their basic training, they are assembled for advanced training. The crews of the small boats are assigned to the transports aboard which they will serve; the flotillas of larger landing craft are formed; the Army troops go aboard the transports. Then dress rehearsals of actual landing operations are run through. The ships are loaded for combat operations with the needed supplies and equipment. The convoy then sails for a selected practice landing beach, and actual landings are made under simulated battle conditions, with the beach "defended" by opposing troops and with aircraft and Naval combat vessels taking part.

This is the Amphibious Force—a strong, well-drilled invasion spearhead which will carry the fight to the enemy, to drive ashore from a convoy with perfect coordination, to start the offensive on the shores of enemy-held territory.

Army troops stream out of an LCI and "hit the beach" during practice invasion maneuvers along the Atlantic coast.

TRAINING FOR INVASION



Landing craft like this were used by the Allied amphibious forces invading Sicily. This picture was made during invasion maneuvers along the African coast. U. S. amphibious crews are paddling in rubber boats back to their LCI after a practice landing.

Tactical Exercises and Maneuve[illegible]ormations for a Cavalry Division

by Brigadier General Hamilton S. Hawkins, Retired

Herein are valuable training suggestions, with details left to be worked out by the division, brigade, regimental, and separate unit commanders.

IN ORDER that the division, and any of its component units, can be handled quickly and with greatest mobility, each unit must have a number of set formations that can be understood by all in a few established words, which become common language to everybody without the necessity of describing them in detail every time an order is issued or reference is made to them in instruction or conversation.

Except when the division, or any smaller unit, is marching in route-order in protected or safe areas (even safe from airplane attack), it does not march on roads. It must be able to move across country in any direction—forward or backward, left, right, or toward any ground feature or point of the compass—merely by the issue of a few simple words of command or brief vocal or written messages. These set formations enable such movements to be started almost instantly.

Aside from route marches, the division has to understand only a few set formations which are named "Maneuver Formations." These Maneuver Formations are practically deployed formations, either as foragers or lines of squads or platoons. No unit larger than a platoon is in close order. They are convenient for cross-country movement, for dispersed defense against air attack, artillery fire or small arms fire, and for quick dispositions of all units for combat.

EDITOR'S NOTE

Well known to most CAVALRY JOURNAL readers, General Hawkins needs no introduction as a sound tactician. To officers who once served under him, his methods of training and ability in the field are equally respected.

This outline for tactical exercises and maneuvers is based upon General Hawkins' personal experience while in command of the 1st Cavalry Division.

By utilizing the four Maneuver Formations of the division, the commander can issue quickly, by voice to his commanders, or by message or radio, his brief orders for the direction of march—the Maneuver Formation No. 1, 2, 3 or 4—and the rate of march. Thus, it is like giving drill commands to a small unit. The division can accommodate itself to the terrain, change direction or formation or gait, and immediately be ready for combat of any kind in a very short time.

In daytime, cross-country movement is made easier and safer. At night, the columns must be condensed in the manner of route order marches, although they must be across country.

DESCRIPTION OF THE MANEUVER FORMATIONS

Each squadron (or artillery battalion) has one standard Maneuver Formation. It is really its best combat formation—*a line of troop columns of platoons*, as foragers or each platoon in *line of squad columns*. The squadron commander can alter the formation to suit conditions, but the squadron must be able to move in any direction at any gait—forward, backward, right, or left.

Each regiment has two Maneuver Formations.

No. 1 Maneuver Formation is *Line of Squadrons*. Formation A, as prescribed in the Cavalry Field Manual, 1940, Par. 261, is satisfactory.

No. 2 Maneuver Formation is *Column of Squadrons*. Formation C. of the Cavalry Field Manual is satisfactory.

In both formations, the deployment and arrangement is suitable for immediate disposal of the units into any order for combat, the squadrons being practically in combat order at all times.

Each brigade has three Maneuver Formations.

No. 1 is *Line of Regiments* on *(such a regiment) at (so many) yards interval. Regiments in Column of Squadrons.*

In this formation the special units, such as weapons troops, communications, etc., have specified places; also, the artillery battalion, if one is assigned, has its place.

Each regiment is in the Maneuver Formation that the circumstances or terrain seem to indicate to the regimental commander as suitable. No. 1 is the habitual brigade formation.

No. 2 is *Column of Regiments at (so many) yards distance, in Line of Squadrons.*

No. 3 is *Column of Squadrons at (so many) yards distance between Regiments.*

The division has four Maneuver Formations.

No. 1 is *Line of Brigades at (so much) interval.*

No. 2 is *Column of Brigades in Line of Regiments at so much) distance.*

No. 3 is *Column of Regiments in Line of Squadrons.*

No. 4 is *Column of Squadrons.*

Each of these formations has a specified order for all component units.

It must be emphasized that the reason for these formations is the necessity in modern warfare for cavalry to march, not on roads, but across country and, except at night, in extended order. Furthermore, orders can be given and the division put in motion much quicker, and any dispositions for attack or defense can be made more easily and quickly from these Maneuver Formations than from the old columns of fours or twos.

It will be noticed that in these formations no advance guards are used. Covering detachments are more mobile, more under control and better in every way when maneuvering across country.

Another important consideration is that the war in Europe has shown that with adequate equipment of antitank guns, the enemy tanks can be stopped if the enemy airplane attacks can be neutralized or rendered ineffective. In addition to support from our own airplanes, troops on the ground must learn to maneuver in dispersed formations.

In any movement the division commander has only to order: for example:

"Division marches on (point or direction) 6 miles per hour. Maneuver Formation No. 1—*Line of Brigades on 1st Brigade*, Interval between Brigades—1500 yards." Or, "Maneuver Formation No. 2—*Column of Brigades in No. 1 formation*. Distance between Brigades, 600 yards."

Such things as covering detachments and combat patrols are attended to by brigade commanders or regimental commanders if regiments are abreast in the brigade.

Of course, when roads can be used, the ordinary system of Route Columns is used; but this will not be possible in the theater of operations except sometimes at night.

DESIGNATION OF TERRAIN OBJECTIVES

When the division commander issues such an order, the brigade commander of the base brigade has only to order, for example, "Brigade marches at once on (such a feature, point or direction), 6 miles per hour. Ma-

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NOTE: The intervals and distances as shown in the text and on the charts are approximate. They are subject to variation and may be changed to fit the situation and terrain.

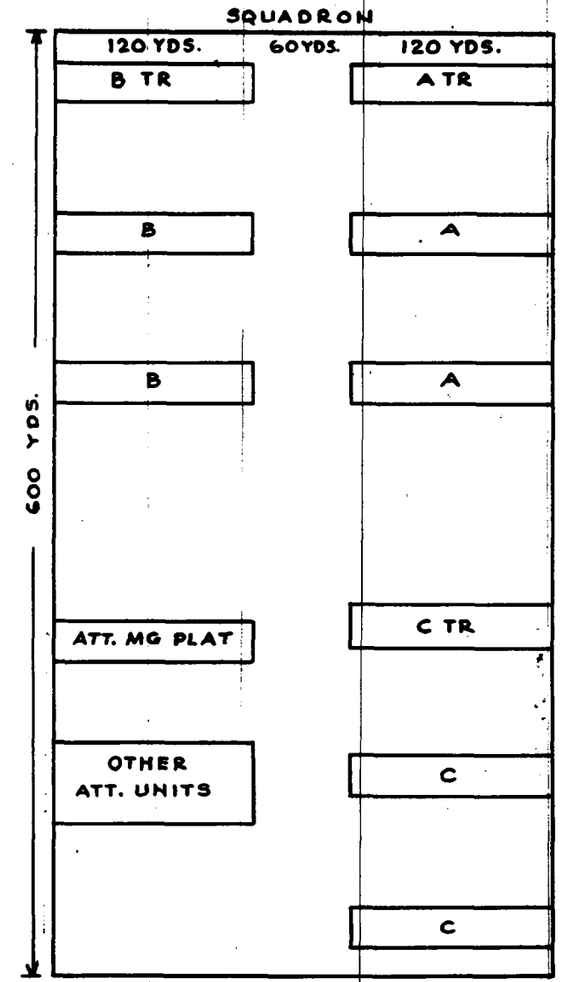


CHART NO. 1

Cavalry Rifle Squadron Maneuver Formation

The Cavalry Squadron Maneuver Formation will occupy a rectangle of approximately 300 yards in width (or front) by 600 yards in depth. This span is variable, but for purposes of this chart it is assumed that the squadron is in *Line of Troop Columns of Platoons*, with one troop held back 200 yards in reserve.

The habitual formation of each troop is a Column of Platoons, with 100 yards distance between platoons.

The platoon is deployed in line with at least 5 yards interval between troopers, or in Line of Squads.

The squad is usually the only unit which at times may be in close order. But, on some kinds of terrain, the platoon may move in Column of Squads.

Combat Patrols and Covering Detachments are not included in chart rectangle.

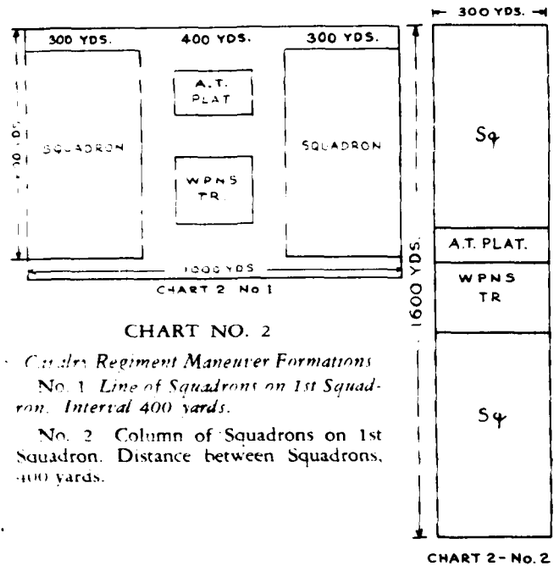


CHART NO. 2

Cavalry Regiment Maneuver Formations

No. 1 *Line of Squadrons on 1st Squadron. Interval 400 yards.*

No. 2 Column of Squadrons on 1st Squadron. Distance between Squadrons, 400 yards.

neuver Formation No. 1, *Line of Regiments on 5th Cavalry*. Interval, 1000-2000 yards." Or, "Maneuver Formation No. 2, *Column of Regiments*. Distance between regiments, 1000 yards." He may order, "Follow me," without giving the direction if he is going to lead.

Regimental Commander, 5th Cavalry, orders, "Maneuver Formation No. 1, *Line of Squadrons on 1st Squadron*. Interval, 400 yards; follow me.

Regimental Commander, 12th Cavalry, orders, "Maneuver Formation No. 1, *Line of Squadrons on 1st Squadron*; follow me," and leads his regiment to its position, etc., etc.

Each unit commander may make any special arrangements he deems wise after the start is made. Initiative is expected. The order of the next higher commander requires only the relative positions of his units, the direction and the rate of march.

Any regimental commander who has a front of his own, puts out his own covering detachment and combat patrols. Thus, once the movement is initiated, the division commander relies on his subordinates to do the right things.

These standard formations must be had, also, for artillery battalions, engineers, signal troops, various headquarters. The positions in the division of artillery battalions, engineers, reserve units, are all specified in the standard formations for each of the four Maneuver Formations.

Must Have Horses Available

Units that are motorized have to do the best they can. Across country, they may not be able to go; if so, they must be left behind. The mobility of the division must not be confined to ground where motors can go. On such ground, the enemy mechanized forces would outmaneuver the cavalry division because they would move faster than horses. There must be no competition in mobility between horse units and mechanized units on ground favorable to the latter. Division Headquarters, therefore, as well as Brigade and Regimental Headquarters, must be mounted on horses, as well as have motors for use where they can be used.

Supply

The supply trains of the Division are motorized. There are usually roads leading to various points behind the division where supplies can be sent for the different regiments and separate units. These are established at points as safe as can be found with several days' supplies. When the division moves forward these points are advanced. When the division retires, new points are established farther in rear or near the locations toward which the division is moving. The division ought to be able to carry several days' supplies with it on pack saddles, in saddlebags, or by vehicles when this is practicable. When the units run completely out of supplies, they must send packs back to the supply points or retire toward those points temporarily to get supplies to carry with them for several days more. Of course, when an emergency demands it, the troops must do without supplies, except ammunition, for a day or two. Resource and expedients come into play.

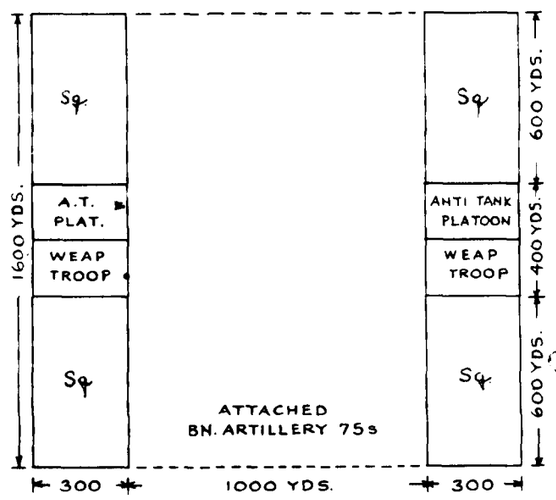


CHART NO. 3

Brigade Maneuver Formations

No. 1. *Line of Regiments in Column of Squadrons. At (1000 yards) intervals.* (This is the habitual Brigade Maneuver Formation.)

No. 2. *Column of Regiments* in *Line of Squadrons* would be one regiment following the leading regiment with the ordered distance between them, and attached artillery in the spaces between regiments or following the rear regiment. This column would be about 2400 yards long with a front of 1000 yards.

No. 3. A simple Column of Squadrons, would be over 4000 yards. A Line of Regiments in Line of Squadrons, with 600 yards interval between regiments, would have 2600 yards front and only 600 yards depth.

After these Combat Formations for every unit in the division have been established and learned, the Division practices its first tactical exercise.

Tactical Exercise No. 1

The division, less its trains, is assembled in any convenient order and place without regard to relative positions of the larger units. The division commander appears in the area, assembles his brigade, artillery, and separate unit commanders. He gives them brief orders as suggested above and starts them on their way across country. He tells them that they are going to be attacked by airplanes and that the whole march must be made with that in mind. The necessary dispersion must be made at once and maintained until the destination is reached, perhaps some five or ten miles away. When the destination is reached, he changes the direction of march and orders another Maneuver Formation. If there is room and time he does this several times and brings them back by such means to the starting point near their camps or station.

This is simply an exercise in using various communications to send orders and control the division—to "sling it around," so to speak, while in more or less dispersed order.

Tactical Exercise No. 2

The division commander tells his commanders he is going to *march to a certain line or point, by a circuitous route*, for a reconnaissance of the area and for a short distance beyond the objective toward which they will march. He gives the Maneuver Formation to be taken, perhaps with greater intervals between the larger units. He changes direction at proper points to follow the circuitous route. He may have to change the formation to accommodate the division according to the terrain. Woods, rivers, or mountain passes may have to be traversed. Towns or villages may lie in his path and be passed by, or avoided, and perhaps reconnoitered. Having arrived at his destination, he halts in readiness for anything, and requires his brigade commanders to send out patrols to reconnoiter areas in their front and flanks. Only very short distances are used for this, as it is only an exercise, and he wants to avoid long delays and tiresome or boring waiting for patrols to return. Perhaps, he permits the units to have lunch during this time.

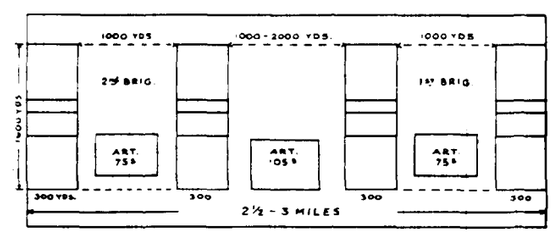


CHART NO. 4

Division Maneuver Formations

No. 1. *Line of Brigades at* (1000 to 2000 yards interval). *In Line of Regimental Columns* (No. 1 Brigade Maneuver Formation) Division Reconnaissance Squadron and Division Engineer Squadron are given separate orders.

No. 2. *Column of Brigades* would have each brigade in its No. 1 Formation, with 600 yards between the leading and the following Brigades. The front would be 1600 yards; the depth about 3800 yards.

No. 3 and 4. These in simple Column of Regiments or Squadrons when the lateral space is very narrow. *Column of Regiments*, each in *Line of Squadrons*, will have a front of 1000 yards and a length of about 4800 yards. A *Column of Squadrons* throughout would be over 5 miles long.

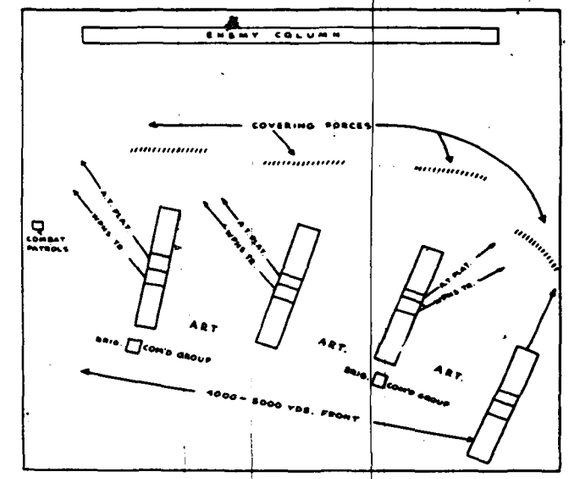


CHART NO. 5

Tactical Exercise No. 3

Division Reconnaissance Squadron may have preceded the division at beginning of movement, but is now replaced by Covering Forces and is operating far on right flank to discover rear of enemy column, or is retired to rear to guard the rear of the division.

Other groups, such as Engineer Squadron, are back with the trains.

Then he marches back by a different route, but always across country, and under the assumption that strong forces of the enemy are following at six or eight miles distance; and the division is put into a *defensive position*, which requires it to halt and turn about to face the enemy. The position is only for a delaying action not very far from camp. It is done rapidly, and then the units are dismissed.

Tactical Exercise No. 3

The division is marched across country by similar means with the idea of *striking in flank an enemy*

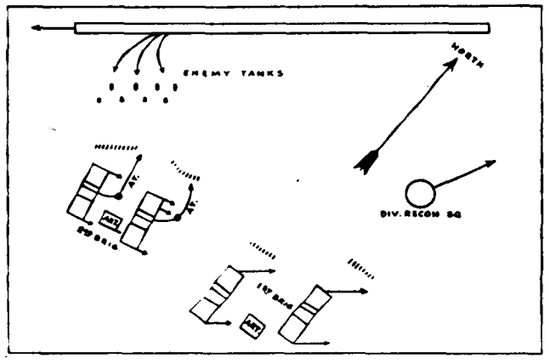


CHART NO. 6

Tactical Exercise No. 4

Leaving AT guns to fire on enemy tanks and then fall back and rejoin division, the division commander orders "Column of Regiments on 1st Brigade march N.E." All units turn to right and follow 1st Brigade. Division Reconnaissance Squadron moves to find motorized troops of enemy which are not protected by strong groups of tanks.

motorized or marching column supposed to be moving on a certain road not very far away. When the road is in sight of the covering forces, the division halts and prepares for fire action against the enemy column. The handling of the division reconnaissance squadron is important here. Concealment while marching, and a sort of ambush position are emphasized. Employment of covering detachments and security patrols on the flanks of the brigades are important. The return march is merely another exercise in moving in one of the Maneuver Formations across country.

Tactical Exercise No. 4

This is the same as Exercise No. 3, except that while moving on the assigned mission the division meets a small mechanized force of the enemy. Antitank units go into action and then retire rapidly, while the division is moved back and then maneuvers several miles around one flank in order to gain the flank and rear of the enemy tank units and attack the motorized units of infantry that follow the tank units.

This requires speed and initiative on the part of subordinate commanders, and rapid communications from division commander to subordinate commanders. The division commander must use brief orders changing the direction of march and using appropriate Maneuver Formation.

For example, he could send a message: "All units to the right (northeast) in *Column of Regiments, Maneuver Formation* No. 3. All antitank units rejoin their commands. Rate of march, 8 miles p.h."

Then, after a half hour: "Slow down to 5 miles p.h. Change direction to north, *Maneuver Formation No. 1 —Line of Brigades on 1st Brigade*; interval, 1800 yards."

Then, perhaps, he makes another change of direction so as to curve around to march directly upon the flank of the supporting motorized columns of the enemy.

This exercise is difficult and requires much practice and initiative on the part of various commanders. Previous practice in Tactical Exercise No. 1 is important.

Use of the division reconnaissance squadron is important to guide the division. This squadron, however, must not give away the presence of the division behind it. If it cannot negotiate the terrain across country, it should be left behind and reliance placed on the mounted covering detachments of the brigades. Scout cars should not be used in front. They would give warning to the enemy.

Tactical Exercise No. 5. Delaying Actions

Delaying actions are of two different kinds. Action against mechanized forces and action against infantry. A third kind would have to be considered if enemy has cavalry. Delaying actions involve both defensive action and attacks.

Delaying Actions Against Strong Mechanization

This requires great mobility and independent action on the part of component units of the division. The mechanized enemy will stick to roads or their vicinity, or to ground that can be traversed easily. Tanks, however, have developed considerable mobility across country. This must be considered by cavalry commanders.

Since the division reconnaissance squadron and the division antitank troop will be motorized, they will presumably have as much mobility on any given terrain

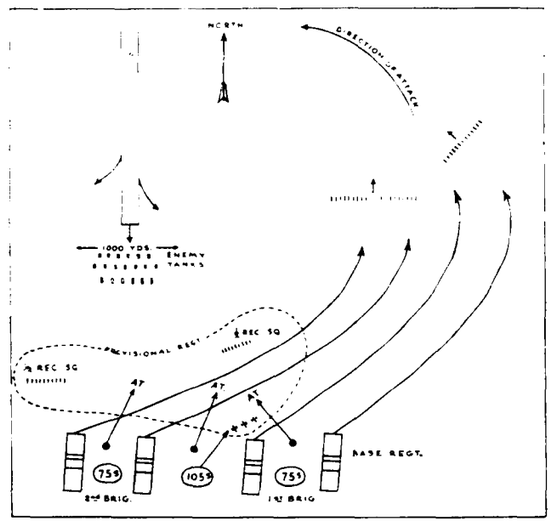


CHART NO. 7

Tactical Exercise No. 5

After sending out the provisional regiment, the division commander orders *Brigades Right Oblique to North East.* Engineer Squadron (if available) moves up to join provisional regiment.

as the hostile mechanization. It would, therefore, be safe for the division commander to oppose frontally the advance of the hostile mechanization by using the reconnaissance squadron supported by the antitank troop. These forces could be reënforced by the antitank platoons of the brigade weapons troops. Sufficient scout cars must be used on the flanks to detect the wide turning movements that the enemy mechanized forces will often use to get around in rear of the delaying forces. Reports of such movements by radio (in the clear) from scout cars will enable these delaying units to withdraw in time. Of course, scouting airplanes will be of great service also, especially in daytime.

Now, therefore, in this tactical exercise, the division commander will combine his *reconnaissance squadron,* all antitank units, and his *engineer squadron,* into one command to fight delaying actions in front of hostile mechanized advance. The *motor battalion of 105 howitzers* from the artillery regiment will also be a part of this command.

This command must be organized and used in practice. A colonel and several assistants in motor cars should command it. It will use roads and such cross-country as may be feasible. It must have a dispersed formation to provide for enemy air attacks. It must have a name such as *Provisional Antitank Regiment*; but it is not assembled as such until the need for it is apparent. The division being in any formation, the order is given, "Provisional antitank regiment assemble at (point)." All units assigned to this provisional regiment leave their regular organization and proceed to the assembly point.

In addition to those means of delaying an enemy mechanized advance, the division commander sends his brigades, each supported by a battalion of 75mm howitzers, around across country to attack the flank and rear of the enemy mechanized column. These continuous attacks are especially directed against the motorized infantry supporting the enemy tanks.

The exercise is initiated by an oral, or dictated, or written order from the division commander, something as follows:

"Division fights delaying action against hostile mechanized force moving (south) along or near road between (such points). Provisional Antitank Regiment moves at once on (such point) to oppose enemy movement.

"The division, less provisional regiment, marches on point or direction), 6 miles p.h., *Maneuver Formation No. 1, Line of Brigades on 2nd Brigade,* at 800 yards interval."

The division commander will probably accompany brigade commander of base brigade, and will indicate the changes of direction to follow a circuitous route toward the flank of the enemy. The covering forces of the two brigades (one rifle troop to each) will be the means by which the moving enemy is found.

In case the road on which the enemy is reported moving is found empty, the division must halt and send out patrols to discover him. When the enemy is discovered, the division may have to move back or forward, right or left, to place itself in position to attack the flank or rear of the enemy.

In case a comparatively small flank guard of the enemy is encountered it should be attacked at once, by the regiment that first encounters it, by dismounted attack while other units attack mounted against its flank or rear. Such an attack is executed by the regiment or brigade without waiting for Division orders. Thus, the initiative and resource of every commander is developed and depended upon.

These attacks against the enemy mechanized column are continued as long as he moves forward. Attack—then maneuver for another attack, is the order of the day. The division is reassembled by radio orders or messengers at some rendezvous.

For this exercise, the enemy may be represented by a column of tanks or may be imaginary. In any case, when contact with the enemy is assumed to be gained, the units must change from Maneuver Formations to Combat Formations, and go through the motions of firing at the enemy and falling back to attack again after the enemy has resumed his advance.

This exercise represents an important operation of cavalry that cannot be carried out well without practice.

Tactical Exercise No. 6. Delaying Action Against Infantry (Not Motorized)

In this exercise the division commander decides to oppose the hostile infantry by using one brigade in front of the enemy advance and the other brigade on one of the enemy flanks. He gives simple and brief orders to carry out this plan. A *liaison detachment* of one platoon is posted between the brigades.

Each of the two brigades moves out by means of its Maneuver Formations.

Depending on the character of the terrain, the *artillery* attaches one battalion of 75mm howitzers to each brigade and holds the motor battalion of 105mm howitzers on the axis of movement of the brigade offering direct opposition. All units, however, avoid the roads.

The *Combat patrols* in each brigade have a very great responsibility. Infantry can march across country; and while waiting in a position to use fire power against the advancing enemy, the cavalry may find itself outflanked by a demoralizing surprise. Combat patrols must be trained to scout around the vicinity in which they are posted so as to prevent such surprise. The same thing applies when the cavalry is moving. Combat patrols must always be out and very active. Covering forces can take care of the front.

The division reconnaissance squadron, which is mechanized, should be sent out well in front of the brigade, which is on the axis movement, to gain contact and explore widely on both flanks for any signs of hostile mechanization.

The division commander keeps the advance echelon of his headquarters with that of his artillery commander. His antitank troop and engineer squadron remain behind the brigade on the axis of movement ready for any emergency.

As in all exercises during maneuvers, all camps or bivouacs are in dispersed formation and camouflaged if possible. While moving, these divisional units keep always in the Maneuver Formations.

When contact with the enemy infantry has been gained, it should never be lost. Any patrol that gains contact should watch the enemy night and day until it is relieved. Progress of the enemy along the axis of movement should be reported every hour, and any movements of important units off the axis of movement must be reported at once.

This exercise can be had with the enemy represented or imaginary. If imaginary, all dispositions are made, then contact is assumed and commanders notified by officers detailed as umpires. Each brigade and separate unit makes dispositions to defend its position or attack the enemy according to its mission in front of the enemy or out on the flank.

The liaison system can be tested and the exercise terminated.

One of the important principles in such operations is that while the force opposing the enemy along the axis falls back from position to position, the force operating on the flank makes harassing attacks continuously. Not one attack but many during the day are made. While keeping the enemy observed by patrols, the brigade on such duty must be able to attack by fire, then withdraw and maneuver around to attack again.

Tactical Exercise No. 7. Attack Against Infantry

These occasions are numerous. The Division may have to attack an infantry rear guard or flank guard when it is not desirable to go far around to avoid such a force. It may have to attack an infantry force which is advancing on the flank of our army or is pursuing. Such attacks are chosen when the hostile infantry is not as numerous and powerful as our cavalry division. Otherwise, of course, the cavalry division resorts to defensive actions and delaying actions.

Another occasion for attack is when the cavalry division is part of a larger force which is attacking the enemy and the mission of the division is to coöperate by attacking the enemy in flank.

For this exercise, assume any of these occasions and move the division out across country in one of the Maneuver Formations to make contact with the enemy. When contact is gained by the reconnaissance elements or the covering detachment or detachments, dispositions are made to attack.

The first thing to consider is the terrain. Does it give cover for the individual rifleman to use in advancing toward the enemy? Perhaps there is cover on one side and not on the other. For any dismounted attack, some sort of cover for the individual soldier to use in his advance is essential. If this cover, in some form, is not present, the commander should maneuver so as to attack over other ground having little folds, gullies, holes, boulders, brush or other advantages which the soldier can use to protect himself, at least from observation, while lying down. Attacks over flat, coverless ground are too costly for dismounted cavalry to undertake with the means at its disposal. If the enemy is moving, dismounted cavalry can risk the crossing of open spaces if not more than a hundred yards across.

For supporting fire, open spaces across which the enemy can be seen are suitable. Every squadron in the attacking echelon should have fire support of machine guns posted in the intervals between squadrons. The first thing to do, therefore, is to put these machine guns into action and let the riflemen advance in the spaces between these groups of machine guns. When artillery is available, it, together with the machine guns, opens up the fight.

The Division Commander directs where each brigade is to attack, and on what general targets the supporting artillery, not attached to brigades, is to fire. The brigade commanders and regimental commanders post their artillery, machine guns and other supporting weapons, and the squadron commanders put their riflemen in between.

The development and deployments are made quickly, the led horses are sent back and held in dispersed formations under cover. Any division reserves are posted, and the action commences immediately. The Maneuver Formations lend themselves to this quick disposition so that the enemy has little time to prepare.

Deliberate, long-drawn-out preparations and prolonged preliminary reconnaissance are not for cavalry except in special cases.

If combined action is feasible, one brigade, dismounted, attacks first, and by using cover, advances to within three or four hundred yards of the enemy. Then the other brigade attacks mounted on one or the other side of the dismounted brigade—and by surprise if possible.

The attack is followed up by antitank units to resist hostile tanks that may have appeared unexpectedly. If hostile tanks appear in strong force, the whole division withdraws as quickly as possible in dispersed order to assemble at a rendezvous previously designated. Such an episode would be a good exercise of the resource and leadership of the division.

The reconnaissance squadron explores far out on the flanks.

Tactical Exercise No. 8. Defensive Position

The division, from some Maneuver Formation, should practice literally galloping into a position to hold a bridgehead, mountain pass, or other defensive mission.

The artillery and supporting weapons, machine guns, etc. go down on the ground for action first of all. The riflemen are posted afterwards.

Led horses are sent back, dispersed, under best cover available, and liaison established between them and their squadrons.

Covering forces remain out in front or on flanks until contact with the enemy is had or until relieved. Reconnaissance squadron explores far out on flanks.

Division Commander rectifies the dispositions, and hasty entrenchments are started.

Then, practice a quick withdrawal while under fire. Dispersal formations or Maneuver Formations are taken quickly, and all head for the rendezvous.

Summary of Tactical Exercises

No. 1. A *march* across country in various *Maneuver Formations*. *Dispersion* to reduce casualties from air attack. Practice of control.

No. 2. A *march* across country in *Maneuver Formations* to a certain line for purpose of *reconnaissance*. Brief reconnaissance by patrols. Return march halted and units turned about to occupy a defensive position against pursuing enemy. Only a brief occupation of the position before units are dismissed.

No. 3. A *maneuver* across country to *attack* flank of *moving enemy*. Deployment for *fire action*. Special attention to handling of the division *reconnaissance squadron*, *covering detachments* and *security patrols*.

No. 4. Same mission as in Exercise No. 3, but division *meets* a small hostile *mechanized force* evidently sent to oppose it. Use of *antitank guns* and *maneuver* of the division to attack flank and rear of enemy. Motor vehicles on reconnaissance must not betray the presence of the division.

No. 5 *Delaying Action* against *strong* hostile *mechanized forces*. Use of a *provisional Antitank Regiment*. Much *initiative* on part of squadron, regimental, and brigade commanders. *Mounted attacks* against small enemy forces seeking to delay the advance of the division towards the hostile flanks or rear.

No. 6. *Delaying action* against *infantry* (not motorized). In this exercise the main plan is to oppose the advance frontally with one brigade, while the other brigade operates on the flank.

No. 7. *An attack against infantry*. Quick deployment or development from *Maneuver Formations*. Use of cover.

No. 8. *Defensive position* and *withdrawal* from same. Quick assumption of position. Rectify afterwards. Artillery and machine guns posted first. Maneuver Formations gallop into position and also used in withdrawing.

Note: It must be understood that the intervals and distances given in the charts are only suggestive and not mandatory.

Conclusion

Assuming that the small units are well trained, these divisional exercises will fit the division for the rapid cross-country maneuvering necessary to accomplish modern cavalry missions. The developed initiative of every commander, especially the squadron commanders, will enable the division commander literally to hurl his division at the enemy in harassing attacks, successfully accomplish delaying actions, or fight in the spot to a decision over the enemy, if the relative strength of his command and other considerations justify such an attempt.

The formations of the division are loose and flexible and not tight. In harassing and delaying actions, every squadron commander is justified in attacking the enemy on his own, wherever he meets him without waiting for orders from higher commanders. Other squadron commanders go to the support of a squadron that has become engaged unless they are themselves already engaged or have received orders from the regimental commander to do something else.

The regimental commander has only two or three squadrons to handle, and he rides with the commander of one of those squadrons. Similarly, the brigade commander, riding with or near one of his regiments can exercise control, but should expect his subordinate commanders to use their initiative after having been told what the mission is, what the base element is, and approximately how far apart the units are to be.

The division can be wide-spread, wide-flung, and yet be under sufficient control by means of radio communications.

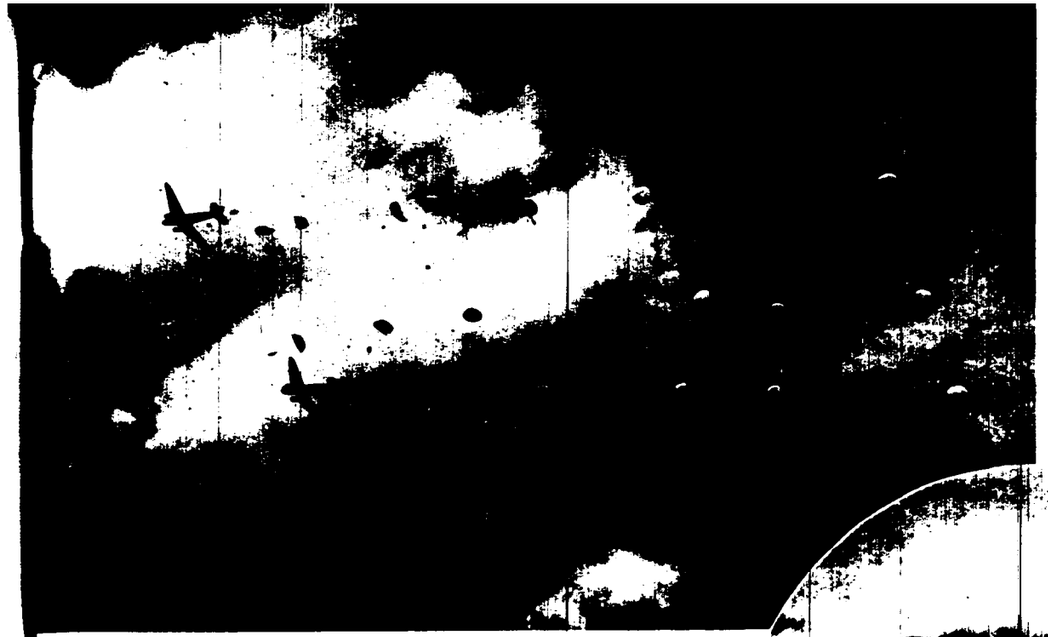
Of course, for a concentrated, coördinated attack, the time, plan, and method of the attack must be fixed by the division commander. The same idea applies to the holding of a position.

In harassing and delaying operations, a very loose formation and much initiative by subordinate commanders must be relied upon and encouraged. This may cause some apparent confusion and temporary loss of touch and control, which must not disturb the division commander. He can, eventually, through radio communications, regain control when he wants to pull his division off to a rendezvous or to undertake a new mission.

Maneuver Formations for the following named units, devised on the same idea, must be determined.

1. Artillery Battalions (75s and 105s).
2. Engineer Squadron.
3. Machine Gun Troops.
4. Weapons Troops.
5. Division Reconnaissance Squadron.
6. Command Groups: Squadron, Regiment, Brigade, Division. These groups are not shown on Charts but are placed wherever convenient for each case.
7. Medical units.

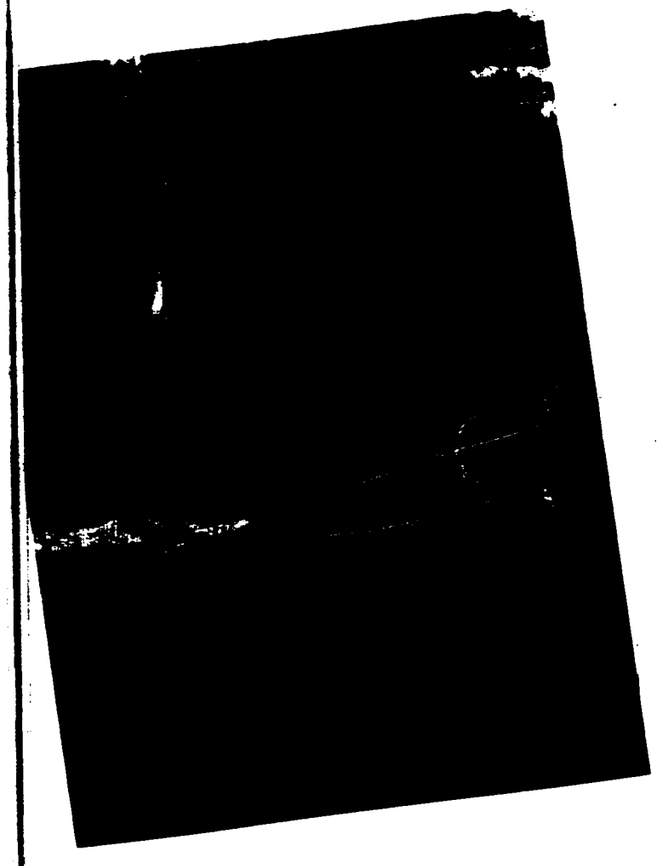
Troops of the Airborne Command prepare to board planes.



Parachutes open as troops bail out.

The Airborne Command

A landing in wooded area.



THE employment of parachute and air-landed units has provided one of the major surprises in the current war and has led to such development of these units as to constitute a new weapon of increasing importance.

The Airborne Command is charged with sharpening the edges of this weapon and with developing a technique which will make its employment most effective. It consists of the airborne divisions, the Parachute School, parachute brigades and regiments not assigned to airborne divisions, and of numerous parachute and glider field artillery and antiaircraft units. The Command is responsible for the training of all airborne divisions, and for training standard infantry divisions in the use of transport aircraft. Additional functions include the development of airborne equipment and matériel, and the development of supply by air utilizing parachutes, gliders and aircraft.

Closely allied to the Airborne Command is the Troop Carrier Command, which furnishes the transport airplane and glider units for all airborne troops. Set aside at glider stations throughout the country are facilities and training aids for the use of airborne units sent there for that phase of their training.

It is true that airborne units are organized and equipped for special operations, and that parachute elements consist of volunteers, but the fact is stressed that the parachute, glider and airplane are but different means to place the soldier quickly near his objective. Upon landing, the action is that of other ground units, modified by the use of special equipment and weapons, and characterized by a reduction in motor transport and the necessity for supply by air. The airborne soldier should possess military skill of a high order, and, likewise, his effective employment demands aggressive, intelligent leadership in small units.

The landings of airborne troops will usually be made in enemy territory. The term "shock troops" is not inappropriate, but the idea is far from correct that these are in any sense either "Commandos" or "suicide units."

The employment of airborne troops presupposes a strong superiority in the air, a continuing support by fighter aircraft, and the employment in mass and in conjunction with other major elements of the ground forces. An airborne operation is too expensive to permit failure, and accordingly must be favored with more than the usual number of factors required to insure success.

Airborne troops landed in enemy territory are prepared for immediate action.

Troops of the Airborne Command take an air field during maneuvers.

Principles and Modern Methods of Reconnaissance

"Send ye men up in the land beyond Jordan to spy out the ways thereof, the going and the coming of the people, the wines and the honeys of the land." So spoke Moses to his assembled captains some three thousand years ago. Today, such a mission is called *reconnaissance.*

THE collection of information concerning enemy and terrain has been a vital factor in the success of every military operation since the dawn of history.

Reconnaissance agencies today are many and varied. To insure the continuous collection of information in every theater of this global war, reconnaissance units must be trained and equipped to function in the jungles of Burma, the deserts of Africa, or the hills and plains of Europe. Depending on terrain, these units will operate in vehicles, on horses, on skis—or on foot.

Successful reconnaissance in any theater, however, must follow certain basic principles. The following are some of the most important reconnaissance principles:

1. *Every commander is responsible for initiating his own reconnaissance in any tactical situation.*

The overall intelligence plan of the G-2 does not release the subordinate commander from this responsibility. He must insure that reconnaissance for his own unit is made within the unit's zone of action.

2. *Reconnaissance should get information of the enemy and terrain.*

a. Information of the enemy includes type and composition, location, strength, and disposition.

b. Information of the terrain includes roads, bridges, wells, lakes, rivers, contaminated areas, landing fields, and bivouac areas.

3. *Missions assigned reconnaissance agencies must be based on their capabilities.*

a. Reconnaissance units, whether vehicular, horse, or foot, have definite limitations as to rate of march and width of zone they can cover.

b. The road net, type of terrain, weather, attitude of civilian population, and enemy resistance must be considered carefully before reconnaissance missions are assigned.

4. *Reconnaissance must be coördinated.*

a. The intelligence plan must provide overall coordination by assigning zones, objectives, and definite missions to each unit.

b. The intelligence plan must be familiar to all reconnaissance units or agencies so that duplication of effort is avoided and mutual coöperation is insured.

5. *The minimum number of reconnaissance agencies necessary to gain required information should be used.*

a. Bearing in mind that reconnaissance must be continuous, the intelligence officer should maintain a "reconnaissance reserve" for unforeseen contingencies and for relief of overworked reconnaissance units.

b. The hardships and difficulties encountered in performing reconnaissance missions make frequent relief of reconnaissance units mandatory.

6. *Reconnaissance is classified as distant, close, and battle.*

a. Distant reconnaissance is normally performed by the air force and by vehicular units and is strategic in nature. It seeks information of large enemy forces whose location and disposition will probably change before contact is made.

b. Close reconnaissance is normally performed by vehicular and horse units and is tactical in nature. It seeks detailed information of the strength, composition, disposition, and movements of enemy units with which our troops shortly may become engaged.

c. Battle reconnaissance is normally performed by vehicular, horse, and foot elements. Its aim is to follow the shifting fortunes of battle and to obtain information which may enable the commander to take advantage of any enemy weakness or to strengthen his own lines when and where necessary.

7. *Reconnaissance forces are located with respect to the enemy.*

a. The location and movements of reconnaissance elements, unlike security elements, depend upon the location and movements of the enemy.

b. Frequently, reconnaissance elements may be on the enemy's flanks or rear, cut off except for radio contact with the parent unit. Operation is obviously hazardous and resupply difficult.

8. *Reconnaissance forces move by stealth; they fight only in self-defense or to get the required information.*

a. The mission of reconnaissance agencies is to obtain early information of hostile main groups. Reconnaissance units, therefore, must not be delayed by unnecessary combat.

b. The German Army puts it this way—"When patrols and detachments have learned all that is possible by skill and artifice, the commander must fight to make the enemy show his actual strength. If the enemy's screen is thin, he may break through it; if the hostile groups are too strong, he must maneuver to get around them. . . ."

9. *When closing with the enemy's main force, reconnaissance is intensified.*

Information as to general location and approximate strength of a distant enemy is normally sufficient. As contact becomes imminent, however, the commander requires increasing detail—location of artillery, tanks, automatic weapons, and reserves—so that he may dispose his own troops to the best advantage.

10. *Reconnaissance must be continuous.*

The search for information must be unceasing. The enemy's location and disposition, like ours, is constantly changing. Contact is secured as early as possible and once gained is never lost.

11. *Information obtained by reconnaissance units must reach the commander in time to be of use.*

a. The commander of a large unit requires early information so that he may maneuver his forces to the best advantage before contact becomes close at hand.

b. Reconnaissance is extended the maximum possible distance in the direction of the enemy so that the commander will have the maximum time to act on information received.

12. *Personal reconnaissance by the commander is necessary for the most intelligent employment of his unit.*

Regardless of the size of the unit, a commander who has personal knowledge of the situation can employ his unit far more effectively than the commander who relies on information from others.

These principles of reconnaissance will apply regardless of the terrain or type of reconnaissance agency employed.

Instruction

Reconnaissance instructions now vary from the simple oral order given a patrol leader to the detailed written instructions, accompanied by map or overlay, given the commander of a reconnaissance regiment or group. Changes No. 7 of *Basic Field Manual* 101-5, dated February 3, 1943, specify the use of Form 13A, *Intelligence Instructions*, and Form 13B, *Reconnaissance Instructions* for use in Service Schools to insure uniformity in instruction in the formulation of orders to be issued to reconnaissance agencies. Either one of these forms, however, will aid the intelligence officer in the field in preparing reconnaissance instructions and in coördinating all reconnaissance activities in his unit. The use of the above forms is strongly recommended.

The Cavalry School has prepared a notebook or log entitled *"Reconnaissance Instructions and Work Sheets."* The purpose of this reconnaissance log is to train the reconnaissance patrol leader in what to look for. The log is in loose-leaf form with a durable cover. It can be folded and placed in dispatch case or saddle bag. On the cover are listed items of information which the commander usually wants to know. The collection of information concerning these items should be SOP for all reconnaissance units. Under each item of information is listed everything a commander desires to know concerning the item. For instance, under item number 7—*Landing Fields;* the following appears concerning landing fields:

Airports—Airdromes—Landing Fields

(State which)

1. Location.
2. Dimensions (width and length).
3. Type, number, and condition of runways (dirt, gravel, pavement, asphalt).

by Lieutenant Colonel Allen D. Hulse, Cavalry

2d Cav Div
York, Pa. (395-765)
1600, April 6, 1943

INTELLIGENCE INSTRUCTIONS

No. 1-D
To: CO Rcn Det No. 1 (92d Rcn Sq) Effective 0500 April 7 1943
Maps: Special Map A. Strategic Map, Gettysburg—Richmond, 1 inch = 4 miles, Gettysburg Sheet

REPORT ALL INFORMATION OF THE ENEMY AND IMPORTANT FACTS ABOUT THE TERRAIN WITH PARTICULAR ATTENTION TO THE ITEMS CHECKED (√) BELOW.	Special Instructions (AREAS AND ROADS TO BE OBSERVED, IF NOT INCLUDED IN UNIT'S NORMAL SECTOR OF OBSERVATION. SPECIAL INTELLIGENCE ACTIVITIES. HOUR AND DESTINATION OF REPORTS.)
1. RAILROADS—Traffic densities, detrainments.	a. Move at 0500, April 7 to the line: Blue Ridge Summit (310-730)-Thurmont (330-710)-Western Maryland Railroad.
2. CONCENTRATION AREAS—Location, strength and composition of troops, activities, movements into, movements from.	
3. ASSEMBLY AREAS—Location, strength, and	

Sample form for Reconnaissance Training.

4. Type, number, and approximate size of hangars and other buildings.
5. Extent of natural cover and concealment for planes.
6. Repair shop and servicing facilities available.
7. Existing communication facilities—radio, telephone, telegraph, teletype.
8. General kinds and approximate quantities of supplies on hand—fuel, oil, water, etc.

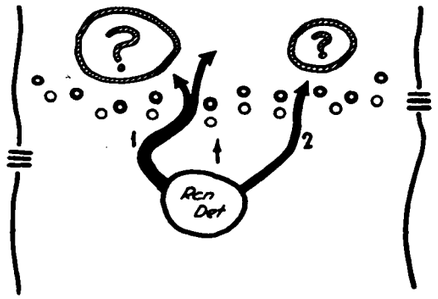
Obviously a detailed reconnaissance of a landing field following the above form would result in a wealth of information. The other items of information are similarly expanded so that the reconnaissance patrol leader may find out practically *everything* the commander wants to know about a specific item. Obviously, the log should not be taken into active combat. The use of the log in training, however, is recommended. It will aid the reconnaissance unit commander in teaching subordinate leaders to *look*, and *what to look for*.

EXECUTION

The reconnaissance unit commander cannot, in general, be bound to any particular method of carrying out his mission. There is a great variety of methods, depending again upon the terrain and the actions of the enemy. Generally a line or wave of reconnaissance patrols, followed by the reconnaissance detachment, advances rapidly toward the enemy. The speed of the patrols is regulated and controlled by phase or report lines. Initially, the patrols must move as rapidly as practicable. Every minute wasted decreases the distance between the main bodies and, therefore, reduces the freedom of action of the higher commander. Support units initially march approximately in the middle of the reconnaissance zone, prepared to move rapidly to any critical area.

Hostile reconnaissance and security patrols are avoided if possible. Terrain must be used to the best possible advantage. Patrol leaders must keep the mission in mind continuously. They must contact the *major* units of the enemy. Their successive messages and the results of personal reconnaissance gradually form a picture in the mind of the detachment commander. The lines of the picture are here sharp, there vague. Now reconnaissance must be intensified. Additional patrols are sent out to obtain information which will broaden and brighten the picture of the enemy. In addition, as forward patrols contact major units of the enemy—an infantry battalion here or a cavalry squadron there—their zone or route reconnaissance phase is over. Now observing and maintaining contact, they must report every move made by the hostile unit. Other patrols, therefore, must be sent out to continue reconnaissance and to contact hostile units as yet unreported.

Combat On A Reconnaissance Mission
1-Break through to continue reconnaissance.
2-Develop an obscure situation.



COMBAT

As hostile resistance becomes stronger and security patrols more aggressive, reconnaissance enters the combat phase. Reconnaissance units engage in combat for two main reasons: either to develop an obscure position—force the enemy to show his hand—or to break through a hostile security screen so that reconnaissance may be continued deep into enemy controlled territory. Support elements, tanks, infantry, or artillery, are moved rapidly to a critical area and committed under the command of a designated officer or the reconnaissance detachment commander himself.

If the hostile position proves to be too strong, the reconnaissance detachment commander must be prepared to break off action and to withdraw, leaving a patrol or two in observation. For, after all, has he not accomplished his purpose? The enemy has been forced to fight and thus disclose his dispositions and perhaps the locations of his stronger elements. This is the information the higher commander wants.

Lest we forget, detailed reconnaissance in the presence of the enemy is executed *dismounted*. The man on the ground is not only master of the battlefield, he is also the most effective and reliable intelligence agent. Air reconnaissance gives us an instantaneous picture of the enemy over a wide area. Weather, terrain, and hostile antiaircraft measures handicap the aircraft. Vehicular reconnaissance gives us distant ground reconnaissance. The most fanatical mechanized soldier, however, will admit that he obtains little information while moving in his vehicle. He must dismount and reconnoiter on *foot*. The same applies to horse reconnaissance. The accepted rule is—march as fast as possible but reconnoiter dismounted.

These fundamentals carry over into special operations—reconnaissance in the desert, jungle, and mountains.

DESERT RECONNAISSANCE

Reconnaissance patrols in the desert are normally vehicular. They move rapidly across country in widely dispersed formations. Lack of terrain features may limit the use of zones and phase lines for control. Compass direction and march rate must provide control. Supplies—fuel, water, and ammunition—must be carried in sufficient quantity to last for the duration of the mission.

The famous "Desert Rats," army reconnaissance units of the British Eighth Army, frequently spent weeks at a time operating in the rear or on the flanks of Rommel's Army, before returning to the Eighth Army for rest and resupply. Messages to the higher headquarters are normally sent by radio because of the great distances involved. Colored flags are widely used for local control. Dismounted reconnaissance during daylight must be cautious. The dismounted patrol may easily be captured or destroyed by a motorized enemy. Close coöperation between air and ground reconnaissance agencies is imperative.

JUNGLE RECONNAISSANCE

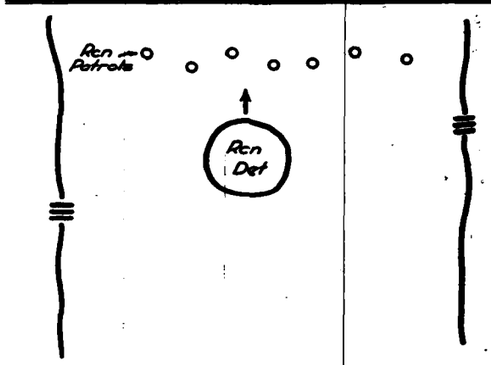
Reconnaissance patrols in the jungle are normally dismounted. They vary in size from two men to a platoon. The three man patrol, one member being a specially trained intelligence scout, is considered ideal by the Marines who made the initial landing on Guadalcanal. The patrol must move in close formation and must use swamps, rivers, and hills not as obstacles, but as avenues of approach.

Frequently, reconnaissance patrols are sent out in successive waves, a favorite method of the Japanese. This provides for the support and security of forward patrols and provides also for continued reconnaissance if leading patrols are lost or ambushed. The use of air reconnaissance is obviously limited in the jungle. The value of radio communication is also minimized. Even the portable radio may prove too bulky, and the close contact with the enemy makes use of voice or key dangerous. Training for jungle reconnaissance must stress night operations, training in patience, and training in maintaining direction, day or night.

MOUNTAIN RECONNAISSANCE

Reconnaissance in mountainous terrain may be accomplished by horse or vehicular units in summer and

Reconnaissance - Initial Disposition



by dismounted units on skis in the winter. Reconnaissance patrols must be strong in combat power and, again, must carry with them supplies for the duration of the mission if the terrain is barren of wild life or other natural food or forage. Equipment must be light and durable, clothing light and warm.

Wooded areas restrict the use of air reconnaissance to the same extent as does the jungle. The radio, however, may be widely used for communication. The reconnaissance patrol moves rapidly from one observation point to the next in column or open formation as the terrain permits. When contact with the enemy is gained, reconnaissance must be made on foot.

Supply in these special operations is extremely difficult. The reconnaissance patrol will frequently contact enemy supply dumps, truck parks, and other rear installations, the destruction or capture of which may seriously handicap the enemy. Often, therefore, reconnaissance over special types of terrain may have the secondary mission of combat.

Conclusion

The principles of reconnaissance are not changing. Modern equipment and methods have simply required a different application of some of the principles. Modernizing influences in the current war include: the use of the fifth column—coördination of reconnaissance units, operating deep into hostile territory, with fifth column agents; the expanded influence of air reconnaissance and the development of the air-ground reconnaissance team; the use of armored vehicles for reconnaissance; and the coördination of reconnaissance agencies in different arms and echelons to insure mutual coöperation, to provide for a "reconnaissance reserve," and to avoid duplication of effort.

Reconnaissance forces are the eyes and ears of the commander. It therefore behooves the commander to select reconnaissance personnel with great care. Reconnaissance training should be centralized. Its aim should be the development of initiative, mental mobility, and resourcefulness. The German Army early recognized the great part that reconnaissance plays in modern war. In 1941 the following was extracted from an official German Army journal:

"Reconnaissance requires of both officers and men a degree of decision, of independent thinking and action, of broad technical knowledge and military skill, such as is required of no other soldier."

★ ★ ★ ★

The Good Instructor*

The soldier is the individual link from which the whole chain of the Army's organization is built.

The man primarily responsible for the forging process is the instructor. His rôle is a most vital one and should, therefore, be fully understood.

Many instructors lose sight of the fact that the man of today was a boy of 15 when the war started. It is not at all surprising, therefore, that he should be somewhat mystified as to the meaning of all this fighting. It should be remembered that 18 is a highly impressionable age, and that he is now expected to mould the soldier and, what is more important, the man.

The man who does not understand the *cause* for which he fights can never possess sound morale. The instructor can help in this direction by giving a brief explanation of the causes which led up to the war, the reasons for our failures so far, and at the same time point out that, no matter *what* the reasons are, our goal remains the same—the defeat of the Axis Powers. He should endeavor to discover his students' outlook and points of view by organized discussion, and at the same time make it clear that "points of view" would go by the board should Hitler win.

The instructor must always be up to the mark—keen, efficient, enthusiastic and *inspiring*; otherwise, he cannot hope to obtain the best results. In short, he must be the "pattern" upon which the men under instruction will be expected to shape themselves. When teaching, no matter how good he may be (or thinks he may be), a lesson should always be prepared beforehand. Marshal the facts, excluding everything irrelevant to the subject to be taught. At the same time, preparation must be flexible, in accordance with the capabilities of the students.

He should never take his own knowledge for granted and assume too much when teaching; remember that this is something entirely new to the men.

He must never lose sight of his own experiences as a recruit, or become too impatient with the man who is rather slow in absorbing knowledge. Some men take time to "digest" what they have learned, and yet often possess the best memories.

He must never forget that a squad is composed of individuals, drawn in most cases from widely different environments. His job is to blend them into *unity*.

The men must be encouraged to find out the answers for themselves. Knowledge thus gained is more easily retained than a mere parrot-like recital of the facts.

The aim must always be *collaboration*, and not a slavish submission to a dull routine.

It is the duty of every instructor, interested in his work, to take frequent stock of his own knowledge and, if necessary, bring himself up to date. He will probably never know all the answers; he can at least endeavor to know them.

*Courtesy, *The Tank*

HORSE BREEDING

Conditions in Europe

What are they? From Poland, Norway, Denmark, Holland, France and Belgium, horses have been bought or requisitioned in great numbers and exported to Germany—where they are used for agriculture, draft, and war.

*by J. Clyde Marquis**

THE progress of horse breeding in European countries since 1938 has been seriously hindered by German requisitions and unsettled conditions. Recent reports indicate that as a result of the shortage of horses caused by army requisitions, there has been an increasing use of cows for farm work in addition to the oxen normally used.

The concensus on the problem of rebuilding European livestock after the war generally is that it is primarily a matter of encouraging natural increase, and that relief by livestock shipments from overseas, while valuable, particularly for certain countries, would be limited by shipping facilities to relatively small numbers.

Alternate measures suggested are:

1. Restriction of slaughter of breeding stock, (for application principally to stock other than horses).
2. Expansion of veterinary facilities to reduce losses from diseases.
3. Importation of animals from near-by countries, primarily Axis countries.
4. Encouragment of artificial insemination.

Details of breeding plans contemplated since 1938, by the different countries, are not available. However, the following information gathered from various sources is of some interest.

Germany

The total draft work (presumably in 1941-42) performed in Germany was 3.92 billion horsepower-hours per year, of which 88.7 per cent was done by draft animals, distributed as follows in percentages:

	Per cent
Horses	71.5
Oxen	7.7
Cows	9.5
Total	88.7
Tractors	11.3

The percentage of tractors used on farms of different sizes was as follows:

0.5 to 2 hectares	(1 to 10 acres)	3.6
2 to 5 "	(11 to 48 ")	1.8
5 to 20 "	(12 to 49 ")	11.03
Over 100 "	(247 ")	32.35

Following the various campaigns of Germany in the East, North, and West, it is stated that a large number of horses, requisitioned by the Germans in Poland, France, Holland and Belgium, were brought to Germany and sold to German farmers and other users of horses. Consequently, many foreign horses now have German masters. The new owners were cautioned by the authorities that at first, difficulty would be encountered in making these horses understand directions, and advice was given on how to teach the animals to take commands in German.

Formerly, Germany imported all the mules used. About three years ago (1937), the first mule foal was born at Graditz-Repitz, where a stud had been estab-

*Foreign Information and Statistics, U. S. Department of Agriculture.

lished near Torgau, Prussian Province of Saxony. By means of asses imported from Italy and America, breeding activities were expanded, and it is stated that Germany is now nearly self-sufficient as regards the mule requirements of the Germany Army. The mule foals are kept at Graditz-Repitz only a few months and then are sent to the Bavarian Alps to become accustomed to their future field of activity. There they are also trained for military purposes.

France

The Germans have already taken many horses out of France, and last summer were threatening the wholesale requisition of horses if the farmers continued to resist. The German Re-Mount Service negotiated with the French Government (Vichy) for the right to buy horses to replace motor traction in Russia the following winter. The French Government, in order to help the farmers and curb speculation, had fixed a maximum price of 36,000 francs (about $82) for a horse. A year earlier, horses cost only 10,000 francs ($23). The Germans asked the suspension of the fixed price in their favor to allow them to offer 40,000 francs ($91), and also asked that they be given prior rights in the markets.

That was not enough, so they increased their offer to 50,000 francs ($114) and finally to 55,000 francs ($125). Still, they were unable to get enough horses, so they advertised in the French press that if they could not get enough horses, they would resort to requisitioning. Free France did not produce enough hay and grain for winter feeding. Consequently, there has been a heavy mortality of animals, believed to be equivalent to 4 per cent monthly. Stock breeding had virtually halted by last summer. According to the latest census, France had the following numbers of breeding stock:

	November 1929
Stallions for breeding	5,835
Draft horses	177,591
Stallions for breeding and work	11,674
Geldings	936,787
Mares for breeding	45,494
Mares for breeding and work	579,794
For producing mules	22,361
For work only	543,606
Other horses	172,942
Stud stock	3,414
Army	71,815
1-3 years	369,140
Under 1 year	195,156
Total	3,135,609

Of the total number on hand, 2,887,438 were described as farm animals. The principal breeds of horses were as follows:

Breton over	140,000
Maine over	110,000
Trait du Nord (Northern draft)	120,000
Normandy	80,000
Boulonnais	70,000

Farm horses of 3 years and over numbered 2,323,000.

Czechoslovakia (former)

At present, it is considered important to import horses for breeding, especially of the Belgian, Nonius, English, and Arab half-blood breeds. No large decrease in numbers has occurred. The principal breeds with the location are as follows:

Bohemia-Moravia Protectorate

Belgian—heavy draft
Oldenburg—medium draft
English—half-blood—light draft
(Moravia especially)

Slovakia

Nonius—medium draft
English, Arab and Anglo
Arab half-bloods and Lepizan (light draft)

Sub-Carpathian Russia

Huzul (Suitable for carrying loads)
Stallions kept for breeding 1936—1,533 head.

Poland

At present, it is estimated that there are about 40 per cent fewer horses in Poland than prior to the war. Prior to the war, the horse population was as follows:

One year and under	296,000
1-3 years	292,000
3-4 years	182,000
4 years and over	3,120,000
Total	3,890,000

Of the total, 2,982,000 were in rural areas.

There has been a complete requisitioning of horses since Russia entered the war. *The Germans have requisitioned all possible horses in central Europe for the Eastern Front.* In order to resume normal farming in Poland, about 4 million horses must be returned to that country. The best sources are Germany, Hungary, Sweden, and the Middle East. The most suitable types to be found outside Europe are in North Africa, South America, and light breeds from the United States and Canada.

Lack of horses in other European countries and lack of ships and difficulties of shipping overseas will make it difficult to import the necessary number of horses.

Denmark

Denmark has been required to export a large number of horses to Germany. During the period October 1, 1941, to September 30, 1942, 15,700 horses were so exported. In 1942, approximately 14,900 horses were released compared with 16,000 in 1941 and an average of 6,000 for the years 1930-34. Originally, 20,000 horses were to have been moved, but notwithstanding favorable prices, Danish owners were unable to supply that many. About 24,000 draft horses are in use in Danish towns at present. Exports are destined almost entirely for Germany and German-occupied territories in the East.

The abnormal fodder situation in the spring and early summer of 1942 caused extraordinary losses of colts as well as of other young animals. Colts are needed to replace horses that have been sold (presumably to the Germans). The death rate among colts in the Holback district was estimated at 40 to 50 per cent of the number of births.

Norway

More Norwegian horses have been bought recently by German authorities, both for export and for the *Wehrmacht* in Germany. Thus a severe shortage of horses has developed in Norway for farm work owing to both the German requisitions and to the need for horses for forest work as a result of the fuel shortage. Many Norwegian farmers will be forced to use cows for plowing this spring and such an improvisation is being encouraged by the Minister of Agriculture.

Spain

The Minister of Agriculture stated last summer that the number of horses in urban areas was in excess of that which could be fed from available fodder supplies. At the same time the number of farm mules has fallen at least 60,000 head below actual needs. This shortage is being aggravated by the fact that while the mortality rate is exceeding the birth rate, farm mules cannot be imported. The number of horses has decreased materially since pre-civil-war days and, at the end of 1941, were 27 per cent less than in 1934.

Portugal

There was an appreciable decrease in livestock numbers in Portugal in 1941-42; the decline amounted to as much as 30 per cent in horses, mules and oxen. This decrease may be attributed to larger "on the hoof" exports to Spain and a virtual suspension of imports of draft animals from the colonies.

Greece

The Greek horse derives its origin from the horses of Hungary, Italy, Bosnia, Algiers, Tunis and Asia Minor. The crossing has been so irregular that the typical horse today represents an heterogeneous mixture of various races. The animals are small and incline more or less to the oriental type. Only on the plains of Thessaly, Ilis and Argos are found animals of good build. The different breeds of horses in Greece are described as follows:

Skyros pony—Island of Skyros is the place of origin. They are strong, hardy, agile, spirited and intelligent and are raised throughout the year under primitive and semi-savage conditions. They forage for food and water like goats.

Pindus horse—Raised by the nomads in the Pindos mountains. Herds consist mainly of mares and foals. Under the hard conditions of their normal way of breeding, they are small, but if given ample nourishment at an early age would develop into the heavier type of the western European horse.

Foreign breeds—Outstanding foreign breeds used for agricultural work are the Hungarian horses of the Nonius and Lippitza breeds.

Russia

In relation to the total number of animals on collective farms in Russia, there are more horses than any other livestock. Early in March of 1942, norms were fixed for field work by horses, oxen and cows as draft animals with certain inducements offered for this use. The number of draft animals was to be supplemented by the use of cows for plowing and by increasing the number of bullocks to replace horses requisitioned by the army. There is a serious shortage of tractors.

Agricultural leaders of Volhynia and Pedolia stated at a recent conference that 1,780 stallions and 4,066 mares had been selected for breeding; also, that 3,395 head of red cattle and 3,398 of black and white had been purchased from farmers and segregated into 179 herds. These measures will form the foundation of future development of breeding. To increase the stock of draft animals, 16,500 colts and 10,500 oxen were placed in the so-called colt and oxen farms.

Because Hitler needs all of the horses that he can get, portable X-ray machines have been rushed to the Eastern Front to determine the nature of an injury immediately.

European.

Wild Horses Join the Army "wn Under"

ROUNDED up from the open ranges of frontier Australia, a herd of wild broncos is turned over to the American Army for basic training. These horses, many of which have never seen a human being before, are first run into the river for a cleansing, soothing bath. Then follows the "breaking," which American soldiers prefer to call "gentling," and which is handled as humanely as possible. The horse is allowed to become accustomed to the nearness of mankind, and then is run into a corral and haltered.

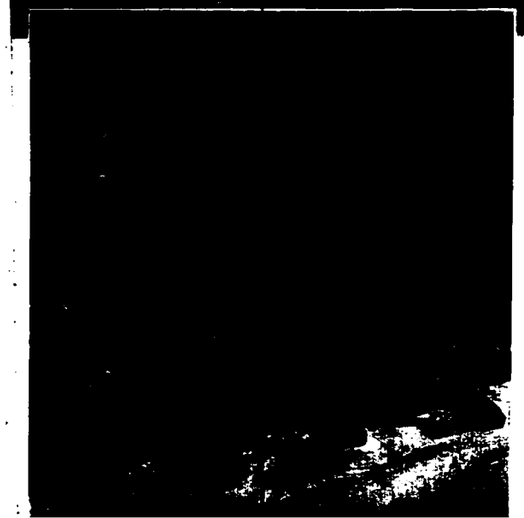
The next step is to accustom him to the feel of the saddle. Then he is released, and allowed a chance to get accustomed to the saddle. The next event on the program is to turn the horse over to an Australian breaker who uses the methods of the American bronco-buster.

After this period, which rarely lasts longer than two weeks, the horse is given a "GI" haircut and started on advanced training. He is taught to carry any one of the six component parts of a broken-down 75mm pack howitzer and other matériel and supplies, and to take his place in the line. Only occasionally is a foal born in this outfit, but such naturally become the pets of the regiment.

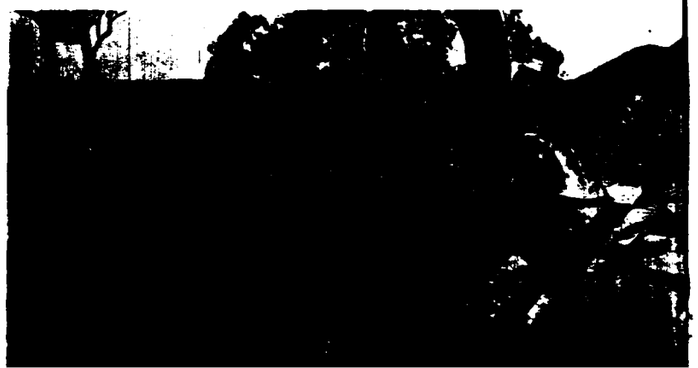
Official U. S. Army Signal Corps Photos

Horses from th open range ar guided into near-by stream by Australian horsemen.

Horses are being given a bath after unloading them from freight cars in the depot area.



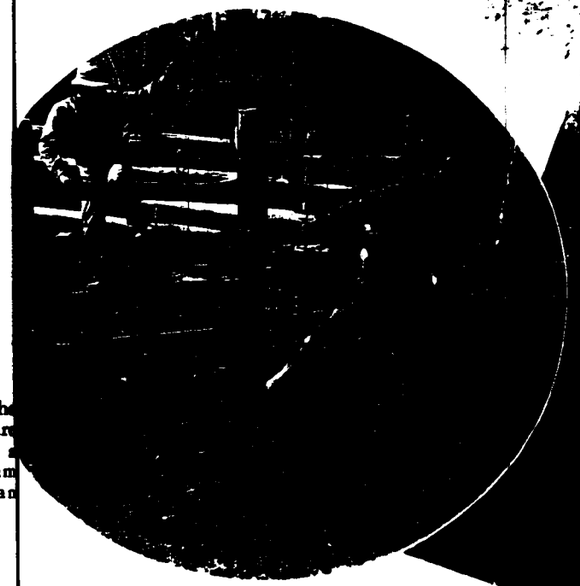
Some of the wild ones object to being a friend to mankind.



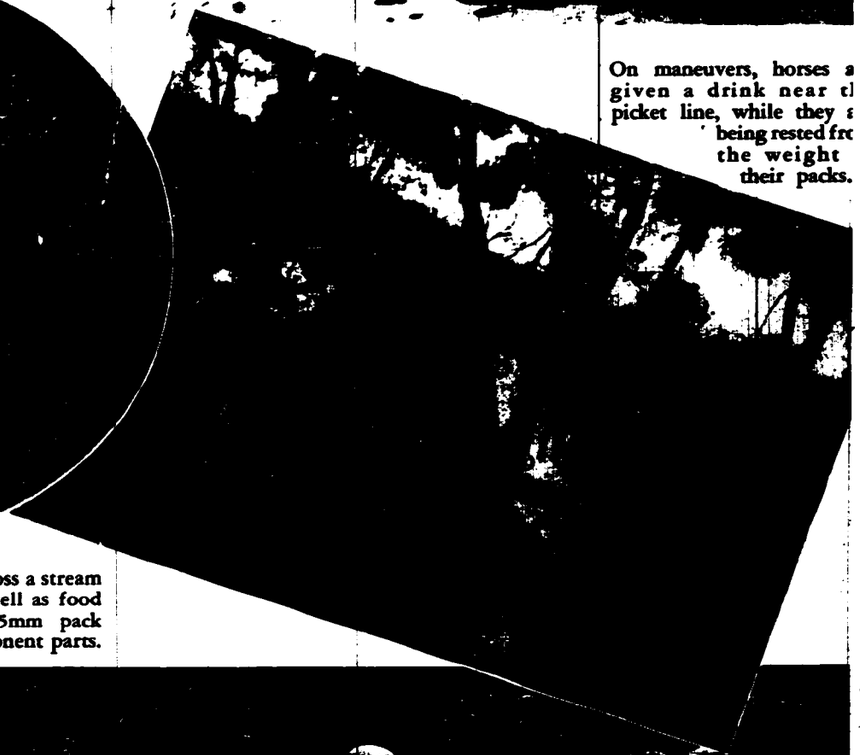
A few weeks of gentling soon changes their attitude.

Official U. S. Army Signal Corps Photos

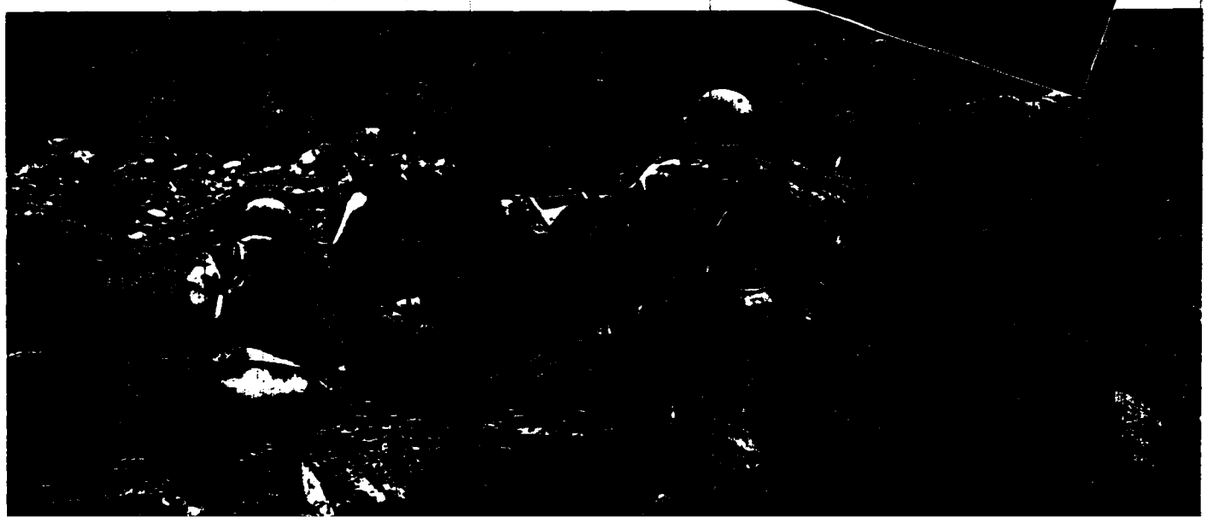
This one got loose but quieted down later.



On maneuvers, horses a given a drink near t picket line, while they a being rested fr the weight their packs.



The pack train continues its trek across a stream in the Australian hinterland. As well as food and ammunition, horses carry 75mm pack howitzers broken up into six component parts.



The Air-Cavalry Team in Reconnaissance

by Major Roy C. Flannagan
Infantry*

Tactical Aviation—the modern Pegasus—works with all ground arms, but his coöperation with Cavalry has an effectiveness born of close kinship.

LITTLE is known of the war record of the legendary winged steed, Pegasus, but it is probable that he flew many a military mission before he was tamed by the Muses. He could operate in three dimensions with superior mobility, and he had power. Did he not kick a hole in Mount Helicon? Weather limited his operations, and at night he was not very effective. His wings were fragile and he probably required 100-octane oats. Nevertheless, he must have been exceedingly useful in those heroic Olympian campaigns prior to the Trojan War.

Today, Pegasus is with us again. We call him Tactical Aviation. As before, he operates far and wide; he fights, harasses, raids, observes, screens, delays, exploits, and pursues.

Tactical aviation now includes virtually all types of operational airplanes, except the heaviest bombers. Combat experience indicates that small, fast, fighter-type airplanes are the most useful for reconnaissance. Two-seated fighters can carry observers over the enemy lines. Single seaters, capable of reaching high altitudes and of avoiding enemy fire and combat aircraft, make effective photographic planes. Fighters, fighter-bombers, and medium bombers are reported most useful for close coöperation with ground troops in combat. For liaison work behind the lines and for employment as mobile observation posts, light machines, capable of operating from small fields, have been of considerable value.

Three Phases of the Air Situation

The ground commander who keeps abreast of the air situation in the theater of operations generally will be able to estimate the when and the where of air support with reasonable accuracy. He must observe the progress of three phases of air action in arriving at his estimate of the time when his requests for air missions will be granted:

Phase 1

Neutralization of the enemy air force in army's area of decisive action.

Phase 2

Isolation of the enemy's front at the point of decisive action.

Phase 3

Close support of ground forces.

In some situations, ground forces will find it difficult and inadvisable to move until supporting aviation beats down the enemy's air force. In others, cavalry and other action may be started while the struggle for control of the air is in progress. In the latter case, the supreme commander must make a decision as to the amount of aviation that he can spare to help the ground force commander. This will not be a simple matter, because assignment of direct supporting combat missions at this stage weakens the air force then struggling for superiority. Furthermore, *few effective reconnaissance missions can be flown for ground units as long as the sky swarms with enemy fighters.*

Need for Priorities in Air Missions

After freedom of action is gained by neutralization of the enemy's air force, the supreme commander, with the assistance of his air commander, again faces a difficult problem involving allocation of air missions. Common sense requires that he apply the bulk of his air strength to the support of the ground unit making the main effort, but other units, particularly cavalry, require a certain irreducible minimum of aviation in order to see. The decision as to this minimum air support will vary in almost every situation. Often it may consist of a small amount of "look and run" reconnaissance or photographic aviation only.

In a situation in which a cavalry division of an army is called upon to perform the traditional mission of finding and fixing the enemy's main body, the cavalry may be the first ground element to obtain direct assistance from aviation. Whether it be mechanized cavalry or horse cavalry, it will find that every properly planned flight can extend its vision and multiply its ability to move and fight.

Normally, the cavalry commander can expect to be furnished information and photographs obtained by the air force in the course of its fight for control, and any aerial map substitutes that may have been obtained during the planning of the combined operation. Reports of "softening" attacks against the enemy's strategic installations also will help him in his estimate of the situation. A thorough familiarity with all the preliminary aerial operations is necessary in planning his own fight and in deciding what missions he will request of the supporting aviation when it is available.

In preparing for his operation, the cavalry commander must keep constantly in mind the possibility that weather or a sudden change in the air situation in the theater may deprive him of all or part of his air support. He plans with a view to using aviation to the maximum if it is there, and to accomplishing his mission without it if he must. Aerial reconnaissance often is like a pair of super-power binoculars—convenient to have as extra equipment but not indispensable in every situation. Combat air support is highly elastic supplementary fire power, but a ground mist at zero hour can render it useless.

In requesting aerial reconnaissance, the commander normally will ask the aviation to perform *missions beyond the capabilities of ground agencies.* Likewise, he will be careful with the priority of his requests so that if only a few mission requests can be granted, these will be the most useful to him. Similarly, he will take pains with his plans for any combat air missions that may be available. It would be uneconomical to ask for assistance except at critical points against targets that offer the most formidable obstacle to accomplishment of the ground mission. Normally the most profitable air targets are important enemy concentrations or installations beyond the range of ground weapons.

The "Process" Machinery for Air Reconnaissance

Reconnaissance missions rarely are combined with combat missions, although reconnaissance planes may be used against targets of opportunity if the risk is worth the effort. Combat aviation, on the other hand, though its mission is not primarily reconnaissance, often brings back enemy information and photographs obtained during its flight to and from the target area.

The cavalry commander's requests for air support are processed like those of any other subordinate command of the army. He consults the officer of the air support or liaison party which has been assigned to his unit; receives from him the latest information as to the status of the "air war" and as to the capabilities of the air support command to help him. The air officer will know how much aviation is available to support the army, and generally he will know something about the weather and other factors in the air situation. He will be much interested in the cavalry missions, because much may parallel the mission of the air support command. In "isolating the front," the air support command first must find the front with the help of the cavalry.

The machinery by which a cavalry commander's requests are sent back to the air support command is similar to that which other ground commanders employ. The request goes to air support control, to air support command, and to army commander for approval before it reaches the airdrome and the aviation unit that will fly the mission. Therefore, the wide dispersion of cavalry increases communication difficulties.

Normally, the cavalry division commander will anticipate many of the needs of his units for aerial information and cover their principal requirements in his plan for the operation. On the other hand, a good air plan cannot be completed until a considerable number of mission requests, which originate in the regiment, squadron, and troop, reach division headquarters and are studied and coördinated. The general scheme for air-cavalry teamwork, therefore, is made up of plans which originate at both ends of the chain of command.

The When, Where, and How Much of Air Support

Because of the high performance of modern aircraft, the occasions when air support can be decentralized to units smaller than a division will be rare in future. It manifestly would be inadvisable to assign a large unit of 400 mile-per-hour planes to exclusive operations on the front of a squadron or battalion, even if that front were extended to maximum limits. A single fast reconnaissance plane is capable of covering three hundred miles or more of front, road, or river line in one sortie of less than an hour's duration. Furthermore, as an additional incentive toward the economical use of reconnaissance missions, it may be necessary to provide each look-and-run plane with fighter protection because even a crippled enemy will try to prevent aerial surveillance of his vital installations and his important movements.

As with reconnaissance aviation support, so it may be with combat support. When the cavalry must fight, it can use fighter-bombers and bombers as effectively as other ground units, but the commander can expect only on extraordinary occasions to have an umbrella to aid him in strafing his opponent or protect him from strafing. If his fight coincides with the aerial effort to isolate the front, if he is on a critical mission such as establishing an important bridgehead, or if he is exploiting a break-through or leading a pursuit, he probably will receive support from combat aviation. Otherwise his calls for support, however important air missions may be to his particular operation, all may be placed in a low priority.

During American operations in Tunisia, ground unit commanders often reproached their air support officers without understanding why there was no aviation available. German planes sometimes strafed our ground positions at will and made a nuisance of themselves. It was only later when the complete story was told that the ground commanders realized how concentrations of air power at the point of successive main efforts had broken the enemy's air force, helped breach the Mareth line, and helped clear the way to Bizerte and Tunis. These concentrations would not have been

*Air Support Branch, Headquarters Army Ground Forces.

possible if British and American air power had been dispersed along the front.

While it is improbable that air support will be available at *every* stage of an operation, it is virtually certain that it will be available during *some* stage of every operation. It is for the latter that cavalry and other units must train with painstaking patience. The training problem is essentially that of teaming a 400 mile-per-hour force with another force that can move at 25 miles-per-hour or less, and doing it without sacrificing any of the capabilities of either. This is a formidable task.

In reconnaissance, aviation and cavalry supplement each other's efforts like two players on the same team. Airmen cover much more territory than cavalrymen, but the latter can look longer and discover negative information that the aviator cannot report with assurance. Obstacles which temporarily may halt a ground patrol do not bother the flyers, but on a rainy day the pilots must remain grounded, while the cavalry continues to operate. Between the two, however, they can get the reconnaissance job done—sometimes in a remarkably short tme.

In combat, the methods of the two arms differ materially. Action by air against small targets such as deployed troops generally is unprofitable, although attack aircraft effectively neutralize deployed units. The flyers must hit quickly and withdraw to reload. The aviation cannot make a sustained effort unless airplanes are available in large numbers. Favored battlefield targets are vehicle parks, convoys, bivouacs, and supply points and traffic centers.

Communications and Distributions

Training of the cavalry-air team calls for particular attention to communications. Figured in the problem are several kinds of radios including the very high frequency sets most useful for air-to-ground messages. Visual signals also come into the picture because the smallest ground units may be called upon at times to identify themselves, or to point out a target area to aircraft speeding overhead. The colored smoke grenade thus far has been the most effective ground-to-air visual device, but fluorescent ground panels of distinctive color have been used with success in training. Airmen can identify themselves visually by predetermined movements of their planes in flight, or by lights or pyrotechnics.

All this is not as simple as it seems, because of the tactical considerations already mentioned. Without the most careful teamwork, hedge-hopping planes will be unable to spot ground signals, and cavalrymen will be tempted to turn their weapons on friendly planes which suddenly whiz over a near-by ridge. In some situations, bomb safety lines must be marked by artillery smoke far in advance of the ground troops, and the latter must be forbidden to fire at any plane unless it starts to commit a hostile act.

The wise cavalry commander will pay much attention to aerial photography in his team training because frequently the only reliable intelligence from the air will come to him in this form. Pilots and observers can see but little of the enemy under ordinary flying conditions. Much dependence, therefore, must be placed upon photographs. The G-2 of the future who cannot interpret film strips and pin-point pictures will be at a great disadvantage against an enemy who can tell the difference between a half-track and a tank on a photograph taken at 30,000 feet.

Closely allied with the problem of quick communication, is that of distributing information, including aerial photographs. Forward elements generally need reconnaissance photographs most. The picture that enables them to make map corrections, to determine the condition of roads and bridges, and to locate objectives on the enemy side of the lines, often must be requested many hours in advance. Thereafter the photographs must be processed, reproduced, and delivered by ground or aerial messenger to a unit which often is hard to find quickly because it has had to change its position several times since the mission was requested. It is necessary also to distribute quickly to advanced units any helpful aerial photographs that have been taken by request of the division, corps, or army commander.

Conclusion

While recent experience inevitably has rendered obsolete certain equipment and some of the methods formerly employed, the basic doctrine expressed in FM 31-35, *Aviation in Support of Ground Troops*, largely has survived the test of battle. The value of strategic action by aviation against distant targets, and of tactical action to isolate the battlefront has been demonstrated in Tunisia and in the Pacific theaters. Furthermore, the overpowering use of close-in air support at the critical point on the battlefield was a major factor. Surprise was made possible by knocking out the enemy's aviation and blinding his army. Thereafter, the supplementary fire power and morale effect of combat aviation materially assisted during the decisive struggle.

Observers have reported that air power was a dominant factor in the break-through of the New Zealand division of Montgomery's Eighth Army at El Hamma, and in the final drive of the First Army and the American II Corps upon Bizerte.

Sky cavalry, the aerial reconnaissance squadrons which make the first contact in battle, must contain the fastest and most maneuverable aircraft obtainable. The units that coöperate most closely with ground troops have become *corps d'elite*. As for the heavy dragoons of the air force, the fighter bombers, they, too, have become battle factors as vital in warfare as once were Napoleon's *cuirassiers*—and as picturesque.

Pegasus, living in retirement on Parnassus, doubtless is very proud indeed of the flying horses of 1943.

Weapons and Realism

*by 1st Lieutenant Yale Soifer**

". . . In your training, put your time and emphasis on the squad and platoon. . . . Teach not to waste ammunition. Learn to make every shot count. . . . The Jap has a great deal of respect for our hand grenades. . . ." — FIGHTING ON GUADALCANAL, 1943.

BECAUSE of the global aspect of modern war, an army service school must be able and ready to make frequent changes in its doctrines of instruction. Combat tactics applicable to one theater of operations may not be successful in another theater. A service school, therefore, must prepare the graduates of its officer, officer candidate, and enlisted courses for any eventuality of destination that may be their assignment.

All such instructional changes can be based on only one source—*the lessons our fighting men are learning over there.*

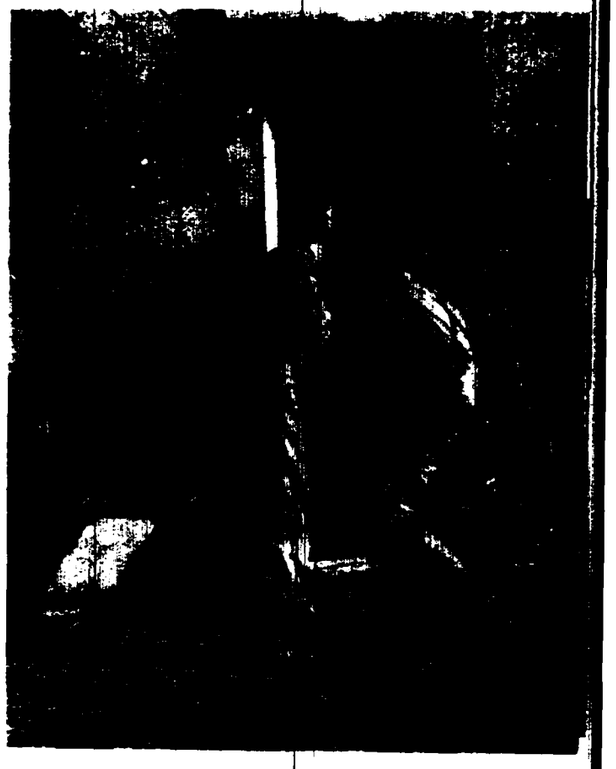
In the light of these lessons, the Weapons Department of the Cavalry School has made many additions to its program in the past few months. In general, the instructional methods in firing the weapon and in the mechanical training and functioning of the piece has not changed. But added to these is a new realism that gives the student a close approximation of the experiences that future battles hold for him.

These new courses may be grouped into three phases —new weapons adopted or in a stage of tentative adoption by cavalry units; small arms battle firing; and small unit tactics. Specifically, these include the following:

1. New Cavalry Weapons
   a. Carbine, Cal. .30 M1.
   b. 75mm Howitzer, Assault Gun.
   c. Grenades.
      (1) Hand
      (2) Rifle
      (3) Rocket
      (4) Improvised
2. Small Arms Battle Firing (With Live Ammunition)
   a. Grenade Throwing
   b. Village Fighting
   c. Infiltration Course
   d. Small Arms Battle Firing
3. Small Unit Tactics

A seven day combat course combining small unit tactics with weapons instruction is included. The employ-

Two officer candidates enter door of a house during combat reconnaissance of the Village Fighting Course. One man, with pistol, opens door and covers entrance of submachine gunner.



*Weapons Department, The Cavalry School.

Mutual protection during a squad's advance through the village. A time bomb or booby-trap may go off at any minute and these officer candidates are ready for anything.

ment, emplacement and battlefield use of all arms in the squads, sections, and platoons of mechanized and horse combat elements is emphasized. *Only live ammunition is used during these tactical exercises.*

New Cavalry Weapons

Instruction in the M1 carbine, the 75mm howitzer, and grenades, follows the established sequence of basic fundamentals: first, mechanical training, functioning, and technique of fire; then, the firing of range problems that emphasize manipulation, fire adjustment, and manufacturing and throwing grenades.

Because of restricted facilities, the 75mm assault gun instruction consists of only limited practical work by the students and demonstration of firing and tactical employment. This instruction is augmented by the use of slides, charts, and "jumbo" models of the weapons parts. The student, therefore, can become thoroughly informed of the details and theory in the functioning of the gun. Sights, instruments, ballistics, dispersion, direct and indirect fire, fire orders, and adjustment of fire are all included in the course.

The grenade course covers all types of grenades employed by cavalry units. A practical exercise in grenade manufacturing and throwing familiarizes the student with hand grenades (fragmentation, chemical, incendiary, and offensive); rifle grenades (fragmentation and antitank); launcher grenades (antitank); and improvised grenades (gasoline bottle, Molotov cocktail, tin can, and nail grenades).

Various experiments are being carried on with the rocket launcher for use by cavalry. A demonstration with the rocket launcher for the students enables them to learn of its firing methods and its penetrating qualities. The rifle grenade is also shown. It is fired from all positions, with special emphasis given to the methods of aiming and sight adjustment. Both practical demonstrations are preceded by conferences dealing with the description, nomenclature and functioning of these special weapons.

Small Arms Battle Firing

Following their basic instruction, students proceed to small arms combat ranges and, with live ammunition, put to practical use what they have learned. A grenade throwing course, which emphasizes the importance of the proper method of throwing hand grenades, has been built. A simulated village of forty buildings has been constructed, where students, carrying loaded submachine guns and pistols, encounter the conditions peculiar to combat reconnaissance in towns and villages. As a climax to this small arms firing, a machine gun infiltration course teaches the student the priceless lesson of keeping down when advancing under enemy fire.

In the grenade throwing period, each student, using dummy rounds, practices the various throwing positions. Following this dry run, a live fragmentation grenade is thrown by each at a stone tank and stone pill box target. Stress is placed on methods of throwing, timing, making use of trenches and fox holes, and accuracy.

Each man, armed with either pistol, carbine, or submachine gun, goes through the village area firing live ammunition at surprise targets. Demolition bombs, booby-traps, and smoke shells bring realism to the period. One squad at a time, under a student leader, goes through the village. Strong emphasis is placed on individual protective fire, care in entering and circling buildings, reconnoitering windows, and accuracy in quick firing.

During its advance, the squad is taught to stay out of the streets and open areas. To bring this point home, a constant cone of heavy machine gun fire is laid down the main thoroughfare as the squad advances. Instructors find that they have no great difficulty in putting this particular principle across. Explosives are used to represent mortar and artillery fire.

The infiltration course climaxes the student's small arms battle firing. An appointed leader is given the mission of taking an enemy position. He must make a plan and execute it. The plan includes the advance of the group (which is composed of two squads), under the cover of a ditch, until within one hundred yards of the enemy position. From there the leader must conduct his group across an area approximately seventy-five yards wide, through thick brush, under barbed wire entanglements, and over open terrain. They must creep and crawl in the direction of the enemy position, and assault only when within hand grenade throwing distance.

Three heavy machine guns from the enemy position lay down a steady burst of fire approximately thirty inches over the heads of the advancing men. Time bombs, firecrackers, and smoke shells are used to add to the realism. By the time that he has completed the advance, the student is well aware of the importance of creeping and crawling on his belly, watching for all available types of protective cover, and taking advan-

tage of terrain. Stress is placed on the control of the group by the leader.

Small Unit Tactics

Climaxing their weapons instruction, Officer Candidate and Basic Officers' Classes spend their last week in small unit tactics problems. These exercises place great emphasis on the employment, emplacement, and battlefield use of the weapons of the cavalry squad, section and platoon.

Every student is given some part in the daily problems and is detailed as the unit leader at least once. Using only live ammunition during these periods, students learn the principles of fire control, fire and movement of squads, sections and platoons, and control of the individual soldier. Conservation of ammunition is brought out realistically. Dismounting arms and men from their vehicles or horses, and crawling or rushing over rough terrain to put the guns into action is also part of the day's activities.

Each day finds a different combat unit of the mechanized cavalry stressed. One day the students work with a fully equipped reconnaissance section, each man and vehicle carrying its quota of ammunition. Another day the problem involves the employment of the assault gun section. When assault guns are not available, they are simulated by the use of 37mm one-pounders mounted on the rear of three-quarter weapons carriers. One day is devoted to stressing the employment of the .50 caliber machine guns and the emplacement and fire missions of the 81mm mortar squads. The series of exercises is climaxed by the employment of the reconnaissance platoon, supported by tanks and the assault gun section.

Horse classes move through the combat problems with fully equipped rifle and machine gun squads, sections, and platoons. One day is devoted to the antitank platoon, and the 37mm squad, section, and platoon, as well as the actual firing of the weapons. Particular emphasis is placed on offensive fire and movement and dismounted action for the horse classes.

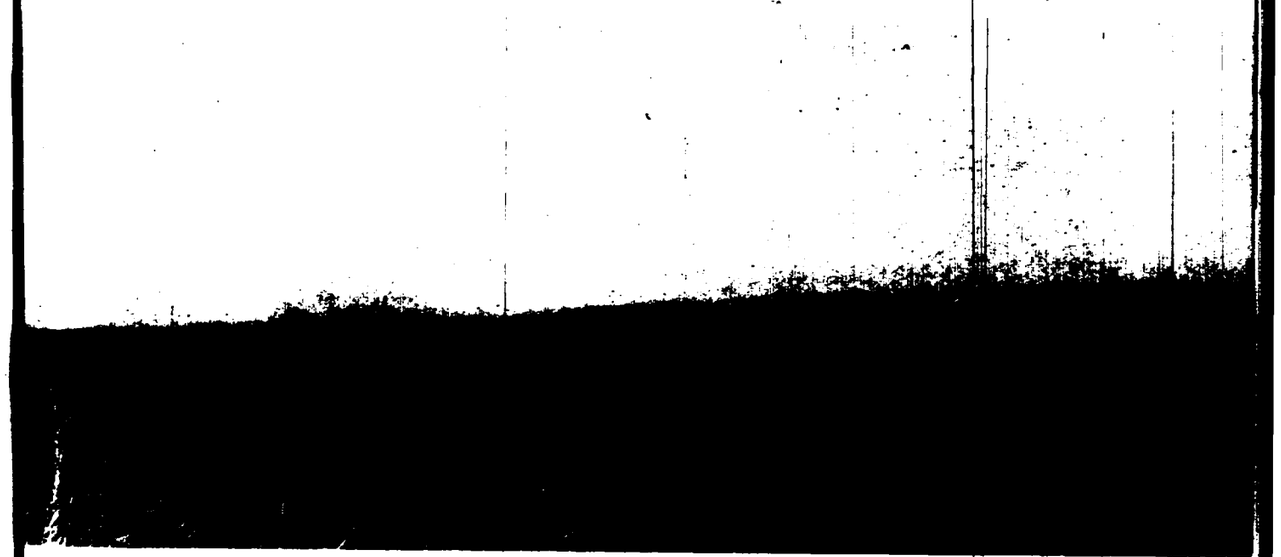
During this course, an attempt is made to develop leaders who are capable of commanding squads, sections, and platoons. It is the corporal, the sergeant or the lieutenant who, with his unit, makes the first important contact with the enemy. There cannot be too much detail in training that stresses small unit control.

Conclusion

The Weapons Department of the Cavalry School endeavors to bring more and more of battlefield realism into its instruction. One of the first requisites for leaders and their noncommissioned officers in combat, is a thorough knowledge and proper employment of their weapons. The use of live ammunition on small unit tactical problems has proved an invaluable means of increasing the effectiveness of combat instruction.

Undoubtedly, tomorrow will bring other changes and new lessons. Whatever they may be, whatever alterations in program they may impose, the Weapons Course will endeavor to give tomorrow's leaders a thorough knowledge of cavalry weapons, mechanically and tactically. It will stress the importance of such knowledge and will attempt to bring to the fore in each individual the qualities of leadership necessary for combat command.

Students of an officer candidate class infiltrating toward enemy position under steady burst of machine gun fire, time bombs, and smoke shells.



Rail Loading Training

*by Lieutenant Donald G. Merritt**

A practical work course, in which student officers and officer candidates have the actual experience of loading a train with tank destroyer vehicles, is given by the Tactics Department of the Tank Destroyer School, under the heading of "Movement of TD Units by Rail."

In comparison with the actual value of the instruction, the equipment necessary to present the course is both inexpensive and readily available at any post. The setup used effectively by the TD School consists of three dummy flat cars and one box car, labeled "TDS-RR." The construction of these cars is shown in Figures 1-4. The flat cars are used primarily for practice vehicle loading, while the dummy box car is used to illustrate the proper installation of kitchen facilities, including both the old Field Range No. 1 and the new Field Range, M1937, as shown in Fig. 1. Six representative TD vehicles complete the demonstration equipment.

The instruction includes a one-hour conference and three hours of field demonstration and practical work. The conference outlines briefly the general procedure for TD rail movement. In addition to the details of command and staff procedure necessary for all rail movements, emphasis is also placed upon points deemed especially pertinent. Pre-loading preparations are stressed. Timely issuance of warning orders, and their essential details, is discussed. The instruction of picked unit loading crews in the early stages of their training is advocated to expedite movement in maneuver and in combat. The determination of a suitable vehicle loading order to meet any possible detraining situation is fully explained. Students are thoroughly acquainted with the loading sequence of personnel and equipment that will best provide for the type of operations necessary at the destination. Supervision and supply arrangements en route and at the detraining point, as well as counter-intelligence measures, are studied.

*Tank Destroyer School.

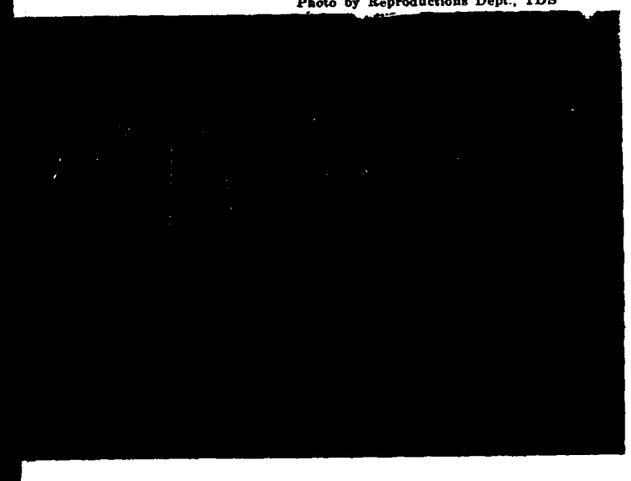


Figure 1.—Installation of the M-1937 Field Range as demonstrated on the "TDS-RR." Students are instructed in the method of blocking ranges and securing chains. Requirements for refueling, size and gauge of sheetmetal apron and fire protection are also explained.

Photo by Reproductions Dept., TDS

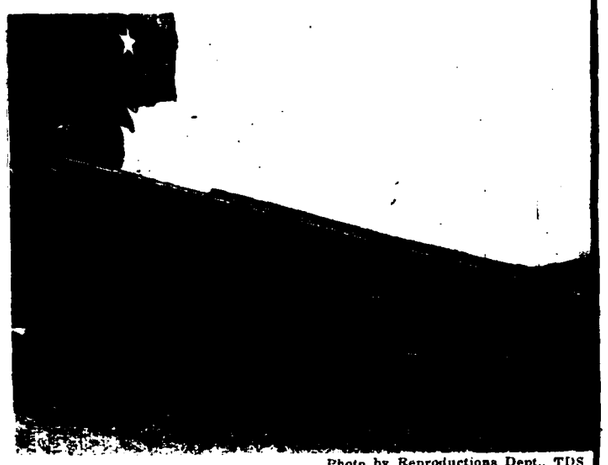


Photo by Reproductions Dept., TDS

Figure 2—Vehicle loading ramp, showing details of RR tie construction for car of average height. Treads are 2" x 12" planking double width, spiked fast. Ramp easily supports heavy M10 Destroyer.

Suggested forms for entraining tables are distributed. These forms, drawn up by the class instructors, are designed to expedite entrainment and have proved invaluable aids to TD entraining officers. The tables are clearly and briefly drawn up to include the number and type of cars necessary, cars assigned to units and their personnel and equipment, officer assignments, and entraining times. Included is a worksheet showing car serial numbers, length and capacity, and the length, type, weight and parent organization of all vehicles loaded. Thus the loading order can be laid out well in advance and completed quickly upon the arrival of the train.

At the end of the initial class hour, the students move to the field where they are formed into small groups. One group is detailed to build the loading and spanning ramps, and one to prepare the lashing wire and blocks and to secure the vehicles that a third group will guide into position on the cars. Another group is assigned to check the loaded vehicles, and the fifth to inspect the cooking arrangements in the kitchen car.

Photo by Reproductions Dept., TDS

Figure 3—Details of blocking and securing of motorcycle and M-10 Destroyer as completed by OC students. No. 5 patterns (padded) are used on cycle wheels, and Nos. 2 and 3 on M-10. Note inexpensive construction of "TDS-RR."

The loading ramp is designed to support the heaviest TD vehicle, the M-10 destroyer. The ramp, shown in Fig. 2, is made of old railroad ties, a supply of which should be available at all loading locations. Technical details of the construction of the ramp, spanning ramps, and block patterns are available in FM 101-10, and in the Association of American Railroads handbook, "Rules Governing the Loading of Commodities on Open Top Cars." Here will also be found the approved use of patterns for different types of vehicles.

Vehicles loaded for demonstration purposes are the M-10, the ¼-ton, the 75mm gun on the half-track, the 2½-ton truck with 1-ton trailer, the 37mm gun on the ¾-ton truck, and the motorcycle. The students guide the vehicles up the ramp in a predetermined loading order, and spot them in their proper places on the cars. The required amount of space is left for brake-wheel clearance. Using the approved materials and methods for each type of vehicle, the securing crews then lash their assigned vehicles. The eight different patterns for blocks are demonstrated (see references above). Five of them are used for the TD vehicles. The blocks are made of hardwood or straight-grained pine, and are fastened with 5-inch nails to ensure proper security without danger of splitting the block. Eight gauge black annealed wire is used for the lashing.

The lashing crew is broken down into teams, one to each vehicle, and there is spirited competition over the best and speediest job. The M-10 requires little securing because of its weight. It is blocked at the front and the rear of each track, with No. 3 patterns. Three No. 2 patterns are used along the side of each tread, as shown in Fig. 3. In this connection, full or half-tracked vehicles must be inspected closely before blocking to ensure tightness of the track. Loose tracks may cause the vehicle to work clear of its blocks.

The ¼-ton truck, or passenger vehicles of similarly light construction, are secured by blocking all wheels front and rear with No. 3 blocks. No. 2 blocks, double height, are nailed along the side of each wheel, and all wheels are wired down. Burlap padding is inserted between the blocks and the tires to prevent chafing of the tire wall. Because of the light weight of this vehicle, a wire is also passed over the chassis, front and rear, to prevent sway.

The tracks on the 75mm SP gun are secured in the same manner as those on the M-10, except that a wire lashing is used from the suspension system to the flat car for additional security. The front wheels are blocked, using patterns 2 and 3, and are wired securely, as shown in Fig. 4. The 2½ and ¾-ton trucks, likewise, use the No. 2 and 3 patterns to block all wheels. Six wheels are blocked on the 2½-ton. Also wires are run from all wheels. The motorcycle is perhaps the most difficult to secure, because of its weight and construction. The wheels are blocked with No. 5 patterns. Four of these patterns are used, one on both sides of each wheel.

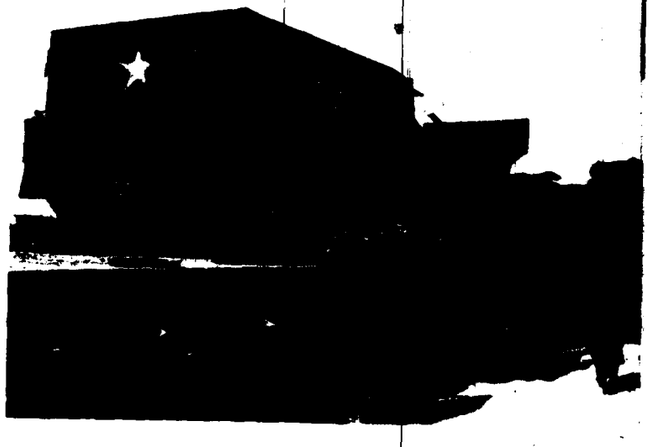
When the vehicles are fully secured, the inspecting group tests the job by checking the travelling preparations on each vehicle, the blocks, and the tension of the wire lashing. Its twisting and securing are also inspected.

The entire class then assembles and the whole procedure, particularly the securing, is critiqued by the instructor and students.

The above instruction has shown excellent results in the training of officer candidates and student officers at Camp Hood. Through them, the fundamentals of rail loading and movement have been effectively transmitted to training units.

Figure 4—OCs securing half-track, using patterns 2 and 3 and wire lashing on track. Same patterns are used on front wheels, with No. 2 patterns double height along side of wheel. Spikes not driven home for demonstration.

Photo by Reproductions Dept., TDS



Centralized Training

In the 3d Cavalry (Mecz.)

*by Lieutenant Colonel Meredith C. Engel**

TRAINING of the individual soldier presents a multitude of problems in any branch of the service. But in the mechanized cavalry of today those problems are magnified beyond the comprehension of any but those who have been through the process of solving them. The volume of subjects and the number of weapons that a new soldier just introduced into the mechanized cavalry must master are so great that neither student nor instructor will have any idle time, and the ingenuity of the instructor will often be sorely taxed.

Drive — shoot — communicate are incidental fundamentals to the big job of reconnaissance, but each one is a big job in itself when it must be taught. As basic subjects in the mechanized cavalry, they constitute merely a background for every soldier. "Stables" have not disappeared—only a word has been added. "Motor stables" is quite an appropriate term, and it is surprising what an attachment the soldier can acquire for his mount. And so, to the three big jobs above, a fourth is added; combine groom, water, and feed and you have *maintain*—as essential to the vehicle as to the horse, if performance is expected when the going gets rough.

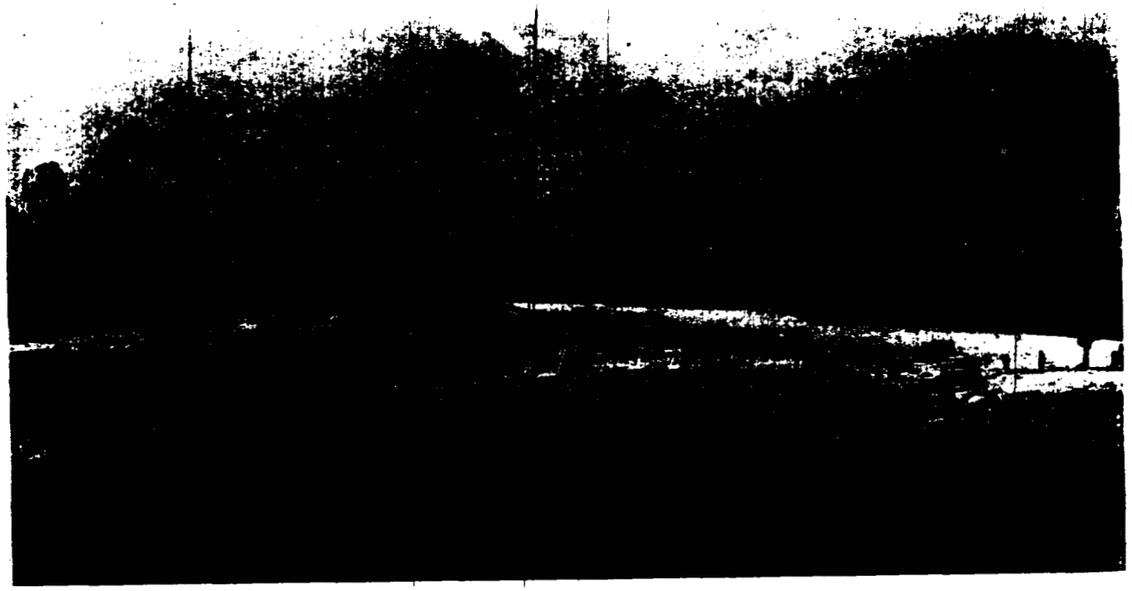
*3d Cavalry (Mecz).

The instructors at the service schools are honest in their convictions when they each in turn advise that the best men in the outfit must be the radio operators, or the drivers, or the gunners, or the mechanics to keep the vehicles in operation. But when every soldier must be able to do at least two and sometimes all four of these things and do them well, it leaves little room for many at the bottom.

When there is much to be done and little time in which to do it, mistakes are costly. There are ways in which the task can be simplified without risking the set-back of costly errors. The expedient now being used successfully by the 3d Cavalry (Mecz) is the system of *centralized* training.

The three big jobs about which every soldier in mechanized cavalry must have a basic knowledge—*driving, shooting,* and *communications*—are each centralized under the control of an officer who is especially qualified in that particular subject. It is that officer's job to plan, organize, and supervise his subject for the entire regiment.

The *Tables of Organization* provide a regimental motor officer and communications officer, who are the logical officers to handle those particular jobs. For centralized training in weapons, a weapons officer must be detailed. All of these officers must have their specialized assistants, of course, and there again the *Tables of Organization* provide almost all that is needed. Each troop has its own motors officer and its communications (or radio) sergeant. Is there any harm in designating one of the troop officers as troop weapons officer, and making him responsible for all weapons instruction within that troop? "But," it is asked, "should not all officers be expert at all weapons and be able efficiently to teach them all?" Yes, and eventually they will, but the army today is being built with young officers, and they are not all efficient in everything at the start. So why not approach one thing at a time and become really proficient at that one thing? Therefore a weapons officer is selected in each troop, and the plans begin to take shape.



37mm Training on 1000-inch .22 Caliber Range

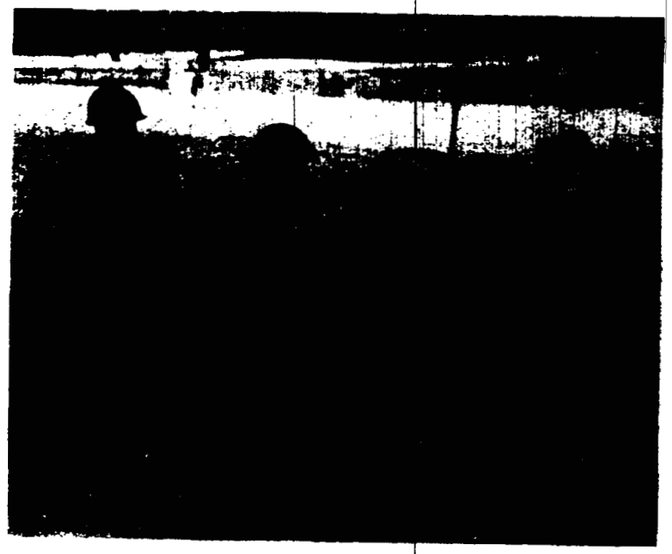
The Communications Classroom. All furniture and equipment were built by the men.

With this plan of centralized training, it might be suggested that the troop commanders are being robbed of their initiative. Not at all, they will have ample opportunity to display their initiative and a great deal more time to permit it to function, because the detailed schedule and the worry of procuring equipment will be lifted from their already overburdened shoulders.

Here is how centralized training works in a mechanized cavalry regiment. First, each of the three officers responsible for motors, communications, and weapons training takes his crew of assistants and thoroughly schools them for their job. There are classes for instructors at every opportunity that can be spared during the day, and then again at night, until they are sure that every assistant is qualified in the subject that is to be taught. Then the method that is to be employed is decided upon and understood by everyone. The training program is broken up into lessons. All available equipment in the regiment is pooled, and the troops are staggered in the schedule under control of the Regimental Plans and Training Officer so that maximum utilization of the equipment can be obtained.

Except for communications training, which all personnel attends at the same time, the troops are rotated through a "classroom." All use the same equipment, but each troop studies under its own instructor, who takes over when his troop arrives. The instructor is thoroughly qualified to give the instruction, has the lesson planned and organized and the equipment set up, and yet is not lost to the troop at other times during the day for duty. The layout of equipment for the day is made by the first troop to arrive in the morning and taken in by the last troop to leave in the afternoon. This saves loss of training time for each troop, but to avoid having the same troops accomplish all of the work, the position of troops in the schedule is rotated daily. By keeping a particular phase of training in the same area throughout the day, the problems of supervision by the responsible officer and of inspection by the regimental commander are simplified.

Another big advantage in centralized training is that the instruction is uniform. In order to make a change or correct errors, it is necessary to see only one officer instead of many. When the regiment is trained, every soldier will manipulate the trigger of the machine gun or clutch the vehicle or handle the radio key in the same way, instead of in as many ways as there are individual instructors. There is only one right way—that is in accordance with the Field Manual—but some units do establish peculiar habits of doing certain things; and when a regiment is organized with officers and noncommissioned officers from several sources, a variance



Future Radio Operators at Work

of methods is often encountered. Inasmuch as a uniform system is not only desirable but imperative, the centralized control can accomplish it. Then, too, all units will be at the same level of training in any one subject at all times.

There are other factors to be considered, minor perhaps compared to the big advantages already discussed, but important enough to be mentioned and examined. Training aids and training facilities are essentials that are often difficult to obtain. If individual troop commanders must spend time gathering by fair means or foul such things as sighting bars, cut-away models, charts, and many other aids so necessary in getting the instruction across, a motley and not too effective array is likely to result. And when it comes to obtaining classrooms outfitted with some kind of furniture, no matter how crude, ranges for firing (with the present congested condition of all army posts), and areas in general for training, the specialist instructor can do much toward getting the best use for the entire regiment out of the facilities available: because centralized training affords absolute coördination through proper grouping and rotation.

Every soldier must be at least familiarized with all individual weapons plus the machine gun, but before one new soldier can be started on his training, there are many things that must be accomplished. A building where indoor instruction can be given in the event of inclement weather is desirable but not essential, but some central place where equipment can be concentrated is necessary. For the rifle alone there must be sighting bars, sighting discs, rifle rests, and boxes of some character, none of which are items of issue.

Numerous small items such as targets, paper, thumb tacks, pencils, waste, score books, score cards, sight blackening materials, and cleaning materials must be provided. Charts and simplified reference material such as pamphlets or mimeographs are helpful. Arms must be cleaned, and ammunition, both dummy and live, must be available when it is needed. All of this equipment must be provided for in advance, and yet rifle training begins in the first week of the MTP! A resourceful officer who knows how to get this equipment, whether it be issue or non-issue, given a few men to work with and that one job to do for the entire regiment, can get the job done. It is being done in the 3d Cavalry (Mecz)! Adequate equipment can be procured and that part of it that must be built can be constructed correctly and sturdily.

There are other subjects of individual training to which this same system can be applied. The pioneer and demolitions personnel, the cooks, the clerks, the buglers and messengers, the motor mechanics, and the armorers for the entire regiment can all be grouped under a specialist instructor for each subject and yet remain under control of their individual troop commanders for basic training.

Assume that the officer and enlisted cadre of a regiment just being activated arrive simultaneously on the date of activation and that the fillers begin to arrive only one week later, all from reception centers. That situation can and has occurred. Will a decentralized system of training be ready to operate under those circumstances? Can each individual troop commander be prepared for the details involved in all phases of training? No! But the *centralized* system of training *will* accomplish these results in the minimum of time and with the minimum of equipment!

★ ★ ★ ★

Putting Round Pegs in Round Holes

*by 2d Lieutenant Claude D. Baker, Jr.**

THE present process of "classifying" members of the armed forces is intended to aid in placing each individual soldier where he may best utilize his technical specialty in furthering the efficiency of the complex mechanized war machine.

Army regulations state, "Classification is a process by which pertinent data concerning the enlisted man's education, intelligence, aptitudes, previous military experience, civilian work history, interests, hobbies, and other qualifications are validly obtained and correctly recorded to be used as a basis for an assignment in which he will be of the greatest value to the service and will utilize his acquired skills most effectively. It will be borne in mind that classification is not in itself an objective, but rather a means to an end whereby no factor contributing to an enlisted man's value to the service will be overlooked."

In order fully to appreciate the present system of classification, it is necessary to dig into the records of 1917 when men were being recruited for the armed forces of World War I. Little thought was given either to the technical ability of the individual or to the need of a replacement for a specialized position where a technical vacancy might easily occur and be very difficult to fill. Radio men had to be replaced; laboratory technicians were needed; and in general, only archaic methods of replacement existed, because the need of a system for the placement of men had not been foreseen.

*Personnel Officer, 3d Cavalry (Mecz)

In 1917, after costly tribulations, the War Department realized the need for a classification system, and in July summoned together skilled personnel administrators and psychologists who drew up a system and put it into operation.

In the latter years of World War I, men were being placed in organizations that could use their technical skills to the utmost advantage. This Placement Personnel System at that time adopted the Qualification Card System, with tests similar to those in use today.

Several years after the end of the first World War, the numbers of the personnel in the armed forces diminished to such an extent that there was little need for this personnel placement system, and it passed to a negligible degree of usage. But the wheels of the system were kept oiled, so that the idea might be used if the need ever recurred.

In 1940 the present system as modified was again put into motion. There was no doubt that the armed forces of today were to be highly specialized and technical. Consequently, to place an individual correctly and to realize the greatest profit from his skills, the placement plan had to work. The present forces are largely a collection of technical individuals, teamed together with other technical individuals in such a way as to utilize most efficiently the skills imparted to them.

The 3d Cavalry (Mecz) was activated at Camp Gordon, Ga., with a complement of officers and enlisted men as the basic cadre. The regiment had as its initial problem the task of placing all incoming recruits in their correct category, where, after basic training, they eventually could fulfill the desired job assigned them according to their civilian skills.

The new filler personnel arrived in groups of approximately 200 to 300 men each, and from War Department Qualification Form No. 20 of each group, it was learned among other things that the regiment possessed a large number of 18 to 22 year old soldiers, with a major percentage showing a score of 110 or above on their Army General Classification Test. There were only 3 illiterate men within the entire regiment.

While the enlisted men were being put through a medical examination, the Personnel Section began the task of classifying and sorting the men into the technical vacancies of each troop. In order that each troop could be given the men that it required, each troop clerk from the cadre was supplied with a list of Table of Organization *job specialties* that existed within the troop.

After necessary preliminaries, the men were then equally distributed within each troop according to each man's *occupational specialties* as justified by T/O requirements and the Army General Classification Test score.

The theory of the entire procedure was to put the right civilian cog in the right military sequel in order to avoid future congestion and further transfer of enlisted men within the regiment. This system reduced administrative procedure to a minimum.

The determined effort of the 3d Cavalry to assign men to each troop equally according to classification test scores was intended to balance each troop in intelligence so that training programs would be balanced. If men had not been assigned equally, certain troops would have advanced further in training than other troops hastily thrown together without thought of equalization.

Troop commanders are now using the Qualification Card every day prior to assigning an enlisted man to any new position. The card system is working with the utmost satisfaction, and it is felt that thorough classification and the usage of the system has been and will continue to be a contributing factor in the final combat efficiency of any unit.

Large men for trucks . . . Small men for tanks

Training the Brigade Reconnaissance Platoon

*by Captain James B. Scott, Cavalry**

WITH the advent of World War II, additional emphasis has been placed upon the already salient battle commandment—"reconnaissance." Adequate, accurate, and complete reconnaissance is now a "must" for every unit commander preparing for a campaign.

Needless to say, the most important reason for placing emphasis upon continuous and effective reconnaissance lies in the present trend of warfare, which has changed from the more or less static position battles of 1914-1918, to the development of a swift mobile offensive striving by its mobility to penetrate the enemy's weak points.

The general information required by commanders of large units when formulating their initial plans is furnished by distant reconnaissance. This information is usually obtained by the use of aircraft, which because of their speed can supply the commander with information of the enemy's main forces, bivouac, supplies, and the location of his reserves, before contact is made between the most advanced elements of the two combatant units.

As actual combat becomes imminent and the forces are within striking distance, specific information becomes a prime factor in the formulation of the unit commander's final decision and plans. This necessitates the initiation of close reconnaissance, which furnishes the commander with the desired information regarding terrain and capabilities of the enemy. Close reconnaissance then takes on a continuous aspect, and only by that means is it possible for a commander to stay well informed on the rapidly and constantly changing situation.

Reconnaissance is performed by integral parts of the cavalry brigade, such as the reconnaissance platoon, mounted, and dismounted patrols.

1. The *motorized reconnaissance platoons* are employed at the farthest distance from Brigade Command Post until actual contact is established. The operation of these platoons is outside the radius of the operation of the mounted patrols. When actual contact is established, the mounted and dismounted patrols then take over the duties of close-in reconnaissance and leave the motorized units free to capitalize on their speed and mobility to seek out weaknesses on enemy flanks and reconnoiter to his rear.

2. Once motor reconnaissance has established contact, it works back to the radius covered by mounted patrols. The duties of the *mounted patrols* then become infinitely greater, and upon them falls the burden of furnishing a larger portion of the information needed by the brigade commander.

3. *Dismounted patrols,* of course, work when information is desired concerning enemy installations and positions where the distance between hostile forces is not in excess of 5 miles.

Primarily, there are two basic elements of information needed by a commander preparatory to issuing his orders. The first is *terrain information;* and the second is *enemy information.* Having a mission assigned by the division commander, the brigade commander knows what information he needs and covers this in his reconnaissance orders. Essential items concerning terrain are the availability of road nets, possibility of cross-country movement both for himself and the enemy, condition of bridges along the expected route, terrain features particularly adaptable for defense by himself or enemy troops, any terrain obstacles which might influence the brigade commander's decision, and the suitability of terrain for use by tanks or antitank units.

The plans and intentions of the enemy are always problematical. Consequently, the desired information concerning him covers a vast field, and varied and conflicting reports can be expected. The essential elements regarding the enemy are his location and strength, his troop dispositions, location of his reserve, position of his flanks, possible strong points or weaknesses, availability of reinforcements, and the type of weapons with which he is armed.

The unit that performs much of the reconnaissance work for the brigade, is the comparatively new reconnaissance platoon provided in the Tables of Organization for Cavalry Brigade Headquarters Troop.

Since a dead or captured reconnaissance element is useless, it is essential that combat be avoided except as a last resort or to prevent capture. Under unusual circumstances, however, in order to gain necessary information or take prisoners, it may be necessary for elements of the platoon to engage in actual conflict. Under such conditions, the fire power of the unit is such that, considering the element of surprise and mobility, the platoon or section of the platoon should be able to overwhelm a force equal or even superior to its own. This reluctance to commit the platoon to actual fire should

*Hq. 2d Cavalry Brigade.

not in any way detract from the aggressiveness of the unit.

In regard to large fire power, the German reconnaissance units are organized similarly and when necessary do engage in battle. Quote: "Motorized reconnaissance is well in front *when there is need to supplement air reconnaissance quickly,* and *when a clear picture of the enemy dispositions can be obtained only by fighting.* The reconnaissance unit is fitted for this because it is equipped with armored vehicles and *numerous automatic weapons to carry out reconnaissance in battle.* Against a strong enemy it must be reinforced."

The selection of personnel for the reconnaissance platoon should be given strict and conscientious attention. From the platoon leader down to the basic privates, the personnel should be hand-picked. Each man should be mentally and physically alert, aggressive, cooperative, and should have a high degree of initiative.

After the men for this unit have been selected, then begins the work of welding them into a solid and smoothly functioning organization. The entire unit should be brought along together in their schooling, and this schooling should follow the maxim—*"explanation, demonstration, application* and *examination."*

Consistently better results can be obtained by having the men actually do the work than by simply explaining it to them. Trial and error, with a constant check and correction, is the most satisfactory manner through which to gain information and retain it for future use.

In the conduct of a school for this unit, consideration should be given to the type of work that will be required of the platoon. Essentially, their's is one of the most rigorous aspects of battle, requiring of them stamina, endurance, and patience. They must be able to gain information of the enemy, interpret and evaluate it, and disseminate that which is essential to the brigade commander. They must conceal information of their own forces and then be able literally to "read between the lines" so far as the enemy is concerned.

During the *first phase* of instruction, all reconnaissance personnel should be familiar with the organization of our army, with emphasis placed upon the particular branch of the service involved—in this case the cavalry. In later phases of training, a review of this field in connection with work on the organization of enemy units is desirable.

With this perspective, the purpose and functions of the reconnaissance platoon should be considered. While the field is quite general, benefits of this orientation lecture are far reaching.

The *second phase* should be devoted to the specific designation of the duties of the personnel in the unit and familiarization with such terms as scouts, patrols and observers, as well as the duties of each. As the instruction proceeds, such terms as outposts, observation posts, command posts, main line of resistance and strong points should be explained. In this connection, it is beneficial to follow the explanation by laying these things out on the ground, at reduced distances.

In the *third phase* study is devoted to the work of the reconnaissance element and the collection and transmission of information. It is possible at this time to work into a preliminary reconnaissance problem, such as laying out a particular enemy situation and then following the procedure necessary to get this information back to the command post. At this time, it is very helpful to use men or prearranged flag codes to indicate enemy patrols, command posts, outposts, main bodies, covering forces, reserves, truck columns and supplies. Additional incentive can be furnished by breaking the platoon into squads or sections and allowing them to compete with each other.

Having been on the terrain, in the *fourth phase* the unit can be introduced to map and aerial photographs. If available, maps of familiar terrain should be used, as features with which the men are already familiar help them in picturing the terrain on the map. Since in all probability, under actual war conditions, aerial photographs will be the main source of information, emphasis during this phase should be placed upon photographs. The use of the compass becomes increasingly important, and preliminary work can be used to supplement the map reading subject.

The *fifth phase* covers instruction in sketching. Little explanation should be necessary regarding the background and foundation of map reading and conventional signs. Basically, the work is simple, but considerable time must be spent in actually working on the terrain. The use of the compass is essential, and by painstaking and diligent work a successful criteria of previous work can be gained by the finished sketch. At the conclusion of this phase an apt student should have confidence in his ability and the use of his tools.

The final step in this phase should be consideration of overlays and a situation map. Every individual must understand the importance of, and have the ability to make an accurate overlay. A cleverly made overlay will usually demonstrate the situation more clearly and graphically than any verbal or written message. The men must be taught, however, that they must clearly remember what they see in order that they may clarify any situation when additional information is requested.

Having been taught to observe and remember what they observe, in the *sixth phase* the men learn to evaluate their information. This must be "sifted out" until only that which is essential is transmitted to higher headquarters. Many items may be of an informative and interesting nature, but unless they have a direct bearing upon the situation they should not be reported. Accurate evaluation of information requires a great deal of time and work. Instruction here can be simplified by setting up a system of flags, as suggested in the *third phase.*

The conclusion of this phase should be devoted to message writing and the method of transmission of messages. Both verbal and written messages should be clear, concise and adequate, and until a degree of per

fection is achieved, verbal messages should be written out before being transmitted.

The *seventh phase* requires considerable preparation and work. Since the majority of information is transmitted *via* radio, it is essential that all persons in the unit understand the fundamental operation of the set. The goal should be for each person, or at least for each squad leader, to be able to send or receive 6 to 10 words per minute. Further, a basic understanding of map coordinate codes, pyrotechnics, panel codes, field telephones and cipher devices should be required. This is perhaps the most interesting but most difficult of all the work required in this course of study.

During the *eighth phase*, the men study the problems involved in examination of enemy personnel and the action to be taken in regard to them. Other men simulating enemy captives are first coached in what they are to say, then actually examined by members of the platoon, and the results recorded. Thus again, actual work is the basis for a successful completion of the phase.

The comparatively short *ninth phase* is devoted to the use of camouflage and concealment. The practicable aspect of camouflaging vehicles, weapons and personnel can be gained by using only the material at hand. If possible, aerial photographs of the resulting camouflage should be taken and used to demonstrate defects in the work.

The *tenth phase* is both technical and comprehensive. It deals with the identification of friendly and enemy aircraft, tanks and uniforms. The use of training films and other visual aids increase the interest of the work. If located near any army airport, friendly craft can easily be identified by actually watching them in flight and pointing out their characteristics.

At the completion of the course the success of the instruction can be determined from the results obtained from the *final phase*. The entire platoon should be run through a 36 to 48 hour reconnaissance course involving the necessity of making practicable use of all their previous instruction. If thought is given to laying out the course, all of the eventualities of combat, as well as the instruction covered, can be simulated. If a good foundation has been laid in previous phases, the result should be gratifying.

This outline covers only the essentials in the training of a reconnaissance unit. It can be compared to the bone structure of the human body. To put flesh upon this skeleton framework, it is necessary to have the judicious and patient work of an instructor and men desirous of developing a capable, well coördinated and adept reconnaissance platoon.

107th Cavalry Reconnaissance Regiment (Mecz.)

From a painting by Howard E. Smith.

Book Reviews

DEFENSE. By Field Marshal Ritter Wilhelm von Leeb. (Translated from the German). Military Service. $1.00.

In *Defense*, published in Berlin in 1938, von Leeb offered his government a plan for the next war in which Germany might be engaged. He recommended that the war be opened with active defense, as a preparation for the offensive later. Von Leeb's plan, as outlined in *Defense*, was rejected by Hitler; but the same idea of active defense, developed simultaneously in Moscow, was successfully employed by the Russian army in its fight against the Germans in 1941.

This is the second book in the series of which Clausewitz' *Principles of Warfare* is the first. Those who found the first book of value will be equally as interested in this one.

SURPRISE. By General Waldemar Erfurth. (Translated from the German) Military Service. $1.00.

Erfurth contributes to modern military literature the first treatise on surprise as one of the fundamental elements of victory in warfare. He was head of the German Military Commission to Finland in 1943, and previously chief of G-8, of the German General Staff, responsible for "basic planning."

In measuring the value of *Surprise*, it should be remembered that it was written prior to World War II, and that in it, Erfurth departs from the lines of traditional military thinking. The deduction to be drawn from his book is that the strategy of surprise is "nothing but an application of the principle of the economy of force."

In the opinion of the translators, General Erfurth underestimates the value of the surprise to be had in the use of new weapons and fighting techniques.

This is the third book in the series of which Clausewitz' *Principles of Warfare* is the first, and von Leeb's *Defense* is the second.

THIRTY SECONDS OVER TOKYO. By Captain Ted W. Lawson. Random House. $2.00.

Captain Lawson, with the editorial assistance of Robert Considine, has given us a thrilling first-hand account of the raid of American planes over Tokyo.

Starting with the very beginning, Captain Lawson describes the selection of the men, the skilful planning, and the rigid training that went into the preliminary stage—all of which helped to cut the losses that might have occurred on such a dangerous mission. The Navy is given full credit for its magnificent work in getting the flyers as close to their target as safety and circumstance permitted.

These months of training were not only for "thirty seconds over Tokyo" but for developing the men to sustain themselves for whatever might come after. Plenty did. Only men in perfect physical condition, with one hundred per cent of their wits about them, could have survived what they went through after they landed in China. Given these attributes, they still would have had little chance had it not been for the courageous assistance given them by the Chinese and the Missionaries into whose hands this crew was fortunate enough to fall.

Not the least important phase of this book is the ending—Captain Lawson's summary of the attitude of these men, in the light of subsequent events, toward the mission for which they had volunteered.

COMBINED OPERATIONS. THE OFFICIAL STORY OF THE COMMANDOS. By Hilary St. George Saunders. Macmillan Company. $2.00.

Stranger and more thrilling than any fiction is this absorbing account of the accomplishments of the picked men from the Royal Navy, the British Army, and the Royal Air Force, who work with U. S. Rangers and other Allied men in what is known as Combined Operations.

Mr. Saunders has written a simple and direct account of the training and exploits of these men. Without giving out information that would aid the enemy, he retains for the reader the sense of being on the inside track.

BRIDGEHEAD TO VICTORY. By L. V. Randall. Doubleday, Doran and Company. $2.00.

Written primarily for the layman, this book presents a general picture of invasion possibilities that, like all such analyses, must wait for history to evaluate.

The author bases his deductions on his familiarity with the geography and peoples of Europe and his knowledge of military tactics, acquired during five years service in the German army prior to and during the last war.

As Mr. Randall states in his preface, he may be very wrong. Apparently, he has offered an honest opinion and pretended to no more. As a whole, his analyses, deductions and conclusions regarding invasion routes seem to be more logical than the average.

Mr. Randall pointed out (prior to the fall of Tripoli) that of all the Axis satellites, Italy is most possible for invasion via Sicily. He suggests further that this invasion should be followed quickly with simultaneous attacks by the Red Army in the east and the establishment of bridgeheads along the European coast in the west.

While advocating the intensive use of airborne paratroops, the author observes that the only successful large-scale action of this kind to date was employed by the Axis at Crete.

As a sketch by which to follow future events, this book is of general interest.

Principles Of War

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THE WAACS. By Nancy Shea. Harper & Brothers. $2.50.

Once again Mrs. Shea has come to the fore with an authoritative guidebook for women. Her *Army Wife* and *Navy Wife* were two of the most helpful books published for wives of men in the service. She now turns her attention to the women in the service.

The Waacs gives a brief history of the organization and the principal people who influenced its inception. It contains a thorough outline of the requirements for enlistment, a comprehensive account of the training given in each branch of the service, and a picture of what the Waacs are doing in the various fields.

This book will be an invaluable guide to women considering enlistment in the service. It will also be of interest to the families of Waacs, because it will give them a clear idea of what is being done by these women.

THE ORDEAL OF SERGEANT SMOOT. By Louis Paul. Crown Publishers. $2.00.

A number of books giving the reactions of draftees to the army have been published. This is a portrayal of the army's reaction to the draftee, as presented by Sergeant Smoot. It should have a salutory effect on the draftee, provide the sergeant with some amusing moments in retrospect, and entertain the rest of the world by providing some much needed laughter.

THE SPY IN AMERICA. By George S. Bryan. J. B. Lippincott Company. $3.00.

WHAT YOU SHOULD KNOW ABOUT SPIES AND SABOTEURS. By Will Irwin and Thomas M. Johnson. W. W. Norton Company. $2.50.

The history and practice of espionage, especially during wartime, is of absorbing interest to most readers. These two books are excellent contributions to the collection of books on the subject.

The Spy In America is the first book to give a more or less complete history of the subject from the American Revolution to the First World War.

What You Should Know About Spies and Saboteurs is concerned more with the practice of spies and saboteurs than with their history. It does, however, give many concrete examples to illustrate the methods described. It is one of the most valuable of the "what-you-should-know" books.

THE UNION OF SOUTH AFRICA. By Lewis Sowden. Doubleday, Doran and Company. $3.00.

Lewis Sowden, a South African editor, endeavors to explain the paradox of the South African Union—an unstable union of a divided people—and the puzzle of its relationship to the British Empire and to the world at war.

While giving enough historical background to make South Africa's inner conflicts understandable, Mr. Sowden centers his attention on its recent past, its present, and, perhaps most important, the question of its future.

THE ARABS. By Philip K. Hitti. Princeton University Press. $2.00.

This fascinating little book is a perfect introduction to a civilization that considerably ante-dates our own. It is a drastic and skilful condensation of Dr. Hitti's monumental *History of the Arabs* published six years ago.

The author covers the geographical, ethnological and religious factors that produced the Arab civilization. He then carries the reader through the period of ignorance prior to the birth of Mohammed, the conquests of the Arabs, and the ultimate fall of their empire which was greater than Rome's at its zenith.

This enlightening little volume should be of interest to all readers who wish to know more of the people who live at the crossroads of the world. It is to be regretted that it cannot be mailed out of the country at this time.

MOTHER RUSSIA. By Maurice Hindus. Doubleday, Doran and Company. $3.50.

One of the great contributing factors to the value of Maurice Hindus' writings is his own life. His early years were spent in Czarist Russia, his adolescence and early manhood in this country, and his mature years in the world at large. *Humanity Uprooted* and *Red Bread* were two of the first really comprehensive books on Soviet Russia to be published in this country. Hindus presented, as few other authors did, a clear, unprejudiced view of the problems that Russia faced and pointed out the good and the evil that might result from the policies being pursued.

Mother Russia is, after a fashion, a sequel to these earlier books. It is a magnificent picture of a nation awakening to a sense of nationalism, rediscovering its own past, and seeing new visions ahead.

The book begins with three stories of young Russian heroes—two girls and a boy. It is unfortunate that these stories are written in the manner of the propagandist; but after recounting these specific examples of what youth is doing, the author reverts to his usual excellent style and presents an interesting and comprehensive narrative of what is happening throughout the Soviet.

Mr. Hindus' deep knowledge of his subject, inherited and acquired, makes itself felt throughout the book.

PRISONER OF THE JAPS. By Gwen Dew. Alfred A. Knopf. $3.00.

Gwen Dew, only American woman correspondent in the Far East when the Japanese attacked, has written a graphic and valuable picture of her experiences during the siege of Hong Kong and in the prison camp where she was held until her return on the *Gripsholm* in 1942. She describes forcefully and well, not only the incidents of the war, but the sadistic brutality of the Japanese soldiers as a whole. She is not blind, however, to the fact that a few Japanese, principally newspaper men, tried to atone for the uncivilized attitude of the majority of their countrymen.

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MEN IN MOTION. By Henry J. Taylor. Doubleday, Doran and Company. $3.00.

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As a raconteur, Mr. Taylor is extremely interesting. His chapter on what happened when the Allies landed in Africa is particularly engaging as it is the first "hind-sight" view that has been presented. His travels took him from the Middle East to Egypt, Syria, Palestine and Turkey.

It is when he ceases to be a reporter and becomes a philosopher in the field of modern social trends that Mr. Taylor exhibits a marked weakness, to the point of ignoring many facts. His book, however, is good reading, whether you agree with his point of view or not.

BUT SOLDIERS WONDERED WHY. By Frank Gervasi. Doubleday, Doran and Company. $2.75.

This colorful book sweeps the reader through the vibrant political aspects of the South American scene—the influences of "sky trucks," politics and the war in Brazil, Argentina and Chile; then jumps (as did the author) to Libya, Cairo, Tobruk, the exchange ships, *Asama Maru* and *Gripsholm;* and concludes with comments on Willkie, Madagascar, South Africa, and the U. S. State Department. It is an account of one reporter's reactions to present world conditions as seen along the route of his assignments. The personalities of prominent men are drawn in swift strokes, interesting, but too vehemently partisan to be convincing. The author is sincere, but in books bearing on political and social subjects an impersonal view produces a more informative volume.

ENGLAND'S ROAD TO SOCIAL SECURITY. By Karl de Schweinitz. University of Pennsylvania Press. $3.00.

Social security will be one of the problems that we shall have to face in the postwar world. For that reason this book is of considerable interest. It is an account of England's social security endeavors and progress over a period of six hundred years from the Statute of Laborers in 1349 to the Beveridge Report in 1942. While England's problems may not be identical with our own, her experience can certainly be of value in our study of the needs of mankind in the struggle for security.

ON YOUR OWN. By S. A. Graham and E. C. O'Roke. University of Minnesota Press. $2.00.

This is an excellent manual for field and service men on how to care for themselves in wild country. There are chapters on the treatment and prevention of poisoning and infections, quicksands, quagmires, temperature extremes, parasites, and other problems confronted in primitive environments.

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The Jap, once on the mad offensive, has been set back and forced to throw up a desperate line of defense in an attempt to conserve what he has gained.

Looking ahead, it may be assumed that with the ever mounting strength of Allied forces in the Pacific area, further offensive action on the part of the Japanese will be a rare occurrence. Furthermore, as the Allies turn more and more of their attention to the Far East, and as the march that will force the Jap back to Tokyo gets more strongly underway, it is the Japanese *defense* which will be encountered—and it is the Japanese *defense* with which we now must learn to deal.

Our knowledge of what the Jap will do on the defensive is sketchy up to the present. Guadalcanal, New Guinea and New Georgia are at present our only examples. In these campaigns, however, the Jap tactics have been practically identical. It is from the former that the writer has gained the direct experience upon which he has drawn in the preparation of this article. Examination of the other two campaigns reveals that practically identical situations have been encountered.

As is well known, the campaign of Guadalcanal resulted in the destruction of between 15 and 20 thousand Japanese who fought to the finish. From the initial landing of Marines on August 7, 1942 to the final phase conducted by the Army, which ended February 9, 1943, the campaign was a persistent combat against a series of defensive measures. At first the Japanese tried to regain what they had lost; then they fought to save themselves from complete annihilation. Only the evacuation of a very small percentage of the troops by a suicidal task force of Jap destroyers prevented the latter.

Marines inspect a Jap machine gun emplacement on Guadalcanal Island. Acme.

During this period, it was truly demonstrated that the Japanese had the ability to defend with tenacity the ground he had been able to gain offensively. His basic philosophy of "do or die," which he so aptly expresses in an attack, applies just as strongly when he is forced to defend. It is this fact that leads us to our basic premise that each and every Japanese in a defensive position must be killed individually before the position can be taken. The best way of doing this, with the least loss to our own troops, can be discovered only through the combination of sound military principles and the few examples with which we have had to contend.

Jap Defense Tactics

The outstanding characteristic of all Japanese positions up to and including rear bivouac areas in Guadalcanal was that, in the strictest sense of the words, they were *dug in*. Fox holes, dugouts, slit trenches, pill boxes, deep artillery emplacements litter the entire area occupied by the Jap. In all of these illustrations the digging in was not merely superficial but solid and deep. Bivouac areas consisted for the most part of fox holes, covered with heavy logs, with entrances that were a tight fit to the average American soldier. In these holes (as evidenced by the great amount of personal possessions left behind) the most of the Japanese soldier's life was spent.

Defensive entrenchments on the front line varied with the terrain but were based primarily on the machine gun pill boxes sunk to a depth of two or three feet, securely buttressed, and covered with one and sometimes two layers of heavy logs. These in turn were covered with dirt and appropriately camouflaged. Facing the expected line of our advance, a small aperture was left for the muzzle of the gun. Because of the size of this aperture, the fire from guns thus protected was limited in both deflection and elevation. In most cases, this greatly decreased the effectiveness of the weapon.

Another type of emplacement often encountered was constructed under and between the roots of large trees. Often these emplacements were necessarily small since their method of construction involved digging directly under the tree, but they nevertheless afforded a maximum of protection and concealment.

A third type of emplacement, encountered where the coral formations of the island made it favorable, was a short tunnel leading into the soft coral and amply protected at its exit by large blocks of the same material. Emplacements of this type when encountered caused difficulty in neutralization.

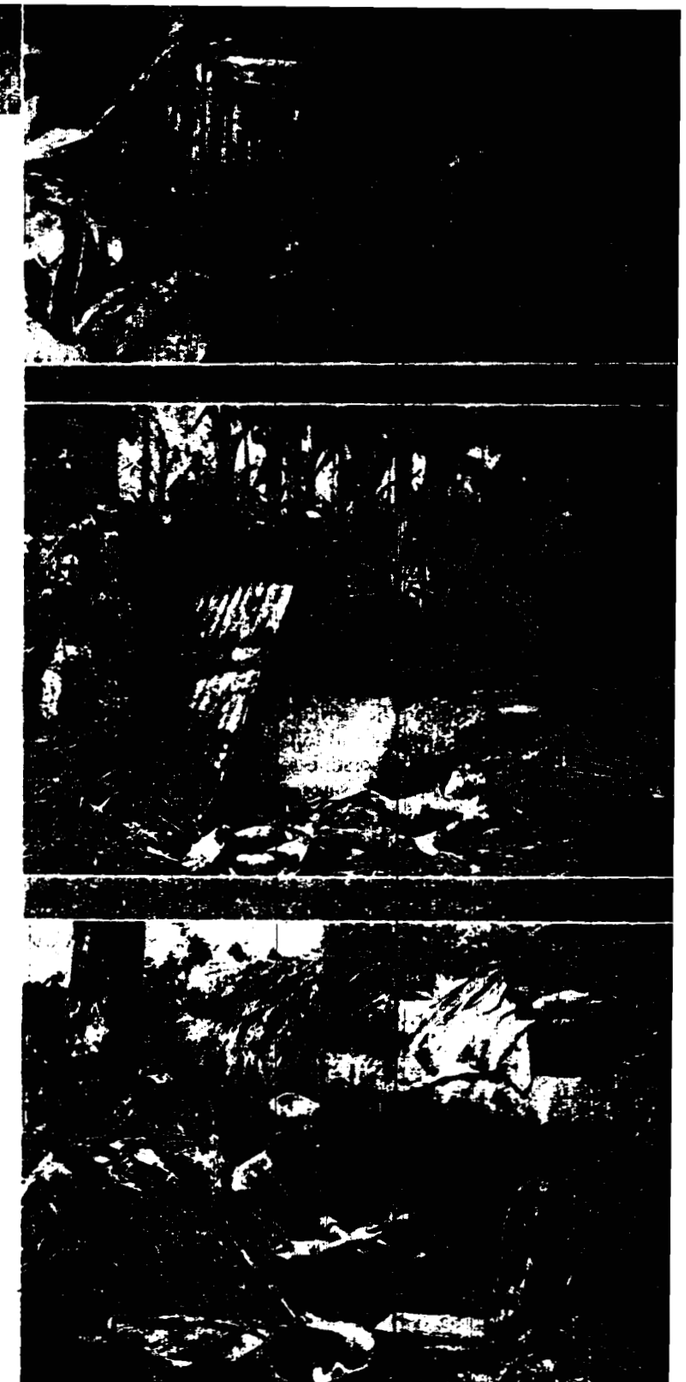
By clever disposition of these emplacements, the Japanese built up defensive lines whose strength caused severe trouble in their penetration. It was not long before our forces discovered that the fire lanes leading from them were often small, but neither was it long before they discovered that, in the majority of cases, each emplacement was amply protected by crossfire from other guns or from a well concealed rifleman in its close vicinity. The endless combinations of defensive setups thus constructed provided commanding officers just as endless headaches for every hundred yards gained.

Three Emplacements Stalled Yanks a Month

The following defensive position, encountered on Guadalcanal, perplexed and finally baffled all the Yankee ingenuity that was possible to bring against it for a period of close to a month. As was common throughout the campaign, the American troops held the top of a ridge line, often a grassy area, while the Japanese dug themselves in along the steep jungle-filled ravine directly over the edge of the American occupied ridge. In this instance, there were three strongly constructed emplacements, as well as the usual supporting riflemen.

One emplacement buttressed amongst the roots of a tree was on the steep forward slope of the ridge at the edge of the jungle. The other two emplacements were across the ravine on the slope of the ridge next ahead. These were also at the edge of the jungle but fired approximately across the top of the trees which filled the ravine. Exposing oneself over the crest of the American-held ridge drew fire not only from the emplacement directly beneath, but from the two guns on the opposite slope whose fire (coming through the trees) originally deceived us as to their location.

The first attempt to eliminate these positions was by mortar, but the strength of the emplacements and the



These captured machine gun emplacements indicate the thoroughness with which Japs dig in. At top, a U. S. soldier in New Guinea has difficulty getting his shoulders through the opening. Center, an Australian near Buna investigates a pill box still filled with smoke from a grenade explosion. At right, a logged emplacement is cleaned of Jap effects.

Top Photo: Press Assn. — *Bottom:* Acme

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Mounted near the airport on Guadalcanal is this .50 caliber Jap machine gun which was captured from the Japs. Here a U. S. gun crew gets ready to give the Japs their own medicine.

smallness of the entrance effectively withstood the mortar fire. A few of the supporting riflemen were undoubtedly eliminated, but they were promptly replaced from the rear. The actual small size of the emplacements and the trees and foliage which surrounded them made it almost impossible to make a direct hit by artillery fire on the two rear guns, while the position of the forward gun on its steep slope could not be reached by the highest angle fire attainable. Again, supporting riflemen were hit but were rapidly replaced.

Strong patrols, sent to each flank and up and down the ravine, were quickly fired upon by the supporting rifles and by the two rear guns, whose slightly wider aperture permitted them sufficient deflection. It was impossible to penetrate deeply enough with patrols to take this position from the rear; furthermore, it was evident that even had this been attempted, the same situation would have been met in the reverse. After three or four attempts with patrols—including using them at night—this method was eliminated.

It was at this point that ingenuity came into play. The forward slope was sufficiently steep for demolitions to be lowered over the edge close to the forward emplacement; although in doing this, it was necessary to be exposed to the fire of the two rear guns for the short time that it took to throw the demolitions over. Unfortunately, this fire, encountered while throwing, prevented the accurate placing of the demolitions. An attempted solution to this difficulty was a net of instantaneous cord with TNT blocks hung on it. Again the strength of the emplacement was sufficient to withstand this attempt. A last attempt at demolition was made when a fifty pound iron keg of TNT was lowered over the edge and suspended as close to the emplacement as hasty observation would allow. Following the resultant explosion, a concerted rush was made to the edge of the crest, but the first man who put his head over was greeted by a burst of fire from the besieged emplacement.

A final attempt at destruction was made by pouring gasoline down the slope and igniting it, but even this means failed. When the final drive commenced, this particular position was by-passed and surrounded. Five or six days afterwards the Japanese defenders were killed when forced out to seek food and water.

Seventy Emplacements on One Hill

A similar set-up on a considerably larger scale was encountered in the taking of a strategically important hill. In this case, a total of seventy-odd machine guns, both light and heavy, were emplaced in concentric triangles up the hill. Each gun was securely emplaced in a pill box, dug in only from six inches to a foot, but constructed with two or three layers of logs all around, buttressed, covered with about six inches of dirt, and carefully camouflaged. Inside with each gun were at least two riflemen, while more riflemen covered the emplacement from tree positions in the near vicinity.

This entire position was in dense jungle, through which the fire lanes were skilfully cut. It was a position which at first appeared to be nearly impregnable.

Much active reconnaissance was necessary before the entire picture of the position was gained. During this time, artillery concentrations helped to keep the enemy constantly harassed and under cover. At the conclusion of the reconnaissance, a hard jungle-march resulted in the almost complete encirclement of the area.

It was during this march, made over extremely difficult terrain, that the idea of using a plane to maintain direction was evolved. The constant obstacles in the form of deep ravines, dense jungles and the like, made it extremely difficult to follow a compass course. Therefore, *at frequent intervals a plane flew over the route from the marked starting point to the terrain feature that was the objective.* Each time the route was flown, which was about once every fifteen minutes, the motor was constantly gunned in order to provide a distinct signal to the forces below. The results were satisfactory.

Following the encirclement of the position, artillery fire was increased to some extent, and by one means or another the various emplacements were neutralized. The fact of the encirclement, plus the constant artillery, soon eliminated the riflemen not in the pill boxes, while occasional direct shell hits and results of accurate grenade throwing soon made channels into the position, which evolved into a "divide and conquer" situation.

During this period, it was discovered that in most cases a skilful crawler could get within twenty-five yards of a pill box before coming into the covering crossfire. This, of course, was due to the small apertures in the emplacements, and naturally takes into account the loss of the outside riflemen plus those inside ones who in most cases went into the tree positions as replacements. It was necessary, however, for the crawler to observe sharply for signs of prepared fire lanes as he closed in. The neutralization of the emplacement then could usually be effected by one or two carefully thrown hand grenades. Along this line, however, it is well to mention that grenades so used should be held for a second or two; for the enemy will take a chance on any grenade falling within reach and toss it back with extreme rapidity.

During this period also, an attempt was made to employ both AT grenades and the 37mm AT gun to reduce the pill boxes. The dirt covering over the emplacement, however, did not provide a sufficiently hard contact to set off the grenade; while the dense jungle made the setting up of the 37mm so difficult that the gun attracted enemy fire long before it could be brought to bear on its target. The few times that the AT grenade was effective, it did a complete job through the resultant concussion within the pill box. Given a more delicate detonation, the rifle grenade would be a highly successful weapon under these circumstances.

Toward the end of this particular operation, the position was reduced to one small but strong area with approximately eighteen guns. This final position was an example of an almost perfect defense. It was just too large to be rushed successfully, so well dug in as to make light artillery almost ineffective, and so skilfully concealed that an accurate reconnaissance was almost impossible. There was no thought of surrender on the part of the enemy as a whole, even though they undoubtedly realized the hopelessness of the situation. Completely cut off, the group was eventually reduced to complete collapse from starvation and exhaustion. Only toward the end was an attempt made by the enemy to escape from the encirclement. Several sharp and desperate night attacks were made without success. Finally with extreme difficulty, our forces succeeded in bringing a light tank up to the final position. Here, in the dense jungle, the armored behemoth blasted out all of the pill boxes that it could reach. The infantry soon overran the remaining positions and the operation ended.

Strong Points at Critical Locations

The above examples amply demonstrate the outstanding features of Japanese jungle defense. All other situations resolved themselves into the same mold,

The Jap defensive line appears to consist of a series of strong points. These are apparently all situated at locations critical from the defensive point of view. Trail intersections, terrain features, river crossings are typical strong point locations. The second of the two defensive operations described above, for example, occurred at one flank of the Jap defensive line and was at the same time a terrain feature that afforded excellent observation of practically the entire area held by our forces—including the all important airfield. Furthermore, it defended a trail leading around the entire American positions.

It is obvious that these strong points are prepared well in advance—and regardless of whether it appears likely that they will be used. The necessary troops are shifted from one point to another, depending upon the threat made along the line. Strong points known to be directly in front of our lines, if not kept under a constant siege, would be evacuated in favor of another point under our attack. A few of the enemy would remain behind for purposes of deception. These would strongly engage patrols and give the appearance that the area was still heavily manned. If, however, by the increase of patrols, artillery, or general activity on the part of our forces, it appeared that an attack was imminent at that point, enemy troops would quickly be shifted back into the area to meet the threat. Occasionally such strong points were occupied by our troops by taking rapid advantage of the fact that for the moment they obviously were defended by but a few of the enemy. If the existence of this particular Jap habit had been realized sooner, many of the strong points might have been taken with ease. The general difficulty of jungle reconnaissance proved a strong factor in favor of the Jap in this respect.

Summary

1. The Jap digs, digs, and digs until he is thoroughly and solidly under cover.
2. His machine gun positions are strongly emplaced, and practically *every* gun is covered by crossfire and/or riflemen.
3. He uses fire-lanes extensively.
4. His line of defense consists generally of a series of strong points which, if he is outnumbered along the line, he will occupy only when necessary.
5. He will occasionally make fierce sallies from his defensive positions—especially when attempting to relieve strong pressure being placed against him.
6. Predetermined defensive positions, notably important terrain features, are prepared well in advance.
7. Defensive positions are carefully concealed. In this respect, the Jap has been known to allow a position to be overrun while he remained concealed. When this happens, he will remain completely out of sight until our unsuspecting rear echelons are surprised by the enemy rising out of the ground practically in their midst.
8. The Jap won't quit; *he must be killed.*

The Jap is good. *He has a crack fighting team, but until recently he has failed to take into account just one thing—in a trained American soldier, he has met a better man than he is!*

Sicily—EUROPE IN MICROCOSM

by Major G. R. de Beer, British Army

THE invasion of Sicily is the largest amphibious operation yet carried out in the history of war. Conceived by President Roosevelt and Prime Minister Churchill at Casablanca six months ago, the scale and complexity of the operation has been a searching test, not only of the competence and efficiency of the planning staffs, but of the ability of the sea, land, and air forces of three countries—Great Britain, the United States and Canada—to coöperate for the common good of the United Nations.

The operations against Sicily consisted of five phases: first, the mounting of the operation; then, the preparations for invasion by means of air bombardment; third, the landing of troops and establishment of beachheads; fourth, the engagement of the enemy's mobile reserves; and finally, the assault on the enemy's positions.

Mounting of the Operation

The first phase involved the assembly of troops, equipment and supplies, and of the ships, landing craft and assault barges to convey them. Altogether, some 3,000 ships were used. Some made the invasion direct from the United States and Britain, others from North Africa. The ships had to be loaded in such a way that the first things wanted out of the holds were the last things loaded into them. The appropriate type of ammunition had to be available immediately at the right place for each type of gun, in the right quantities, and at the right time. The medical stores had to arrive with the doctors. Gasoline and oil had to be on hand for tanks and transport vehicles.

All this had to be planned and carried out in the utmost secrecy. Notwithstanding the magnitude of the distances to be covered, and the differences in distance between the various ports of sailing and the final goal, the ships all arrived approximately together at the spots selected for the attack on Sicily.

While the ships were being loaded and during their journey they had to be protected from attack by U-boats and aircraft, and from the possibility of attack by the Italian fleet. This was the task of the British and United States Navies, and the Allied Air Forces. It was perfectly carried out.

Before the assault on Sicily was launched, preparatory work was undertaken to soften the defenses by bombarding enemy airfields, forts, and communication centers. This was largely the work of the Allied Air Forces based on Northwest Africa and Middle East. Pantelleria, which had been captured, and Malta, the invincible island which had been developed into a first-class offensive base, provided airfields close enough to Sicily to enable bombers to be protected by fighter aircraft. Fighter-bombers also could operate against trains, road traffic, and troop concentrations.

The Allied Navies helped in this preparatory work by sinking enemy ships on their way to Sicily. Allied submarines went so close inshore that they were able to open fire with their guns on railroad installations on the mainland of Italy itself.

All this work was carried out with due regard for security, so that the pattern of the air and naval attacks should not disclose to the enemy the objective against which the attack was to be launched.

The assault by land forces was carried out by the 15th Army Group under General Alexander. This consisted of the British Eighth Army (which included the Canadian 1st Division) under General Montgomery, and the United States Seventh Army under General Patton. The entire campaign, including operations of the Navies under Admiral Cunningham, and of the Air Forces under Air Marshal Tedder, was under the supreme command of General Eisenhower.

Landings

The initial assault force of 3,000 vessel consisted of 160,000 men—British, American, and Canadian—with 1,800 guns, 600 tanks, and 14,000 transport vehicles. This initial force was followed day and night by large reinforcements, which included some Indian and French units.

The sector selected for assault was the southeast coast of Sicily, which enabled landing operations to be carried out under constant fighter aircraft cover. Sicily is about the size of the Crimea. It was defended by 5 Italian coastal divisions, 5 Italian field divisions, and a number of German troops and air force personnel. Both the 15th Panzers and the Hermann Goering Divisions, last reported as surrendered in Tunisia, had been reconstituted from elements evacuated. Altogether, the enemy strength was estimated at about 300,000 men.

The assault began on the night of July 9th-10th, when British airborne troops in gliders landed near Syracuse, and American parachutists landed near Gela.

At dawn on July 10th, the seaborne landings were made, under cover of the guns of the Allied Navies and of bombardments and a protective fighter umbrella provided by the Allied Air Forces. The British troops landed between Siracusa and Cap Passero, the Canadians at Cap Passero, and the Americans between there and Licata.

The weather was very bad with high winds and heavy seas, but in spite of these difficulties all the landings were successfully made, and the first enemy resistance was quickly overcome. Beachheads were established; further forces were landed; and within a few hours the British were in possession of the port of Siracusa, the Canadians of Pozallo, and the Americans of the ports of Gela and Licata. This was important, as it enabled further disembarkation to take place with the facilities of these ports. The Allies also lost no time in capturing a number of airfields and putting them into use.

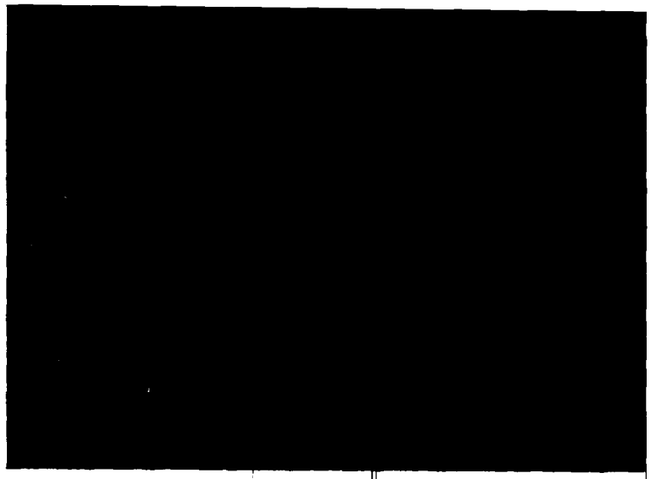
The enemy had been taken by surprise both in regard to the time and place of the landings. It was some time before he reacted. On July 11th, the Axis forces attacked the Americans near Gela with tanks but were driven off. Similarly, on July 13th, a German attack near Augusta was driven off by British forces.

Meeting the Enemy

It was soon apparent that the main enemy concentration of strength was in the region of Catania, where most of his airfields were, while the rest of the island was occupied by enemy forces more widely distributed.

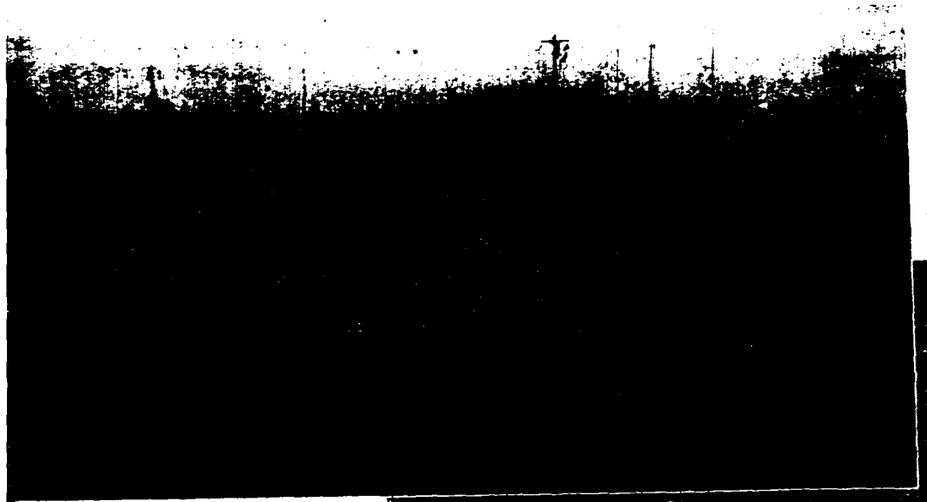
The British Eighth Army had been given the task of engaging the enemy advancing on Catania. The Canadians, forming the left flank of the Eighth Army, had the task of striking at Enna, the center of the island and of the enemy's communications. The United States Seventh Army was assigned the conquest of the western part of the island.

Throughout the operations, the Allied Air Forces maintained mastery of the air. By the fighter cover

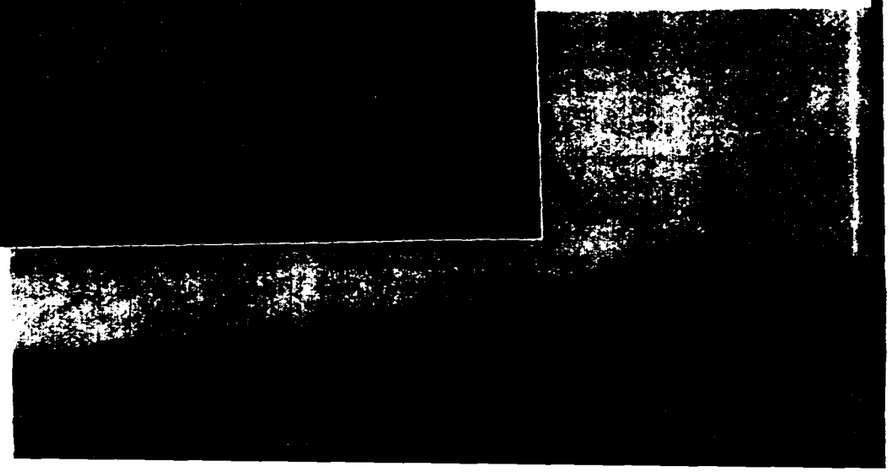


This scene on a winding hill road shows Eighth Army troops as they advanced toward Catania.

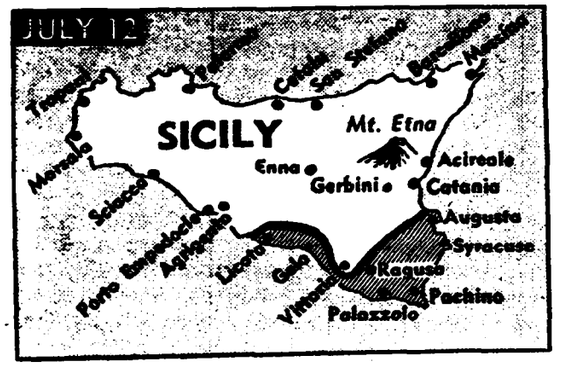
British Official Photos

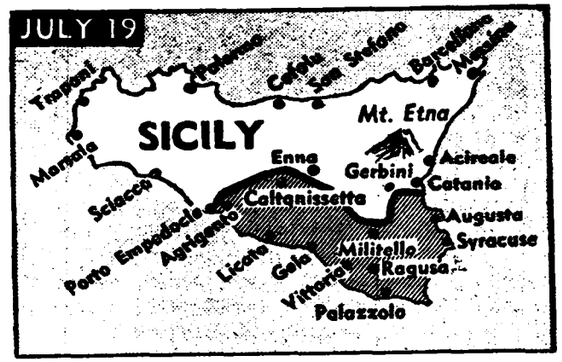


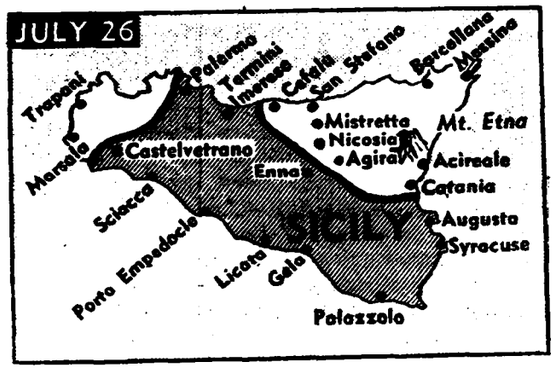
Left: Just after dawn on July 10th. Men of the Eighth Army unload stores from British ships, while others build a beach-road for heavy and light traffic.



Below: A Hunt class destroyer engages shore batteries at Augusta, while Commando troops make for the shore in their landing craft. Note Mt. Etna in the background.







which they provided, and by their constant bombardments of enemy positions, they afforded the troops the most valuable support.

British. The German positions south of Catania were protected by the largest river in Sicily, the Simeto. For the progress of the Eighth Army, therefore, it was of the utmost importance to secure the Primosole Bridge intact. For this purpose, British parachutists were dropped near the bridge during the night of July 13th-14th. They held the bridge against attacks by seven battalions of infantry until their ammunition was exhausted. Before this they had drawn the explosive charges from the mines under the bridge. When British reinforcements arrived, after breaking through enemy positions farther south, they were able with fierce fighting to secure the bridge intact and establish a bridgehead on the northern side.

Meanwhile, farther west, other British forces came up and secured crossings of the Simeto and Dittaino Rivers, ready for the final assault.

Canadian. On the left of the British forces, Canadian troops made rapid progress by hard fighting against desperate resistance. On July 16th, they captured Caltagirone, on July 20th Enna, on July 22nd Leonforte, on July 28th Agira, and on July 29th Catenanuova—which seriously threatened the enemy positions around Catania from the west.

American. The United States Seventh Army, on the left of the Canadians, rapidly accomplished its task of overrunning the west of the island. Although Italian resistance was weak, the speed of the American forces was remarkable. On July 17th they captured Agrigento and repulsed enemy counterattacks near Barrafranca. On July 22nd their armored forces swept into Palermo. On July 23rd they occupied Marsala and Trapani. The whole of central and western Sicily was now in Allied hands, together with 70,000 prisoners and over 200 guns.

The Seventh Army lost no time in wheeling eastward and, covering the sector from the north coast to the center of the island, made contact with the Canadians and formed a continuous front.

Major Offensive

On August 1st, the Allies opened a major offensive. The enemy's line of defense, looping round the southern and western slopes of Mount Etna, ran eastward to the east coast, south of Catania and northward to the north coast, west of San Fratello.

General Alexander's plan was to maintain pressure against each end of the enemy line while launching an assault against the enemy's center, southwest of Etna. In this region the enemy's lateral communications were dependent on a railroad and road from Catania through Paterno and Adrano to Bronte. The impassable barrier of Mount Etna was to serve as an anvil against which to

deliver a hammer blow that would sever the enemy's lateral communications and cut his forces in the forward positions in two.

This blow was delivered by the left of the Eighth Army and the right of the Seventh Army.

Canadian. On August 2nd the Canadians stormed their way into Regalbute. On the same day British troops crossed the Dittaino River and captured Centuripe, and then crossing the Simeto River, captured Adrano on August 6th and pushed on to Bronte.

American. On the Canadian left, the American forces attacked Troina and, after furious fighting for almost a week, captured it against desperate enemy resistance and advanced farther to Cesaro. The center of the enemy's forward line was thereby broken, and he began to fall back on each flank.

British. On the east coast, British forces captured Catania on August 5th and Acireale on August 8th, while the Royal Navy, by bombarding the enemy's rear and lines of communication, constantly covered the Army's seaward flank.

American. On the north coast American forces, advancing from San Stefano, captured San Fartello by August 8th, while a seaborne force landed east of Santa Agata under the protection of the United States Navy. The landing was successfully accomplished, and the American troops quickly dealt with an enemy counterattack and captured Santa Agata and 1,500 prisoners.

Again under the protection of the United States Navy, a second landing by American forces farther east on August 11th made possible a further rapid thrust along the north coast. Yet a third landing by American forces was made on August 16th near Milazzo, and the enemy was deprived of the use of this port.

British. Meanwhile the Eighth Army pressed onward from the south and captured Taormina on August 15th. In the following night, under cover of the Royal Navy, a landing by British Commando troops and armored forces was made at Scaletta, and the retreat of the enemy by the coast road to Messina from the south was cut. This close coöperation between the Allied Navies and Armies—enabling the latter to bypass obstacles by means of seaborne landings—contributed materially to the rapid success of the campaign.

Conclusion

From August 7th onward it had become clear that the enemy was straining every nerve to accelerate his evacuation of Sicily in small boats under cover of 500 antiaircraft guns, mostly mounted on the Italian mainland. But in the evening of August 16th, the men of the U. S. 3rd Division swept into Messina from the north, followed next morning by British armor coming up from the south—and the campaign in Sicily was over.

After thirty-eight days of fighting in extremely difficult country—ideal for defense, ill-adapted for the use of armored forces—in spite of extensive demolitions and the use of mines, bridges destroyed and tunnels blocked, the island of Sicily had been invaded and conquered.

Enemy casualties up to August 10th were 135,000 prisoners (7,000 of them German) and 32,000 killed and wounded (24,000 of them German). Approximately half of the German forces engaged were therefore destroyed. A further large number of Italians were lost to the enemy by their spontaneous assumption of civilian status.

In addition, the enemy lost over 500 guns, 260 tanks, over 1,000 aircraft captured on landing grounds, about 700 shot down, many thousands of transport vehicles, and great quantities of stores and equipment. These figures do not include the losses inflicted on the enemy in the last week of fighting, nor in the course of his evacuation, which was continuously harassed by light forces of the Royal Navy, the United States Navy and by the Allied Air Forces.

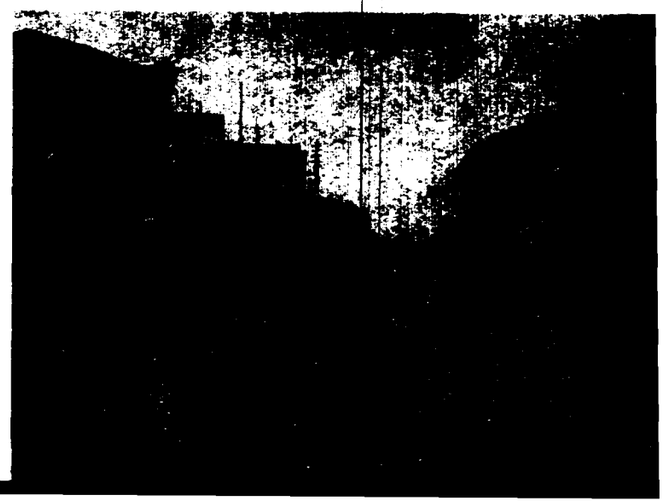
Sicily may be regarded as a microcosm of the Fortresses of Europe, and the rapid success of the Allied armies demonstrates a principle of strategy that will have its applications in the larger theater.

The enemy is strong, but since he does not know where the Allied blows will fall, he must distribute his forces. He cannot be strong everywhere, and not strong enough anywhere to cope with a determined assault by an adversary in possession of sea and air power. The Allies possess not only sea and air power but also the troops, equipment, and experience required to effect landings against opposition on enemy coasts.

Furthermore—and this is the latest appearance of an old strategic principle—when the Allies with their sea and air power have made a successful landing, it is they who now enjoy the advantages of interior lines from the bridgehead that they have captured.

That is the heartening lesson of the Sicilian Campaign, and the reward for the meticulous planning, arduous training, superior generalship and the indomitable fighting spirit of all the forces of the United Nations involved in the operations under General Eisenhower's command.

British patrol parties enter a Sicilian town after a heavy artillery bombardment.



U.S. Seventh Army IN SICILY

The 3d Division pushed triumphantly across Sicily in less than two days.

Acme

LOOKING down at Sicily from the air, a major terrain feature in the east is the Catanian plain, cut by a net-work of rivers running from west to east. Then comes Mount Etna, canalizing the ground to a narrow five-mile strip between it and the sea. West of Etna two river valleys run to the sharp spurs of the mountains pressing close to the big volcano. Between them is a third valley about 3 miles wide that opens on the coastal plain at Taormina. The north coast is rimmed by mountains with a single road running parallel between them and the sea. The whole of the northeast corner, from Mount Etna to San Stefani to Messina is rugged mountain terrain. The one central pass at Randazzo furnishes the only outlet between the two coastal roads on the north and the east.

Landings

At 2210 on the night of July 9th, while the Allied invasion fleet itself was still at sea, the first airborne troops were landed by glider. These were followed by parachute troops at 2320. Because of high winds, however, many were blown considerable distances, and the troops were landed in a much more scattered manner than had been planned. Many of them were unable to carry out their prearranged assignments; others, improvising their missions as they went, proceeded with the destruction of such enemy installations and communications as they found. In a few cases, the small groups able to unite, took and held fortifications until relieved later by other troops.

At an American beachhead in Sicily, prisoners are guarded while waiting to be removed. Supplies and troops are still being landed.

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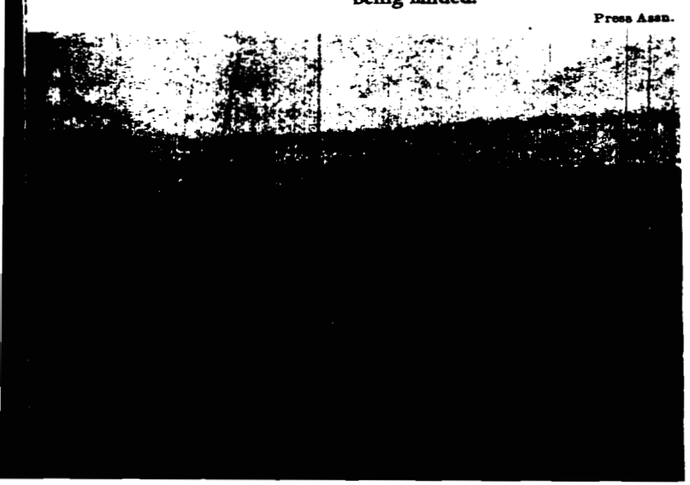


The first Allied troops beached at 0300 on the 10th, and by 0600 shore batteries had been shattered, beachheads established, and tanks, artillery and reinforcements were being brought ashore for the advance inland.

By the end of the first 18 hours, it had become clear that the Allied armies had succeeded in establishing a firm, broad beachhead that extended for over a hundred miles along the southwestern tip of Sicily.

On the extreme eastern end of the 100 mile beachhead the British Eighth Army, commanded by General Sir Bernard L. Montgomery, landed between Cap Passero and Siracusa and proceeded north along the east coast road against only slight immediate resistance. By the night of the 11th, British troops secured Siracusa and a few days later entered Augusta.

The Canadians, who landed at the southern tip of the peninsula, advanced inland through Palazzolo.

The U. S. Seventh Army, under Lieutenant General George S. Patton, Jr., landed at three points along the south-central coast. The 45th Infantry Division, under Major General Lloyd Middleton, pushed from Scoglitti to Vittoria, and within twelve hours secured the airfield there for the immediate use of Allied planes. The 3d Infantry Division, under Major General Lucien Truscott, landed at Licata, secured that important air base, and started north toward Caltanissetta. The 1st Infantry Division, under Major General Terry Allen, ran into the strongest opposition in its landings at Gela.

Battle of Gela

The Axis defense was under the command of Italian General Alfredo Guzzoni, who ordered his 4th Division to attack toward Gela, and his 54th Division toward Siracusa. Each division was given a detachment of the Hermann Goering Panzers.

The 1st Division, which had established a beachhead at Gela approximately 7 miles wide and 2½ miles deep, was confronted on the morning of July 11th by one of these Italian prongs, supported by about 100 German tanks.

A handful of American parachute troops who had landed in the enemy rear on the night of July 9th, made a valiant but hopeless stand along a road guarding the approach to the beach, but the tanks rolled over them and on toward the 1st Division, still in the process of landing.

The Italian 4th Division, plus the 100 German tanks, attacked from all three sides. Only three tanks from the U. S. 2d Armored Division had been landed at this time, and despite the efforts of the eleven artillery batteries, the enemy made considerable progress. The 1st Division was pushed steadily back. On the north, the enemy got within a half-mile of the beach, while on the east he made such unexpected gains in the direction of division headquarters that members of the staff grabbed rifles and fell to. Severe fighting continued all day.

The landing might have met with disaster, but at some point, word of the enemy attack reached a destroyer off shore, and the naval guns were turned into the tanks. It is not known how many tanks were knocked out in this manner, but the destroyer continued pounding the tanks until dark, when the division made a counterattack and pushed the enemy back. A later count disclosed that 84 enemy tanks, 14 of them "tigers," were knocked out in the olive groves around Gela.

The First Triangle

After securing the two supply ports of Siracusa and Augusta, the British Eighth Army, advancing toward Catania, ran into a main Axis defense stand, flanked on the east by the Ionian Sea and on the west by the towering volcanic Mount Etna. For approximately three weeks it was blocked stubbornly in every effort to break through.

by Christine Harbour

Associate Editor, *The Cavalry Journal*

Press Assn.

Spearheading the remarkable advance from Agrigento, the 2d Armored Division rolls through the battered streets of Palermo.

During this time, Montgomery consolidated his position, secured the outlying areas on his flank, and waited for sufficient ammunition to blast the enemy from his Etna base. Not until August 1st at 0600 did he make his all-out attack which sent the Germans reeling toward Messina.

Meanwhile, the conquest of the rest of the island broke down into several separate phases.

The American troops, having secured their bridgeheads to the east, spread out in two main directions. The 1st Division headed straight north from Gela. The 3d and 45th Divisions, plus the 2d Armored Division fanned out in a west-northwest direction. Against steadily increasing opposition, by the evening of the 15th they had fought their way to a line running roughly through Niscemi—Riesi—Canicatti—Girgenti.

From Canicatti, the 3d Division headed rapidly west toward Agrigento and after severe fighting, strongly supported by medium artillery fire on shore, moved into that city on the 17th. Ammunition for the American 155mm guns in this section was hauled through the hills by scores of Sicilian mules, captured and pressed

into service. It has been reported that the 3d Division used as many as 500 mules during its fighting in Sicily.

Agrigento-Palermo

Following the fall of Agrigento, there occurred one of the outstanding military events of the entire war—a blitz that outblitzed anything that the Germans pulled during 1939-40. The 2d Armored Division and the 3d Infantry Division, supported by the 82d Airborne Division, pushed from Agrigento to Palermo—a distance of 72 miles over hills rising as high as 3,000 feet—in less than two days. General Geoffrey Keyes, Commander of the II Corps of the Seventh Army, who headed this outstanding operation, arrived in Palermo and accepted its surrender on July 22nd.

In writing of this advance Quentin Reynolds said, "They moved so fast that often the German and Italian 88s, which they captured en route, had not been pointed around or set up to shoot against them. . . . They had some opposition not furnished by the terrain, which is hilly in some places and marshy in others, but they did something the Italians have never done—*they marched by night*. The Italians thought it not quite sporting for the Americans to barge into their camp just as they had got to sleep."

Palermo was taken a full week earlier than the General Staff had anticipated, and spearheads were immediately fanned out toward Marsala and Trapani, both completely cut off from any supplies or support. Because of the quick conquest of the western part of the island, insufficient attention has been given to the superb leadership and brilliant maneuver that cut the island in two before heavy resistance was fully organized.

The North Coast Road—Battle of "Bloody Ridge"

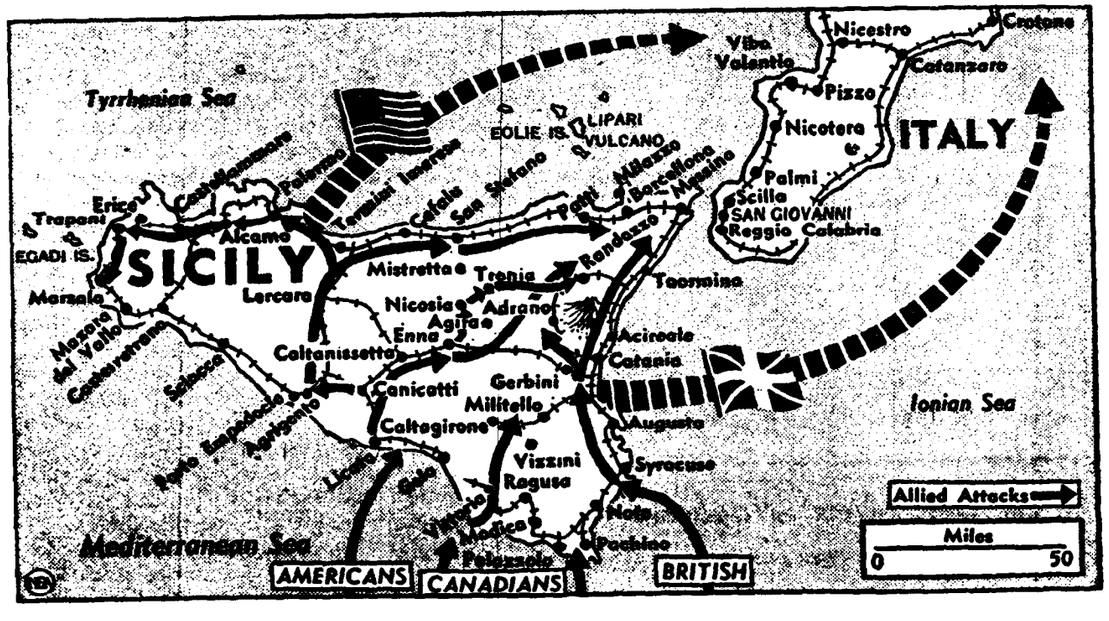
From Palermo, the main body of Americans turned east along the north coast road, a narrow strip flanked on the north by the Tyrrhenian Sea and on the south by a precipitous ridge, cut only by a few mountain passes to the central plain.

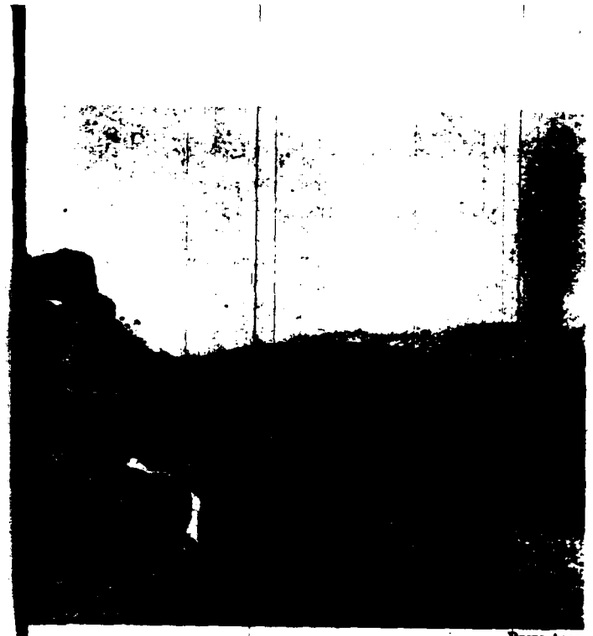
Al Newman in *Newsweek* describes this terrain very graphically. "The coast road winds over the tips of high ridges running down to the sea—driving as much as a mile inland to cross occasional wide, dry stream beds on multiple arched bridges of brick. It is of standard two-car width and has a macadam surface. Defending such a road, one of your flanks is secured by water and the other by your artillery placed on the reverse slope of a ridge a mile or two inland. Then as you retreat you blow up the bridges behind you, realizing that this will not hold up the enemy indefinitely but will delay him as he improvises a road through the boulders of the stream bed."

The 45th Division, spearheading the American advance along the coast road, ran into its first heavy opposition at the end of July in the Battle of San Rosso Hill—on the map Hill No. 335, but named by the men of the 45th, "Bloody Ridge"—which lies west of San Stefano.

From prisoners captured, it was learned that enemy troops contained elements of Rommel's former Afrika Korps and the 29th Motorized Division. Some of the prisoners had belonged to the 71st Regiment, which the German High Command had considered sufficiently valuable to evacuate from Stalingrad just before the Russians encircled that city.

Quentin Reynolds, who witnessed this battle, wrote





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From an elevated observation post U. S. soldiers watch the results of artillery fire as smoke rises from a shell burst on Troina. The town was later taken by units of the 1st and 9th Divisions.

in *Colliers*: "This hill was like a thousand other hills here in northeastern Sicily. . . . It was two miles ahead of us, and two companies of our 45th Division were trying desperately to hold it. They had lost it twice this day and now . . . our boys had regained it. A mile back of us our 155mm guns (the boys call them the Long Toms) were walloping away at a hill just four hundred yards beyond San Rosso. The hill was higher than San Rosso by perhaps a hundred feet. The Germans had a lot of artillery there and were pouring it down on the crest of San Rosso. They were throwing 88s, machine gun fire, and that six-barreled rocket gun they like so much—and that was bad. We could hear this and see the top of the hill crowned with white smoke, yet San Rosso had to be held at all costs, and tomorrow the hill beyond (where the Germans now were) would have to be taken."

After the capture of San Rosso hill the 45th Division was replaced by the 3d.

Hill by hill, the Germans were finally pushed back along the north coast road. The capture of San Stefano finally secured the mountain pass and opened the road leading southward to Nicosia, which had fallen to the 1st Division, fighting north across the southern plain.

The Last Triangle

By August 1st, the Axis had been forced back into the rugged northeast corner of the island where their line ran roughly from Catania on the east coast, through Troina in the center to San Stefano on the north. From then until the final capture of Messina on August 17th, they bitterly contested every foot of rugged, precipitous ground, and ceded it only after ample use of mines and demolitions assured them of a tedious Allied advance.

During the fighting in this mountainous terrain, there appeared on the flank of the 1st Division a regiment of French Moroccan cavalry known as Goumiers. These hard-riding, hard-fighting troops slashed around German road blocks and, fighting dismounted with long knives that beheaded the enemy in one single stroke, created havoc among the Germans. (See Pages 29, 30 and 31.)

Advancing on the flank of the 1st Division, the Goums captured the town of Capizzi, northwest of Troina.

Battle for Troina

Troina, central point of the Axis line, was fiercely defended. The 1st Division, advancing from Nicosia, fought from crest to crest, through the hairpin turns of the highway at the Serra de Falco—Falcon Mountain—and finally closed in on Troina from three sides in what was probably the most bitter local contest of the Sicilian campaign.

Again quoting Newman: "Troina occupies a ridge 6 miles east of the ridge on which Cerami is situated. Troina is 500 feet higher, and the terrain between the towns is roughly a treeless bowl containing almost no cover whatever. Our problem was that of fighting our

Army engineers repair a mountain road in the wake of the German retreat. Heavy demolitions slowed the Allied advance through the mountains.

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way from the stage of a theater to the exit at the rear of the balcony with the enemy occupying mezzanine loges and boxes.

"At this time, the 9th Division was replacing the 1st, so combat teams from both divisions shared the honors. They were pinned down by mortar fire for nearly a week but managed to inch their way forward. Day and night our massed artillery behind Cerami played on the ridges like a hose, giving rise to the German legend of *Zauberfeuer*, or magic fire which haunts the mysterious peaks like something out of the Ring trilogy. A high officer who ought to know said it was the toughest action American troops have had yet anywhere. In the end our bombers smashed repeatedly at the outskirts of Troina, and the town fell on August 6th.

"At this point it looked as though the campaign would take far longer than it actually did. But Troina had broken the German will. There was plenty of mining and demolition between Troina and Randazzo, but nothing like earlier opposition."

Randazzo-Messina

After the fall of Troina in the center, and Catania to the southeast, the Germans employed every available demolition in their hasty retreat through the mountainous region to Messina. On August 10th United Press reported:

"The Germans are making scant effort to hold towns. The rearguard action works simply. At a particularly bad turn or vital bridge, the enemy wrecks the road and no detour is possible. Behind these blocks they set up small suicide outfits with machine guns and mortars. Mines are planted. Four such places were found south of Bronte. . . . Vehicles pile up in front of the demolitions and lay traffic wide open to German mortar crews and machine gunners hidden in the hills a few hundred yards beyond. . . . Many (of the Axis) may escape because mountainous battleground will prevent the Allies swarming in fast enough to compel mass surrender."

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A reconnaissance unit of the 3d Division searches for snipers in the streets of Messina, which they entered early on the morning of August 17th.

Amphibious Leap-Frog Landings

During the same time, along the north coast road to the east of San Stefano, enemy demolitions also prevented any slashing armored thrust that might have outflanked the Axis positions. From the sea south to Troina, the fighting was strictly an infantry-artillery combat on the ground, while from the sky, fighters and light bombers screamed down against the Germans, dug into the hillsides.

At Cape Orlando the 3d Division, under General Truscott, launched the first of a series of brilliant amphibious flanking attacks that unhinged the Germans and sent them reeling back from the surprise. Before the enemy had fully recovered, a second unit landed at Brolo early on the morning of August 11th. Lacking the surprise of the first attack, the second force encountered more opposition, but most of it was able to get through to the top of a hill behind the town from where it fought off enemy attacks for some thirty hours.

"Because of the steepness of the heights, the tanks and tank-destroyer units had to be left at the base of the road, and for a time they (the task force) prevented attempts by the Germans to break out of the trap. Meanwhile, the main body of the 3d Division fought desperately to get through to this lost outfit and ultimately did so. Brolo was a shocking sight afterward. The road was littered with corpses and battered equipment. Burning tanks and tank destroyers lined the highway, while the whole hillside still smoldered.

"In spite of the fact that the bulk of the German forces broke out, Brolo was definitely worth-while . . . The going became relatively fast. German demolitions were hasty and not as complete as before. From Brolo to Messina I counted seventeen road-bridge demolitions. Of these only eight were done with characteristic German thoroughness. Six good opportunities for demolitions were neglected entirely—a sure sign that Brolo rushed the defenders off their feet."—Al Newman.

Sicilian Finale

The Battle for Sicily—the first battle for Europe—was concluded on August 17th when British and American troops met in Messina on the northeast point of the island.

Along the three main roads of the Axis retreat—the north coast road, the east coast road, and the Nicosia-Randazzo-Messina mountain road—the Germans had fought a masterly rearguard action that prevented the Allied armies from overtaking and annihilating the main body of enemy troops. No units escaped intact, but an estimated 88,000 individual soldiers managed to cross the Strait of Messina to the Italian mainland in spite of constant strafing and bombing from planes.

Total Allied losses—killed, wounded, and missing—were estimated at 25,000. Of this number approximately 7,500 were American troops of the U. S. Seventh Army which had fought valiantly throughout the first campaign on European soil.

Outstanding Cavalrymen in the Mediterranean Theater

Right: **Lieutenant General George S. Patton, Jr., Commander of the United States Seventh Army in Sicily, looks at a road sign in northern Sicily labeled "Messina."**

Below: **Major General Lucien K. Truscott (right), Commander, 3d Infantry Division, studies a map with Lieutenant General Omar N. Bradley.**

Left: **Major General Ernest J. Harman, Commander, 1st Armored Division, helped drive the Axis from Tunisia.**

Above: **Major General Terry Allen, Commander, 1st Infantry Division, was one of the generals who directed American troops in both Tunisia and Sicily.**

Photos by Press Assn.

Above: **Major General Geoffrey Keyes (right), Commander of a Corps of the Seventh Army, discusses with Italian General Molinari (left) terms under which Palermo, Sicily was surrendered to the Allies.**

Left: **Brigadier General Hobert R. Gay (right), Chief of Staff, Seventh Army, is shown with French officers at Fedala, French Morocco, prior to the recent Allied Campaigns.**

Official Photo, U. S. Marine Corps

U. S. Marines land on Guadalcanal Island.

THE successful amphibious operations of this war—the landings in the Solomons, in North Africa, in Sicily, and many smaller islands—were born in the islands of the Caribbean.

During the 1930's the science of amphibious warfare was gradually developed from small beginnings until, at the present time, the United States and her allies are prepared for landing operations on a scale never dreamed of before the present war.

The magnitude of this accomplishment cannot be appreciated unless one refers to the period of the interbellum, when amphibious operations received little attention. The debacle of Gallipoli dominated thought on the subject. Landings on territory held in strength by the enemy were considered almost impossible. Moreover, it could not then be foreseen that the day would come when all substantial beachheads on the continents of Europe and Asia would be lost to the United States and Great Britain and that vast numbers of men and huge amounts of matériel would have to be landed on hostile shores.

Early Development of U. S. Amphibious Forces

The need for amphibious operations was clearer in the Pacific. As a part of any war between the United States and Japan, both belligerents obviously would have to move across the water to seize islands held by the enemy. To prepare for such an eventuality, the Navy and Marine Corps began training for joint action in the thirties, and units of the Army later joined in the program.

In 1935 the Fleet Marine Force was established by Navy Department General Order, as a part of the organization of the United States Fleet. It was to be maintained in a state of readiness for operations with the fleet and "available to the commander in chief for operations with the fleet or for exercises either afloat or ashore in connection with fleet problems." The Fleet Marine Force units were specially trained for missions of seizing enemy-held bases, then defending them.

So much has been heard of "amphibious operations" in recent months that it is easy to forget that each new landing operation is a unique problem—that no formula for success in amphibious warfare can be drawn, except in the most general terms. There are, for example, some striking differences between landing operations in the Pacific and in the European theater of operations. In general they call for different training, different planning, different forces.

Differences in Bases

There is the matter of bases from which invasion forces start. In the European theater of operations, after the initial occupation of North Africa, it has been possible for our landing forces to organize at bases with dock facilities and loading gear capable of handling large numbers of ships and landing craft and of loading much heavy equipment. It may be supposed that an immediate objective of the landing forces starting from such bases is to seize a beachhead which will provide similar dock and loading facilities.

In the Pacific, on the other hand, there are relatively

few bases with facilities comparable to those of a large European or North African port. Such bases as there are, in many cases, lie at great distances—hundreds, even thousands of miles, instead of scores of miles—from the invasion force's objective. The force which attacked Guadalcanal had to load at a South Pacific port far more than a thousand miles from the Solomons. As the Pacific war progresses, enemy objectives will be farther and farther from large invasion bases. However quickly islands which are seized from the Japanese are developed as bases for another push, they cannot be expected to compare with European bases in having large and elaborate facilities.

Shore-to-Shore vs. Ship-to-Shore Movements

A second difference is related to the one just mentioned. Landing operations in the European theater are likely to be, in large part, shore-to-shore movements—movements from one well-equipped base to another base capable of handling large amounts of heavy equipment. The shore-to-shore movement also permits the use of types of landing craft which may not be suitable for the long hauls in the Pacific. There the landings must, in general, be from ship-to-shore, which means that the attack force must bring with it everything it expects to have during the first phase of the operation. A movement of troops and matériel from ship to shore calls for the greatest possible speed and skill, for the transports and supply ships are extremely vulnerable to air and submarine attack as they stand to unload. If ships are lost, the men and supplies that they carry cannot be replaced quickly from other bases.

In the Guadalcanal operation more than two weeks passed before any considerable amount of supplies were brought in to supplement those landed in the first three days. Meanwhile the landing force had to operate as a self-sufficient unit.

In Japan's third major effort to recapture Henderson Field, in October, 1942, they sent six transports heavily escorted by combatant ships. One was sunk by aircraft based on Henderson Field before it reached the shores of Guadalcanal. Three others were sunk by aircraft or set afire and forced to be beached while unloading, and two were driven off while engaged in unloading. A month followed before Japan sent another attack force, and then eight of the twelve transports which approached Guadalcanal were sunk by aircraft before they reached the island, and the remaining four were beached and destroyed soon after they reached the island.

These operations, and similar ones in other areas, demonstrate that heavy losses inflicted on an attack force operating as a separate unit far from base, unable

Right: **At a North African port, assault troops board boats massed for the invasion of Sicily, July, 1943. This was a typical shore-to-shore landing such as can be expected in operations in the European theater.**

Left: **The soldiers unload their landing craft on Sicily's shore and shove their trucks and equipment through the deep sand. A shell has just struck the water beyond the landing barge.**

U. S. Signal Corps Photo

Official Photograph, U. S. Marine Corps

U. S. Marines land on Florida Island during the first stages of the Solomons Campaign in which American forces blasted the Japanese out of their position. Landing barges are drawn up along the shoreline, and reinforcements are coming from the sea. Note the density of the vegetation.

to rely on quick reinforcements, serve completely to smash the attack. The eggs are in one basket.

Differences in Equipment and Arms

The equipment and arms suitable for landing operations in the European theater are, in general, different from those which can be used in the Pacific. Some reasons for this have already been mentioned—the fact that shore-to-shore movement permits more to be carried than ship-to-shore movement, and that bases in the Pacific are less elaborate.

Terrain in the Pacific islands imposes another limitation. There our forces will typically land on tropical islands covered with dense jungle and volcanic mountains, with no roads but native tracks and trails. On Guadalcanal, for example, the only roads capable of taking vehicular traffic were the Government Track along the coast, and a few roads cut through the coconut plantations by the Japanese to serve the airfield area. Other tracks had to be cut laboriously through thick jungle. Equipment such as heavy tanks and heavy trucks, which can be used where there is an adequate road net, are useless in the jungles of Pacific islands.

The coral reefs and numerous unbridged streams which abound in the Pacific impose a limit on types of vehicles that may be used. Rubber-wheeled amphibious vehicles, for example, would be useless on rough coral. On the other hand, amphibian tractors, which proved to be very useful in such conditions, might be found too slow to be used profitably where a beach is smooth and where there are adequate roads and bridges.

Number of Landings

Landings in Europe, apart from those for raiding or reconnaissance purposes, are likely to be on a very large scale. Once a beachhead has been secured, it will be used for funneling in men and equipment and supplies needed for extended land operations over a long period of time. When the initial landing operations have succeeded and an adequate beachhead or beachheads have been secured, operations lose the distinctive character of amphibious warfare. After a relatively few landings on a grand scale in the face of enemy opposition have occurred, then the amphibious force's job is done.

In the islands of the Pacific, on the other hand, landing operations are likely to continue until the day Japan is defeated. The forces landing on an island will be concerned typically with reducing one or a few enemy positions, as in the cases of the landings on Guadalcanal and Tulagi, the Japanese attempts to recapture Henderson Field, and the campaign for New Georgia. After a relatively short campaign, our forces will move on to repeat the operation on yet another island. In this regard it should be mentioned that the Guadalcanal Campaign ought not to be taken as typical of future operations in Pacific islands. The fighting during the first months of that campaign, after the

Marines seized the airfield, was the result of Japanese attempts to recapture the air base. In subsequent operations the Japanese are not likely to be able to deliver the repeated and powerful counterattacks which postponed the final mop-up on Guadalcanal for more than six months. As our strength in the Pacific grows, it seems reasonable to expect the island campaigns to grow progressively shorter.

The Time-Table

The Guadalcanal Campaign illustrated the benefits of long training in landing operations. The time-tables set for the operation, from the time of loading the ships and embarking the Marines until the time of landing, called for the utmost speed at every step.

Officers not thoroughly acquainted with the landing operations doctrine developed in the decade before the war would have been helpless to draw up the elaborate plans for the attack in the short time available.

Officers unfamiliar with the principles of "combat-loading" (i.e., so loading a ship that the equipment and supplies, according to an intricate schedule of priorities, shall be available during the landing operation) would have found it impossible to load the ships in time to meet the date set for the departure from base. Marines, working for days around the clock in a downpour of rain, were able to meet the tight schedule.

A rehearsal of the Guadalcanal-Tulagi operation had been planned in another group of islands of the South Pacific, and for four days the attack force went through landing exercises. The rehearsal was only a partial success, for it developed that the site selected by hasty aerial reconnaissance had a bad coral beach where boats could not land without incurring substantial damage. In consequence, the rehearsal had to be confined to practicing going over the side, unloading supplies and equipment, assembling boats in rendezvous areas, moving toward the beach without actual landings, and coordinating naval gunfire and bombardment by carrier-based aircraft with the movements of the landing force.

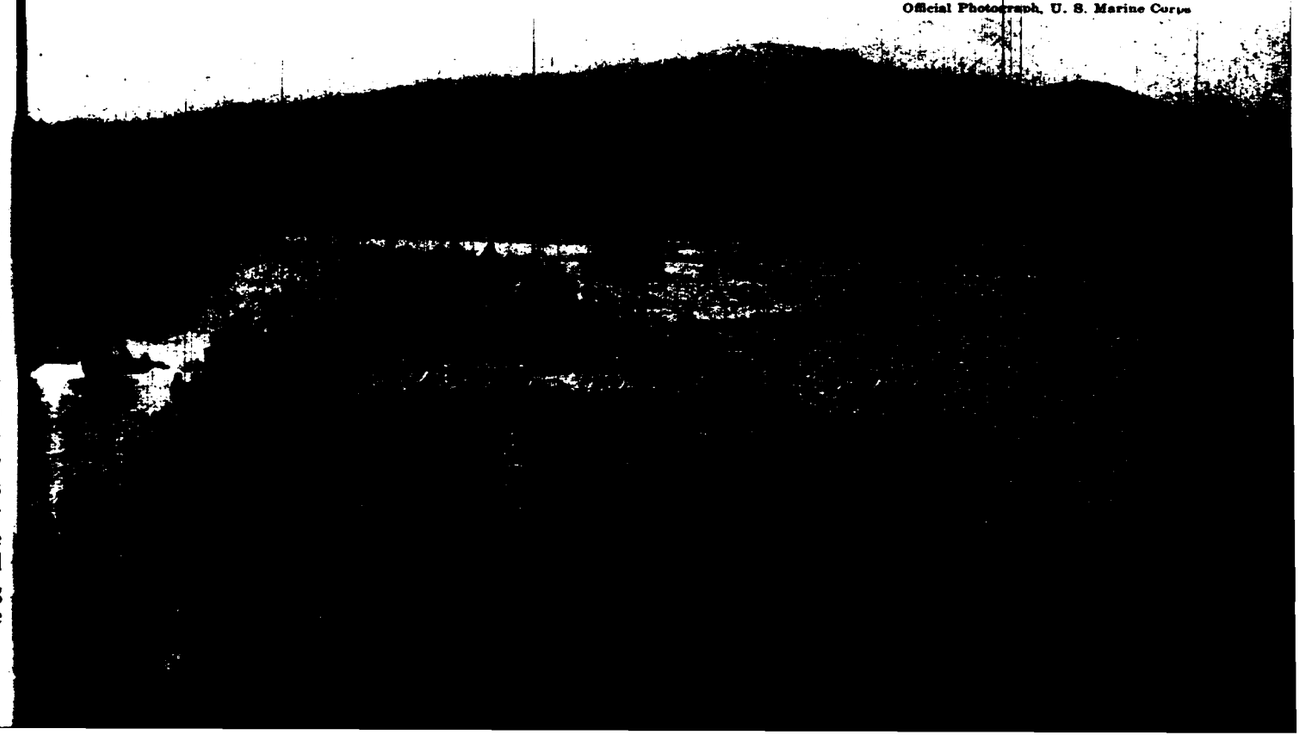
In such unpromising circumstances the months and years of training in landing operations proved their worth. Men did almost by habit what they might not have been able to do with less training, and the actual landing operation proceeded with model precision.

When the attack force arrived off Guadalcanal, in the dark early morning hours of August 7, 1942, its finished plan of operations was only a few days old. Roughly, half of the landing force had been at sea 39 of the previous 50 days and had spent the other 11 days in the cramped quarters of troop transports. The other half had been at sea for six weeks of the previous three months, had been quartered on troop ships for three more weeks, and had had only two and a half weeks in camp on land. This, however, was part of a highly trained force especially fitted for landing operations, led by officers thoroughly schooled in the doctrine.

The years of exercises in the Caribbean and study in the Schools had borne fruit.

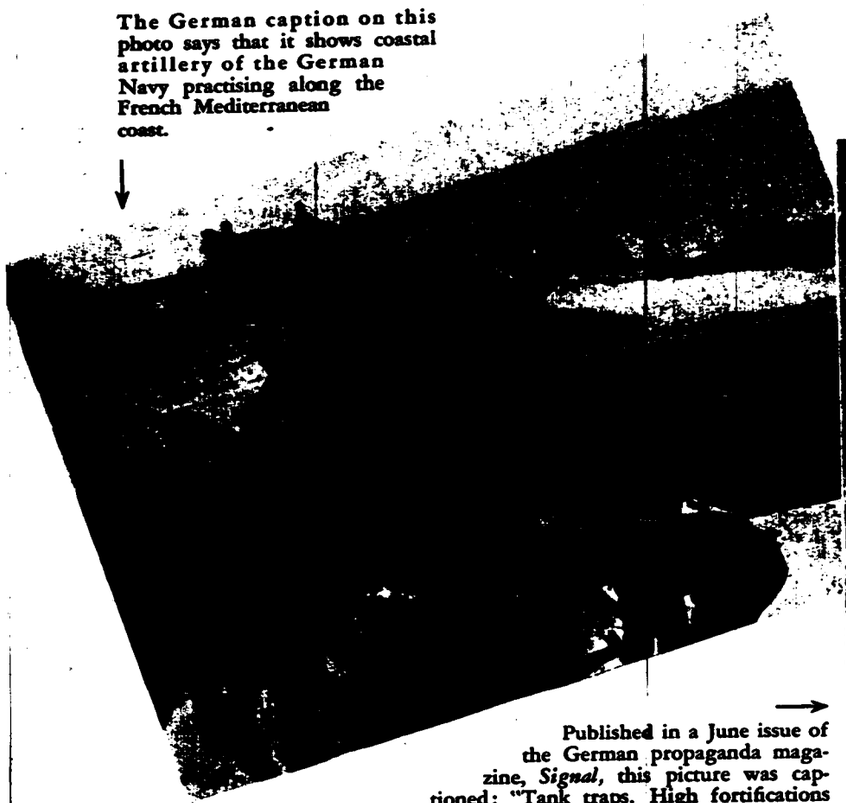
Packed with supplies within and without, two LST's (landing ship—tanks) approach Rendova Island, American base set up in the Central Solomons within artillery range of Munda Point. Much of the pounding Munda received before its fall came from guns of Rendova.

Official Photograph, U. S. Marine Corps



German Defenses in Europe

The German caption on this photo says that it shows coastal artillery of the German Navy practising along the French Mediterranean coast.



Photos by Press Assn.

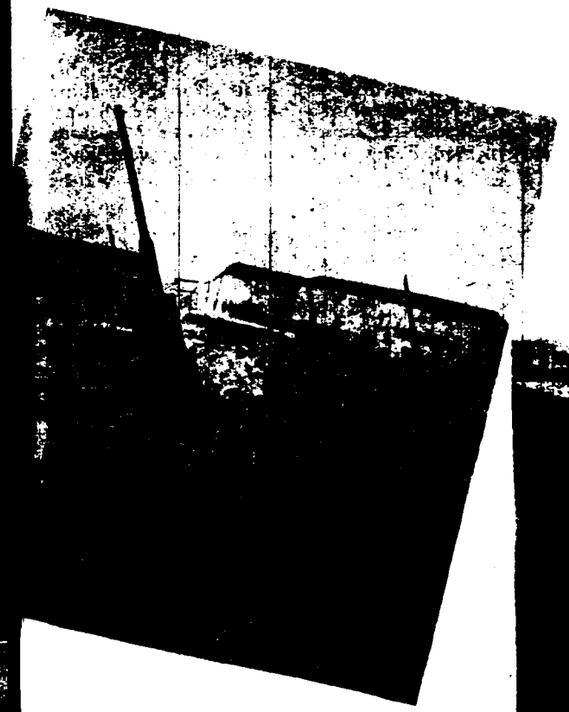
Published in a June issue of the German propaganda magazine, *Signal*, this picture was captioned: "Tank traps. High fortifications such as this pinned the enemy down on the strand as early as during the retreat from Dieppe. . . ."

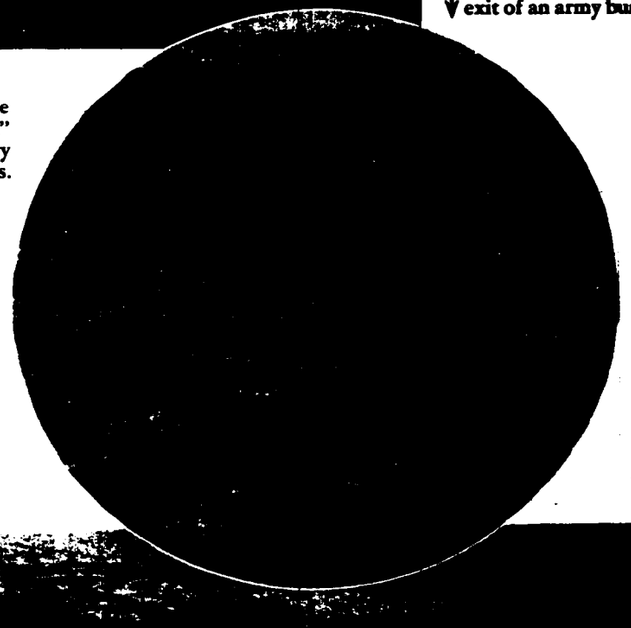
The caption which accompanied this photo from London says that it shows a German defense gun on the Gulf of Biscay. Source of photo unknown.

The Germans claim that thousands of heavy pill boxes such as this have been built along the Arctic, Atlantic, and Mediterranean coasts, from Norway by way of France to Greece.

This picture appeared in the Munich *Illustrated Press* under the heading "A bunker in the Atlantic Wall." German caption said it was the camouflaged exit of an army bunker.

The Hamburg *Illustrated* published this picture under the heading "Railway Antiaircraft Unit." Four heavy antiaircraft guns belong to a battery which is stationed on two rails at short intervals.





The German caption on this photo says that this is a bombproof petrol reservoir, built into the earth as a fuel dump for submarines, airplanes and tanks. Each one is supposed to contain several thousand gallons of fuel.

THE ROLE OF THE TANK IN THE WAR OF TODAY

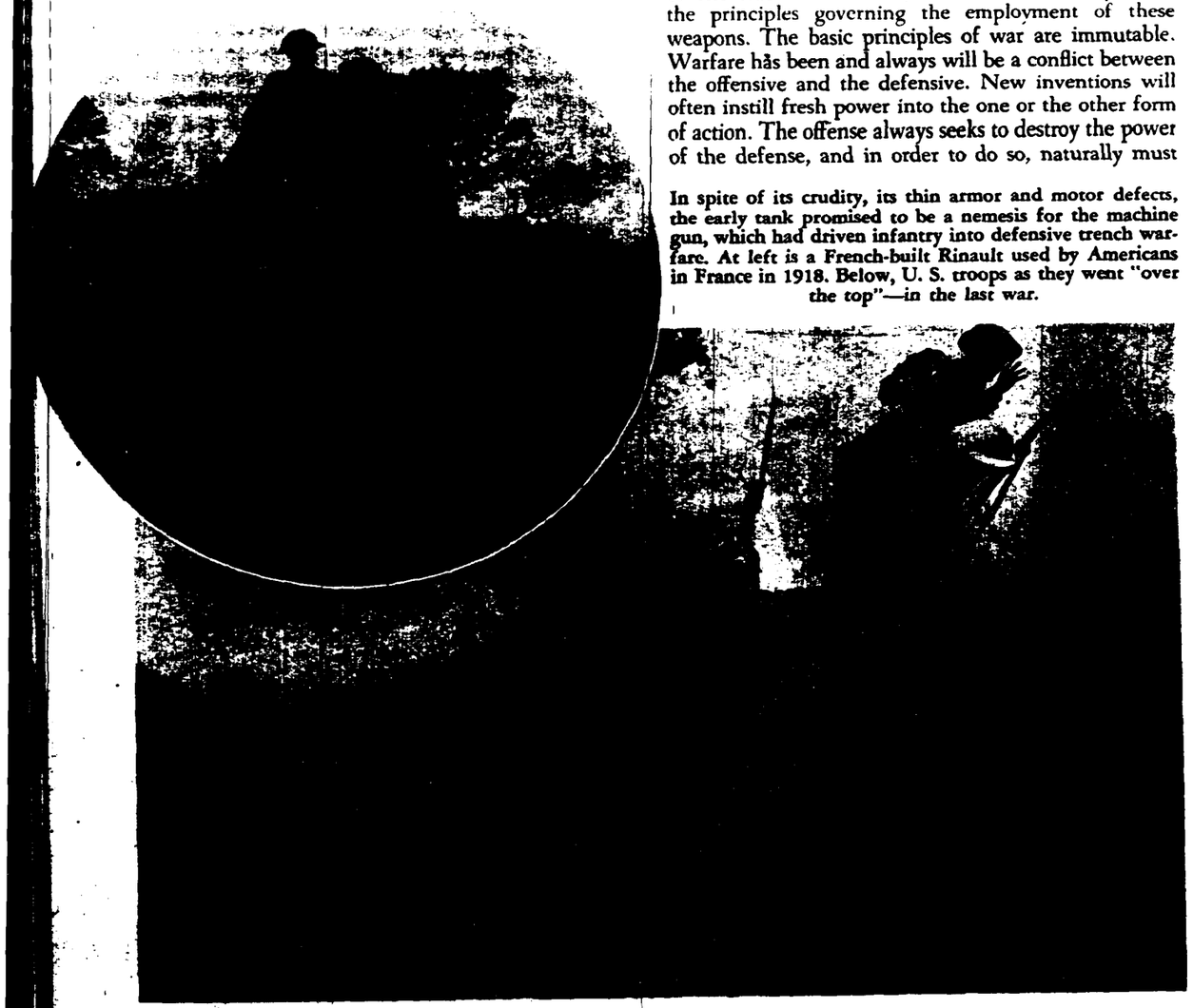
*by Brigadier General Edwin E. Schwien**

WHETHER considered tactically or strategically, the proper employment of tanks is probably as controversial a subject as can be found. There are, however, many tank theories which cannot be justified if scrutinized logically.

First, it is necessary to trace certain tactical and technical developments of war that created the demand for a tank or similar combat vehicle—in other words, to determine the purpose for which the tank was designed. This accomplished, it can then be shown where the employment of tanks in mass can be most effective. By such a process, some of the unsound doctrines or theories currently prevalent can be eliminated.

*8th Armored Division.

U. S. Signal Corps Photos



In spite of its crudity, its thin armor and motor defects, the early tank promised to be a nemesis for the machine gun, which had driven infantry into defensive trench warfare. At left is a French-built Rinault used by Americans in France in 1918. Below, U. S. troops as they went "over the top"—in the last war.

Basic Strategic Principles

Many military people are too prone to think that scientific inventions, which usually manifest themselves in some form of weapons, change the basic principles of war. While it is true that there is a periodic ascendency or decadence of various types of weapons which will tilt the balance of the scales to the advantage of one side or the other, this fact in no way alters the principles governing the employment of these weapons. The basic principles of war are immutable. Warfare has been and always will be a conflict between the offensive and the defensive. New inventions will often instill fresh power into the one or the other form of action. The offense always seeks to destroy the power of the defense, and in order to do so, naturally must possess greater power—whether in cannon, maneuverability, or leadership.

The great masters of war have invariably applied correct principles in their successful operations, and these principles are the same whether applied by Hannibal, Alexander or Napoleon. An analysis of Napoleonic campaigns will reveal frequently recurring patterns that laid the cornerstone to success. First, there was usually a *rapid* and secret concentration. This almost invariable preliminary was often followed by the favorite Napoleonic maneuver from a central position designed to defeat opponents in detail. On the other hand, by means of *rapid*, secret marches, Napoleon would at times reverse the front by placing the bulk of his forces astride the enemy line of communication. He would then follow these strategic maneuvers by launching the tactical battle.

In either of these maneuvers, *rapidity* or *mobility* was the essence or key to success. Napoleon's first objective was to place his armies in a strategically advantageous position from which he could apply his superiority in leadership, weapons and morale in the tactical battle or battles to follow. The strategic stage set, the tactical battle was considered merely as a means to accomplish the final strategic victory. The speed or mobility which was so essential to Napoleonic maneuver was made possible by highly seasoned infantry and the mass employment of cavalry. The *strategic pursuit*, energetically executed with devastating and final results (until the failure at Ligny), was the principle rôle of the Napoleonic cavalry masses.

Exploitation

Until the advent of the gas engine in the 20th Century, strategic exploration as well as exploitation belonged exclusively to large masses of horse cavalry. The turning of a front, the exploitation of a break-through in order to operate against lines of communication, the thorough pursuit—all required a speed which simply did not exist in anything but cavalry.

Up until World War I, all military authorities agreed on the desirability of waging fast offensive wars. Schlieffen and Foch believed firmly in this same basic doctrine of the rapid offensive. Even as late as 1914, both the Germans and the French had large masses of cavalry available for strategic rôles. Motor transport was in its infancy. The first World War certainly did not indicate that the *rôle* of these cavalry masses had become obsolete.

If anything, the lessons of the latter part of World War I, in the summer and fall of 1918, clearly proved a very definite need for a powerful and fast exploitation force. At no time after the early stages of the war did such a force exist. Even had the numerous penetration attempts succeeded in effecting a break-through, there would have been nothing at hand to have turned the tactical victory into a strategic one by destroying the enemy's nerve centers well in rear of his armies. Nearly all of the large cavalry formations existing in 1914 had been turned into infantry before the end of the war. In other words, both sides lost sight of the fact that the break-through battle is merely a means to an end; that it is, in the final analysis, only a preliminary skirmish designed to place one force in advantageous juxtaposition relative to its opponent so that strategic maneuver will again be possible—so that rapidity, as envisaged by Napoleon, can again play its preponderant rôle in war.

There still exists and there always will exist the need for speed and maneuver in war, even though these factors were lost sight of in the latter stages of the first World War.

This résumé indicates that in the field of strategy a large exploitation force with great strategic mobility is absolutely necessary.

New Weapons and Tactical Doctrine

In the tactical field, on the other hand, the appearance of new weapons on the battlefield has usually affected the *application of tactical doctrine*.

From time immemorial, the successful issue of battle has depended upon the presence and delicate balancing of three organizational factors—mobility, fire power, and the actual physical seizure and determined occupation of strategic and tactical localities.

Very early in the history of warfare, these factors took the form of cavalry, artillery and infantry. The early manifestations of these branches appeared as knights, catapults and archers. Various technical inventions throughout the ages caused apparent changes in the ascendency or relative importance of the three. The early invention of armor and the mobility of the horse made the knight supreme on the battlefield of the Crusaders.

The invention of gun powder enabled the infantry to repel the shock action of the mounted and armored knight. Later, the invention of the machine gun and the parallel high development of the artillery gave to the infantry a defensive power heretofore unknown in the annals of war. This latter development reached its peak in World War I when the infantry, safely underground, and protected by huge masses of machine guns and artillery, successfully stood off an attack of ten-fold its

strength. The defensive power of infantry seemed definitely to be in the ascendency.

During the last three years of the last war, offensives on both sides were carried out with greatly increased fire power. Artillery seemed to be the only answer to the machine gun. Offensives requiring a laborious and tedious massing of matériel and munitions were undertaken. Enormous "groupments" of artillery were massed on narrow fronts for the purpose of literally blasting a path through enemy defensive resistance. In spite of meticulous care and methodical fire preparation, however, there always remained untouched isolated machine guns which always disclosed themselves after the lifting of the artillery preparation or the rolling-on of the barrage. These same surviving machine guns then proceeded to exact a terrific toll of the attacking infantry—a toll so heavy, in fact, that the attacking divisions were quickly disorganized long before a break-through had been attained.

The rhythmic pauses of the attack, designed for the forward displacement of supporting fire power, also served the defender well. They permitted him a breathing spell in which to reorganize his defenses, to bring up his reserves either for the occupation of *"bretellos"* or to switch positions, or for counterattack. The costly French offensives in Arbois and on the Somme, as well as the German holocaust of Verdun, furnished no answer to the problem of the attacker. The factor of fire power received a sudden impetus in the invention and first employment of toxic gas. This aid to the attack, however, was quickly overcome by the defense in its passive antidotes and in its own employment of this weapon.

During this epoch, all military thought, all inventive genius was directed toward the development of new weapons that might effectively neutralize the universally dreaded machine gun. It was not now a question of what to do in case a break-through was accomplished. The question at hand was *how* to *break through* the deep zone defense of the enemy. In addition to unbelievable masses of artillery, numerous accompanying guns, and other close support weapons, the attacking infantry obviously needed fire support that could stay right with it in its advance and beat down that omnipresent machine gun resistance.

Combat aviation was still a thing unknown, but even with its present efficacy, the dive bomber will never be able to remove in toto the menace of the concealed machine gun nest.

Introduction of the Tank

Sometime before the end of the war, the tank appeared on the battlefield. In spite of its crudity, its thin armor and motor defects, it promised to be the nemesis of the machine gun. Artillery barrages seemed unable to stop it, and it was vulnerable only to direct artillery fire. World War I then terminated and left the future capabilities and limitations of the tank to speculative theory. Two lessons, however—one tactical and the other strategical—were learned. Both of these had a direct bearing on possible future uses of the tank.

Tactical Lesson. The machine gun was still master of the tactical battlefield. The tank, still largely experimental, might be the answer to the machine gun. All authorities agreed that the purely frontal operation stood little chance of success without a definitely improved fire support aid to the infantry.

Strategic Lesson. There still existed the need for a rapid, mobile force capable of extending the tactical rupture or penetration into strategic victory by a deep and devastating exploitation. This could be accomplished only by a complete paralysis of the enemy communications. Only large cavalry masses were available for this rôle. They had been so used in the American Civil War. If the tank masters the machine gun and permits the break-through, then there must be available a fleet mobile force that can quickly reach a vital strategic objective and exploit the fruits of the tactical victory.

The postwar period, therefore, found the tank sharing honors with aviation in the speculative theories of military writers.

The British perceived and announced their conception of the tank as the logical successor of the horse. They visualized the metamorphosis of the cavalry exploitation masses into fleet tank masses. Unfortunately, their thought processes did not go beyond the theoretical stage. The French, on the other hand, constantly aware of their terrific war losses, sought primarily an answer to the machine gun. Their conception of the future capabilities of the tank was more or less limited to its use in support of the infantry on the tactical battlefield. To them it was a fire power weapon designed solely for the support of infantry. Even they, however, made a distinction between their *chars d'assault* (assault vehicle) and their pitifully inadequate *force mechanises.*

The Germans capitalized on both lessons. Not only did they recognize the tactical use on the battlefield of the tank versus the machine gun, but they also immediately perceived its capabilities in the more grand and vast strategic pattern.

The Tactical Rôle

First, a tank was needed to support the infantry attack. What characteristics must it have in this capacity? Obviously such a tank required fire power such as infantry cannon and plenty of machine guns. Next, it must have armor—plenty of armor, as it would be required to advance in the face of direct artillery fire (or antitank fire as at present). Did it not need speed? No, speed would serve only to separate it from its infantry, its *raison d'etre.* Besides, speed and heavy armor were not compatible. How should it be organized? Should it be placed under the Inspector of Cavalry or Infantry?

Obviously, the Germans reasoned, this heavy tank had

nothing in common with the cavalry. Its two principal characteristics were fire power and armor, neither of which was possessed by the cavalry. In reality it was the old infantry accompanying gun, much improved and armored. If used in mass—in "groupements"—for the support of a particular infantry operation it might well be given to the Inspector of Artillery. This would again, however, detach it from the immediate support of the infantry. By a logical process of elimination, therefore, it must belong to the infantry. "Give unto Caesar the things that are Caesar's." Let the infantry train it; let it work with infantry. Call it the *infantry tank.* It was given a clear, definite task versus the machine gun.

The Strategic Rôle

The Germans perceived the rôle of the tank not only in the tactical picture, but in the strategic picture as well. They understood how large masses of cavalry might have brought the first World War to a speedy conclusion had a break-through permitted their employment. And yet they knew that cavalry was fragile and delicate, that it was unarmored, that it lacked attack power. If it could reach vital communication centers without encountering resistance in its path thereto, it could make its action felt in the strategic picture. If, on the other hand, the intervention of enemy reserves blocked its route to its exploitation objective, it lacked the "punch," the fire power and shock action to push through. If only the cavalry mass could be implemented with fire power, with shock; if it could be made more impervious to enemy fire by means of armor—if all of this could be done, could it still retain its mobility, its speed? Would all of this be possible?

The answer to this question was given in the Polish and French campaigns. The problem was solved by the substitution of the light, fast tank for the horse. Even a mobile medium tank satisfactorily answered all requirements. Here, in this rôle, armor and fire power were and *still are* sublimated to mobility.

The result was the birth and organization of the panzer (armored) division. A new branch was created to administer and develop it—the Mobile Force. Under this branch was placed the horse cavalry. Their functions were fundamentally analogous. They belonged, therefore, under one titular head. The title of this force is indicative of its function, of its principal characteristic —*Mobile* Force. The principal function of the *gun* in the panzer division is to enable the latter to employ its *mobility,* so as to reach *quickly* a *vital strategic objective.*

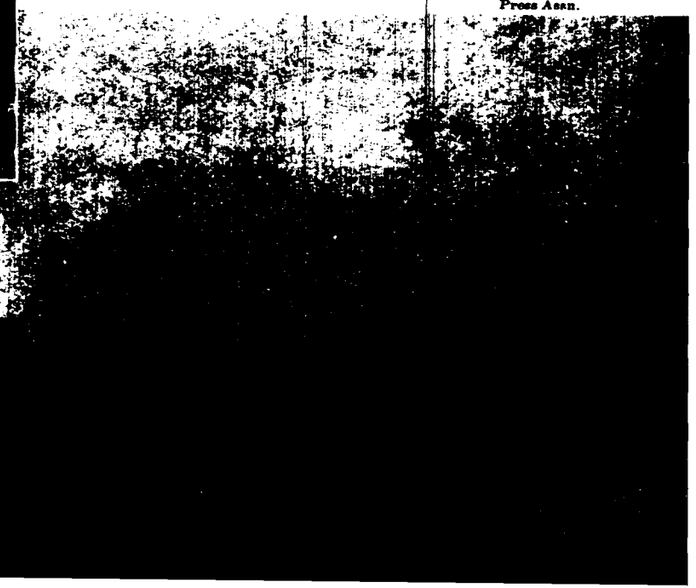
If the division can reach this objective *without firing a shot,* so much the better, so much less the delay. If it were possible to stretch the imagination and visualize

Press Assn.

Left: **A heavy German tank crosses a Russian tank ditch during a recent attack on the Orel-Belgorod front. Here the tank is employed in its tactical rôle in support of infantry. The photo reached this country via Lisbon.**

Below: **German tanks and half-tracks, employed in their strategic rôle, advance on Soviet positions and fortifications in a counterthrust during the Orel-Belgorod fighting. Picture from Lisbon.**

Press Assn.



the armored division, substituted for its weaker strategic brother, the lightly armed and unarmored parachute corps, and dropped on the strategic objective — that would be perfect!

When the Germans massed the bulk of their forces on the Belgian Ardennes Front in April, 1940, and ruptured the French Meuse Front north of Sedan, their maneuver was an exact replica of the Napoleonic maneuver from a central position. The operation, in a great many respects, bore a close resemblance to Napoleon's first Italian Campaign. The penetration of the front first separated the British and part of the French from the main French forces. This initial strategic advantage was then followed by rapid action against the entrapped Belgian army and by *rapid* exploitation by the panzer corps toward the channel ports. In the meantime, the main French forces to the south were contained during the annihilation of the combined French and British forces to north. This part of the campaign accomplished, the Germans turned their attention to the south and quickly broke the Aisne and Somme fronts and exploited their success across the rear of the Maginot Line to the very frontier of Switzerland. In this operation, as well as in those previously carried out in Poland, the *strategical exploitation* was executed by tank or armored division. The tank replaced the horse and did an effective job in *exploitation!*

The German infantry divisions also had their tanks. But, with the realism peculiar to Europeans, the Germans appreciated the vast differences between the two types of employment.

Armored Mobility

The armored division, therefore, is a far cry from the infantry tank. The tank battalion of heavily armored, slow moving fortresses must be an organic part of the infantry division or else attached thereto. There is, or should be, absolutely no connection between the two, either in training, administration or functions. In the *infantry tank*, the *gun* is primary. Even armor is secondary. Mobility plays no part.

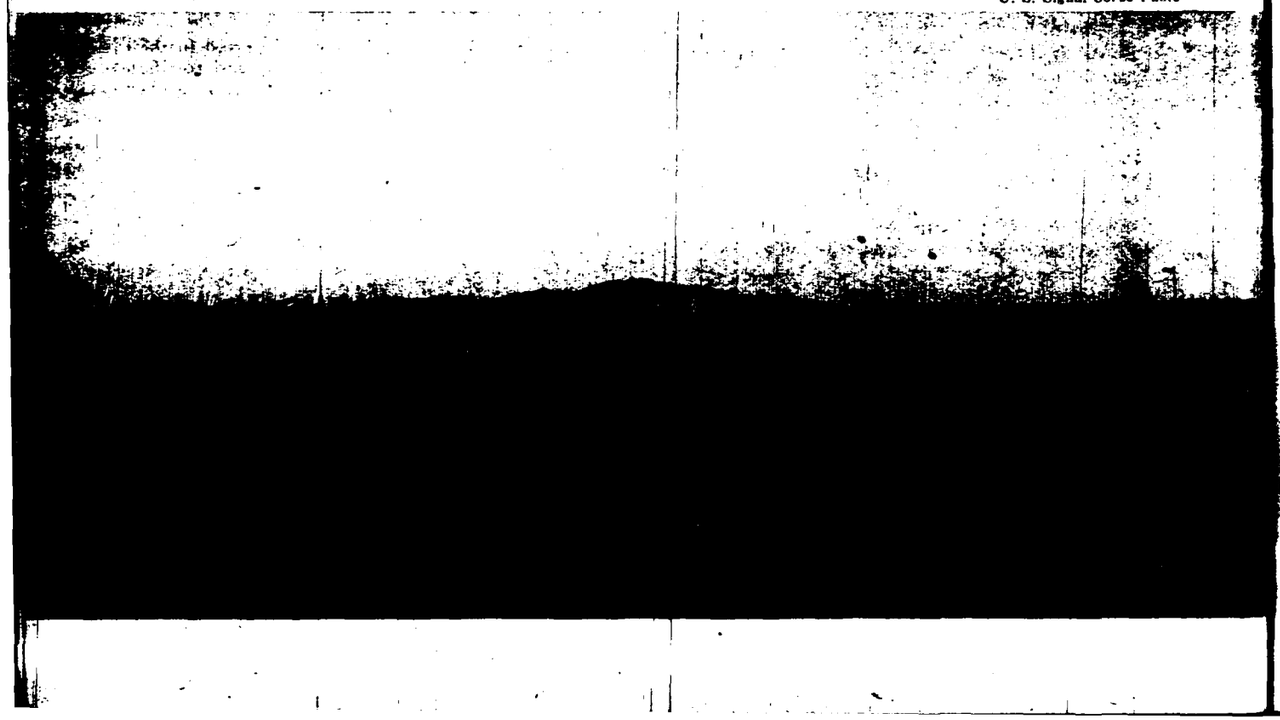
There should be no confusion on this clear-cut issue. The *mobile tank division* of this war, when operating in a suitable theater, is as important, if not more important, than the Napoleonic cavalry of the early 19th Century or the cavalry masses of our own Civil War. If the theater of operations at anytime is of such a nature as to preclude the employment of *tanks in mass*, then *the horse cavalry division must be employed for the strategical exploitation.*

When the tactical or strategical break-through occurs in Europe, the war will be shortened considerably if there are sufficient armored divisions to capitalize and exploit the rupture gained so painfully and at such a cost of lives by our infantry and its organic tanks.

There must be no failure to exploit!

Editor's Note: *To this summary might be added the strategic pattern of the Russians as demonstrated at Stalingrad and more recently at Taganrog, where the successfully employed cavalry and tanks in joint operations for the complete exploitation of an earlier break-through.* (*See pages 32 and 33.*)

At the Desert Training Center, this U. S. tank formation moves across the desert during maneuvers.
U. S. Signal Corps Photo



Principles of War Applied to Cavalry

by Major Benjamin D. Betts, Cavalry

MILITARY successes of history usually have been marked by adherence to certain principles of war —the principles of the *offensive*, of *surprise*, of *economy of force*, of *mass*, and of *simplicity*. These principles remain unchanged.

In the light of modern battle experience and by the use of the principles of war as a yardstick, what useful characteristics are found that are peculiar to cavalry? How can these characteristics be utilized best in modern war? How can they be accentuated further by organization, training, and equipment?

The Offensive

The first unit of measurement is the principle of the offensive. *Field Service Regulations* state, "Superior hostile numbers may be overcome through greater mobility, better armament and equipment, more effective fire, higher morale, and better leadership." This statement seems to contain the essential elements of successful offensive combat: mobility, arms and equipment, training, morale, and leadership.

Mobility? Cavalry has it—a fluid, individual mobility practically unhindered by terrain obstacles, time of day, or weather, unequaled in the combination of speed and flexibility by any other branch.

Morale? Morale is not substance. It is hard to evaluate and hard to compare. There is a certain *esprit* in cavalry that is hard to find elsewhere. Give a normal man a horse, a little confidence in his ability as a horseman, and he becomes "the man on horseback." This type of morale may be atavistic, but it does breed individual responsibility and initiative, and a sense of being the better man in personal combat. The morale factor is the spark that initiates the offensive. Cavalry has it.

Other cavalry essentials—arms and equipment, training, and leadership—are not in themselves basic characteristics, but may be changed or modified to accentuate basic characteristics.

Surprise

The second unit of measurement is the principle of surprise. The elements of surprise are secrecy, deception, novelty, and accomplishment of the impossible. The purpose of surprise is to demoralize the enemy and thus defeat him. How does cavalry measure up? Secrecy in modern warfare calls for night movement. March by night, hide by day. In this manner even large bodies of cavalry can move great distances with secrecy. The horseman's mobility in cross-country operation is less diminished at night than any other soldier's, in that his mount, sensing dangers before the rider, is an asset rather than a liability. In terrain or weather where the enemy is limited to ground observation, cavalry, taking full advantage of its cross-country mobility, may move with secrecy by day. This same mobility gives cavalry great powers of deception. The enemy normally overestimates the size of a force that moves on him unseen, strikes, moves off, and suddenly strikes again from a different direction. General Dovator's Russian cavalry, operating behind the German lines, was estimated as having up to thirty times its actual strength.

The very novelty of the tank was one of its most potent advantages when it came onto the battlefield in the last war. Its great power was its psychological effect. Today, against well trained troops, the tank has lost that power. The man on foot has built up a disdain for armor that enables him to stand coolly by his guns at its approach until he is assured that his weapon will have its maximum effect. How many men, on the other hand, are so familiar with horses as to retain their composure in the face of a mounted attack? The more mechanized and impersonal that war becomes, the greater will be the psychological power of horse cavalry.

Cavalry's final element of surprise is the accomplishment of the impossible. It seemed impossible to the Spanish Loyalists, holding the heights of Teruel, that any force could successfully storm their position, yet Monasterio's Moorish cavalry overran their position in a matter of seconds. In our own maneuvers, cavalry has shown what it could do in "impossible terrain." Surprise? Cavalry surely has its place.

Economy of Force

The third unit of measurement is economy of force. Since we are now engaged in total war, this principle can no longer be limited to the battlefield. Economy of force thus becomes *economy*—the utilization and management of resources. As a nation, we have a job to do and, in order to win the peace as well as the war, we must do this job with economy. Every tool used in war must show a profit; the end must justify the means. Every tool, whatever its classification, goes into battle showing a debit of labor and materials. While in the combat zone, maintenance is added to this debit. On the credit side may be entered the value of missions performed, enemy objectives gained. A careful analysis on the debit and credit basis should be made of *every* piece of matériel or equipment. Horse cavalry, as such, measures up. The horse goes into battle with a minimum on the debit side and with a maximum of potential credit.

It is inevitable that the horse is compared with his mechanical counterpart. In the complete acceptance of motorization and mechanization, one must accept two additional enemies—terrain and weather. These enemies immediately immobilize a large portion of potential forces—matériel, manufacturing facilities, and manpower. The challenges of terrain and weather must be accepted, and these natural enemies conquered, before

it is possible to strike the acknowledged human foes with full force. Even at this stage of development, it must be admitted that combat vehicles have a definite sensitivity to terrain and weather. The assurance of readily available horse cavalry in situations of difficult terrain and weather would eliminate these foes of mechanization to a large extent and release those forces now immobilized to aid in the defeat of the Axis.

The Principle of Mass

The word *mass* used in its military connection conjures up a picture of almost anything but horse cavalry in modern warfare. Years ago, horse cavalry fitted into the picture—drawn sabers, the charge, the thunder of galloping hooves, wave after wave of horsemen riding boot to boot. That was mass, but what of modern war? The roar of tanks—the might of armor—has stolen the rôle of the charge, has taken the color, the glory, the spectacular rôles that once belonged exclusively to cavalry. But does this mean the end of horse cavalry? We think not. Once the dinosaur was formidable, but today the mosquito is more dangerous.

Our conception of mass should not be limited to the picture given above. The mass to be concentrated at any given point may be a solid mass like a heavy steel wedge; a resilient, smothering mass like a huge featherbed; or a penetrating fluid mass. Each type is effective in warfare. The degree of effectiveness depends on the tactics and equipment of the enemy. The inherent characteristics of horse cavalry are those of the penetrating fluid mass. Given the terrain and weather that impose limitations on mechanization, horse cavalry can penetrate the enemy front lines like a swarm of gnats going through a screen door, organize in the enemy's rear areas, and strike rapid punishing blows at his rear installations and routes of communication to disrupt supply, to disorganize and demoralize him, and to draw combat troops out of the front lines.

Simplicity

It is taught that a simple plan is most successful. What are the elements that are most likely to cause complexity and misunderstanding? Such ample emphasis has been placed on tactical simplicity that there is a natural wariness of the elaborate tactical plan. On the other hand, the ever-increasing types of specialized equipment that supply modern combat troops have complicated the logistical plan. Today, in military as in civil life, specialization is the keynote. There is a danger in over-specialization, a danger that can lead to disaster. In an army of specialists, the loss of one man may seriously jeopardize the success of an operation.

To move and supply this type of army it is necessary not only to plan on a certain number of men and a certain amount of equipment, but also on specific men with specific qualifications and training, on specific missions, and on the timely supply and resupply of specialized expendable items. Is this simplicity of plan?

The basic characteristics of horse cavalry, on the other hand, both as to supply and employment, give the flexibility that facilitates simplicity of planning.

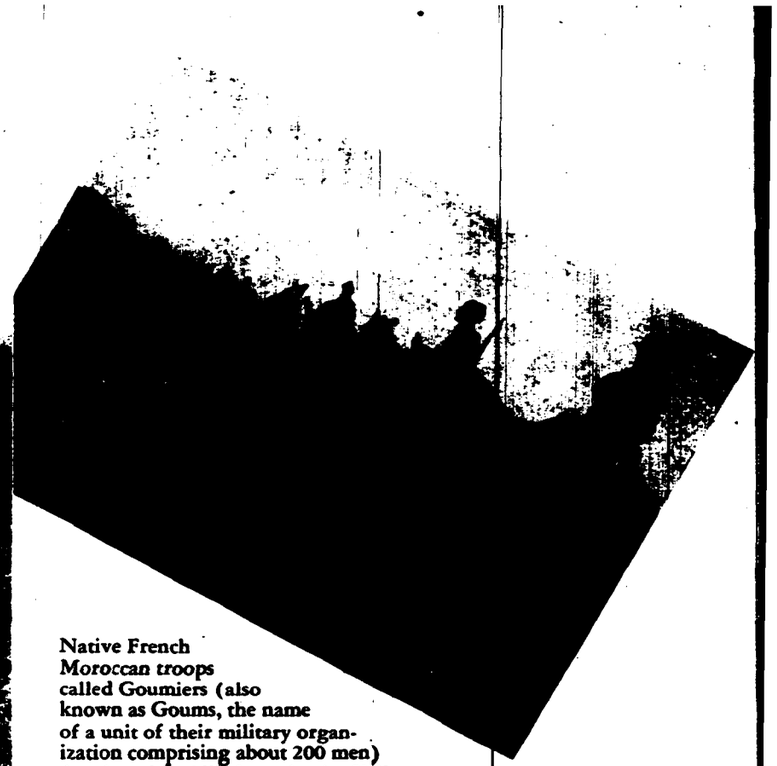
Using these standard basic principles, an analysis of horse cavalry shows certain characteristics inherent in the arm that can be used to great advantage in modern war. Cavalry furnishes an economical solution to the problem of cross-country mobility, a solution that gives the *individual* soldier the means to travel rapidly and comfortably over practically all types of terrain without perceptibly lessening his readiness for immediate action. Cavalry has the ability to disperse and thus present an unprofitable target to the enemy air and artillery without decreasing its mobility, and it can move with a maximum of secrecy in favorable terrain.

These characteristics perhaps are its most important assets, though others come readily to mind. Along with these capabilities, cavalry naturally has limitations. Its limitations have been enumerated often and are well known. A horseman presents a large target. He cannot creep and crawl and make use of small cover in a mounted approach. As soon as a mounted unit goes into dismounted action, from an eighth to a quarter of its manpower is lost to the commander in retaining some degree of mobility.

If horse cavalry is to regain its battle utility, it must go back to *basic* capabilities and limitations. These basic characteristics must be examined thoroughly, and training, organization, and equipment must be based on these fundamentals.

One approach to the larger problem is a consideration of cavalry logistics. Is it possible that modern cavalry bears a startling resemblance to the hunter who took too literally the slogan, "Be Prepared"? The hunter was out for a day of bird hunting, but before leaving camp started to pick up an item here and there to prepare for an emergency. Being endowed with an active imagination, the accumulation of these small emergency items made such a heavy load that he had to give up his mission. The danger of the woods made it a physical impossibility for a lone hunter to go out. The individual items of "emergency" equipment are not so heavy, but the accumulation easily becomes so great as to eliminate our greatest asset, mobility. Why not cut cavalry equipment to the *barest essentials* to carry out a specific mission and thus increase its mobility and efficiency? Why not follow the example of the successful hunter who leaves his heavy rifle in his base camp when out for birds, and his shotgun behind when out for bear?

No panacea is offered—only the plea to start with fundamentals, to suggest, improve, and correct—that one national asset, horse cavalry, may be used to the limit of its capabilities in achieving a common national goal. The day will never come when intelligent thought and planning will cease to show the way to a more efficient use of the means at hand. Today, *all* means must be used to insure victory.



Native French *Moroccan troops* called Goumiers (also known as Goums, the name of a unit of their military organization comprising about 200 men) fought with Allied armies in Sicily.

French Moroccan Cavalry in Sicily

Here a unit of Goumiers, commanded by a French officer, heads for the hills beyond the Sicilian central plane soon after their landing July 14th. Their capture of Capizzi on the American flank preceded the important battle for Troina.

Signal Corps Photos

Goumiers Flanked U. S. Troops in Sicily*

Goumiers, the feared Berber fighting men of North Africa may be likened to an unorganized militia. They fight for the sheer love of fighting—and for the money they can earn by bearing arms for their friends against a common enemy. Under the French administration of Morocco, the Goumiers contracted to hire out their arms and abilities at stated intervals and upon official levy, as adjuncts to the French and French Colonial forces.

While the Goumiers fight under French officers, their methods are their own. They wear no uniform, rely largely upon cold steel for best results, and frequently supply their own arms. Working at night, they prefer to penetrate the edges of enemy-held territory by guerrilla tactics, at which they are most proficient.

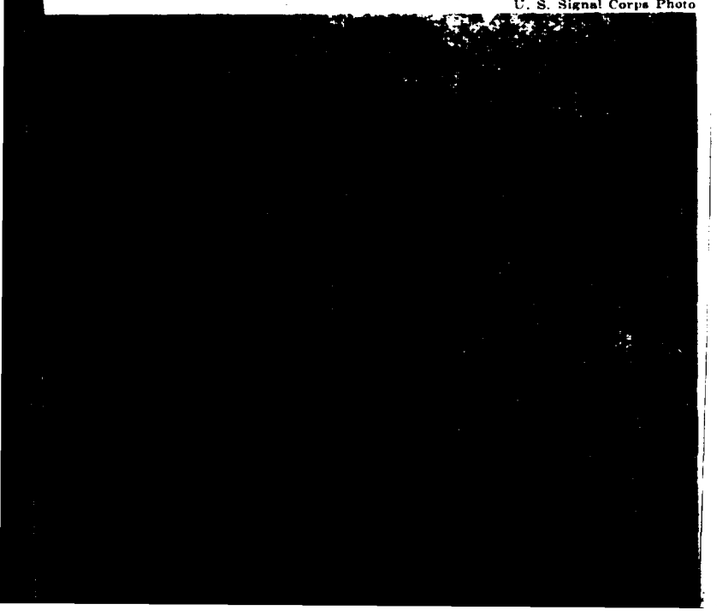
Goumiers are members of the white race, with deeply tanned faces, dark brown hair and brown or hazel eyes. While blondes among them are not unknown, they are extremely rare.

August 11, 1943—Fighting on the flank of U.S. troops, French Moroccan Goums have taken hill after hill in Sicily, sent back hundreds of German prisoners, and left many dead Jerries behind them. All of the Goums can handle French light machine guns, American tommy guns, and 81mm mortars—but with a bayonet and a bunch of grenades they will charge any position, anywhere.

The Goums are all Mohammedans in religion and Berber in origin. The Berbers are natives of North Africa; the Arabs are not. Unlike the Gurkhas (British Indian Troops), who look like a bunch of kids, these Goums look as tough as they really are. Most of the men are lean, with close cropped kinky hair and a braided pigtail. The pigtail is to give the Lord something to grab on to when he yanks them up to paradise, after they die.

Shoeing a wild mule is just practice for the more dangerous tasks to be faced after dark by Said ben Mohamed, Abdallah ou Ali and Mohan ou Hamoud.

U. S. Signal Corps Photo



Practically all of the Goums have beards. "They believe that a man who has not seen action and does not have a beard is not a man," explained a French lieutenant who had served with them for three years. "Goums are the best fighters I have seen anywhere," he said. "They just don't know when to quit."

On one occasion their objective was two hills just outside Misretta which were held by two companies of well entrenched Germans. Climbing as quietly as goats, the Goums got into position at night and hurled several dozen well aimed grenades, and then made a cold steel attack. When they were within 50 yards of the top, the Jerries opened up with machine guns. Instead of falling flat on their faces, hunting for cover, the Goums rushed straight in for some hand-to-hand fighting. For that, each Goumier has a ten inch knife—a *koumia*, which he uses to cut off heads. Now-a-days he does that only if he gets very mad, which sometimes happens. The Germans definitely don't like the Goums, but the Italians are scared to death of them. On one occasion, in the Mateur-Bizerte sectors, where the Goums were attached to the U.S. 9th Division, three Italian companies surrendered en masse as soon as they heard that the troops in front of them were Goums.

Back in 1912, when the French came into Morocco they absorbed the Goumiers into their army as a separate fighting force. The units, built up into *tabors*, the equivalent of a regiment, are made up of four Goums, 200 Goumiers to a Goum.

To every *tabor* of Goums there is a cavalry unit in which each man owns his own horse. All Goums fight on foot. Also attached to each section are several score mules to carry ammunition into terrain where jeeps cannot go. But the Goums like their jeeps. It makes a funny picture to see one of these Goumiers wearing his wool sack uniform, tearing along in a jeep, his pigtail flying in the wind.

Besides their company commander, each Goum is staffed by one French officer and ten French noncommissioned officers. In addition, the Goums have their own native sergeants. They all eat the same food—C rations—which they do not particularly like. The Goums would much prefer a steady diet of bread and green tea, their national dish.

* * *

*With Allied Forces in Northern Sicily, August 9, 1943**—Goumiers have been slicing their way with American and Canadian troops through German- and Italian-held towns in Sicily ever since they landed at Licata on July 14th. One of their outstanding exploits, made preliminary to the American assault on the German stronghold at Troina, was the capture of Capizzi, about five miles northwest of Troina. (Editor: The capture of Troina has been called the decisive point in the conquest of Sicily.)

It was almost by accident that I found these hardy fighters at Capizzi and learned of their capture of the town. We had just passed through Nicosia, where batteries of 105s and 155s were systematically shelling the Germans at Troina, and a British correspondent, two American colleagues and I had chartered a jeep for the run over to Capizzi.

On the road to the town, littered with burning Axis trucks, Sicilian prisoners from a Palermo artillery regiment were waiting to be transported to the rear. Reaching Capizzi, we found a mêlée of prisoners being loaded in trucks and townspeople searching for relatives and friends among them. It was then that I recognized the magnificent horses and long capes, which are the familiar badge of the Goumiers. They were getting ready to move in half an hour.

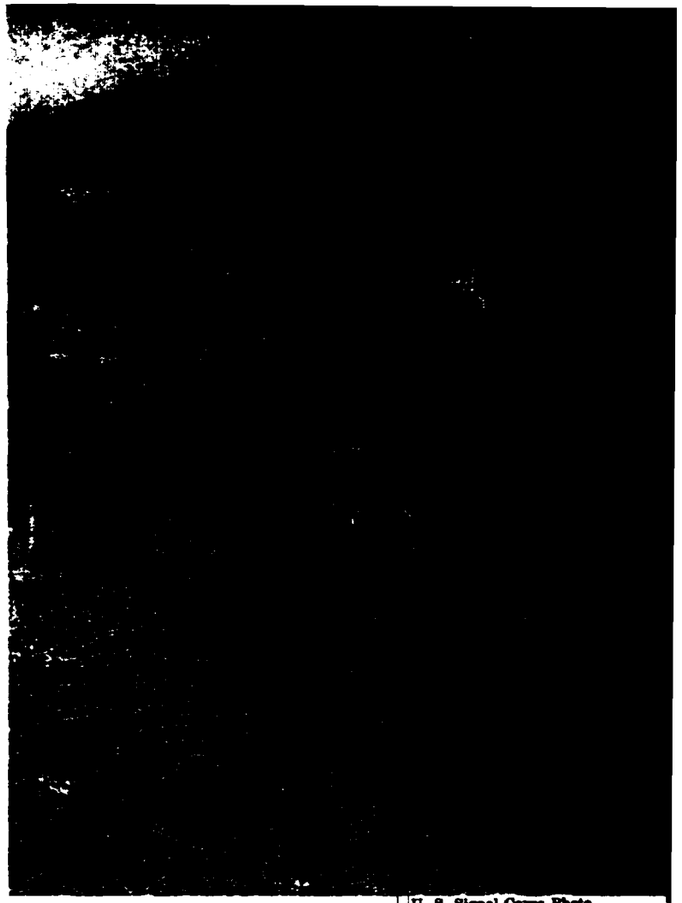
A sergeant major of the Goumiers took time off from his work to give me an account of the fighting that had led to the fall of Capizzi. "While American artillery laid down a barrage," he said, "the cavalry advanced to the entrance of the town. This was about six o'clock in the evening on Friday, August 6th. The Germans still had two companies at full strength holding the defenses. The Goumiers rode in formation into the town, and the Germans attacked from both sides of the main street with machine guns, tommy guns and hand grenades. Instead of breaking under this cross-firing, as the Germans probably expected, the Moroccan fighters spread out to engage the Germans in hand-to-hand combat. The battle went on for five hours until eleven o'clock. The enemy, after having been swept from every defense line and after suffering heavy losses, finally withdrew.

"And you can say that our losses were very slight," added the sergeant major. "The cavalry has the *baraka* (all the luck). It is a fact that since we landed at Licata we have often been in some tight places, yet we always manage to get out of them with honor and almost without damage. Of course, we have to admit that the Americans' heavy artillery has something to do with our constant good luck." The officer smiled. "It pounds the enemy positions with remarkable accuracy and makes our job that much easier.

"The American officers are very friendly and the men are swell comrades," he continued. "Tell everybody that we are proud to be representing France in the Sicilian Campaign. This war isn't any fun. We have to fight hard and often, do not get more than two hours sleep a day, but the Goumiers are tough. This life of uninterrupted riding suits them, and their spirits are high."

With a wave of his hand, the sergeant major left me, promising we would meet again when the campaign was over.

*Text of a cable to The Free French Headquarters by Ralph A. Martins, *Stars and Stripes* Staff writer with American forces in Sicily.



U. S. Signal Corps Photo

Goumiers are well-known for their prowess with the knife. Shown here is Embarck ou Boujmaa, sharpening an American bayonet in preparation for his nightly foray. Note his American rifle and belt and French helmet.

Swift Thrust by Cavalry and Motor Units Captures Taganrog

London (Tuesday), Aug. 31.—A vast encirclement movement in which Red army mechanized divisions and Cossack cavalry drove to the Azov Sea coast 28 miles west of Taganrog led to the fall of that Nazi anchor city and the freeing of more than 150 settlements yesterday, the Russians announced today.

Horsemen and motor-borne troops were reported to have knifed from Donetsko-Amvorisevka, 40 miles northwest of Taganrog, to Veselo-Voznesenskaya, 28 miles west of Taganrog, to fix a pincer jaw complementing that of the Russian lines east of the town. Then the pincers closed.

The Nazi stronghold of Stalino, 70 miles northwest of Taganrog, was threatened. The surprise smash left the entire German right wing in jeopardy and apparently crumbling.

The Russian communique, recorded here by the Soviet monitor from a Moscow broadcast, said remnants of the Taganrog garrison "are being wiped out."

Southwest of captured Kharkov, where the Russians are swinging southward in an apparent effort to encircle the railway juncture of Poltava, "our troops continued their offensive and captured several populated places," the Russian bulletin said.

Premier Josef Stalin announced the capture of Taganrog late in the day, after the Nazis already declared they had abandoned the town in another of their so-called "strategic withdrawals."

Stalin's special announcement said:

"As a result of fierce offensive engagements our troops routed the Taganrog grouping of Germans and today captured the town of Taganrog . . . As a result of the operation carried out, our troops have completely liberated the Rostov region from the German invaders."

The capture of Taganrog was the sixth milestone in the Russians' victorious summer offensive. It cracked the German Donets Basin line in the southern Ukraine and ended German dreams of Caucasian oil for their war machine.

Germans were reported getting out of Taganrog as Russian advances on Poltava, Krasnograd and Stalino (arrows) threatened to trap the Nazi forces in the south.

Stalino Menaced

The Russian break-through threatened Stalino, German supply center 70 miles northwest of Taganrog and loosened the Nazi grip on the mines and wheatfields of the Donets Basin.

Taganrog is the last stop on the important rail line from Kharkov, which was cut a week ago by the Soviet capture of Donetsko Amvrosievka, 40 miles north of the port.

Although the Germans tried to write off the loss of the city with the explanation that they evacuated it to shorten their lines, Stalin's order of the day said the new victory was achieved "as a result of a bold maneuver by cavalry and mechanized formations which broke through into the rear of enemy troops."

The victory was another major gain in the powerful Soviet offensive that has swept through Orel, Belgorod, Karachev, Kharkov and Sevsk since it began July 12.

Taganrog was captured first by the Germans in November, 1941, but they fell back later that month. They captured it again in the summer of 1942 and held it despite the threat of the Soviet winter offensive this year when the Russians retook Rostov, 40 miles east of Taganrog.

Stalin's Order of the Day

AUGUST 30, 1943

Order of the Supreme Commander-in-Chief to Colonel General Tolbukhin:

As a result of violent battles the troops of the Southern Front routed the Germans' Taganrog group and today, August 30, have captured the town of Taganrog.

This new victory, won by our troops in the south, has been achieved as the result of a bold maneuver of *cavalry and mechanized formations* which broke through into the rear of the enemy troops. As a result of the operation they carried out, our troops completely liberated the Rostov Region from the German invaders.

In the fighting for the liberation of the Rostov Region and the town of Taganrog, the following troops distinguished themselves: The Kuban Cossacks—cavalrymen under Lieutenant General Kirichenko of the Guards; the tankists, defenders of Stalingrad, under Lieutenant General of Tank Troops of the Guards Tanaschishin; and the troops under Lieutenant General Tsvetaev, Lieutenant General Zakharov, Lieutenant General Gerasimenko and Lieutenant General Khomenko, and the fliers under Lieutenant General of Aviation Khryukin. . . .

To mark the liberation of the Rostov Region and the town of Taganrog, the name of "Taganrog" shall be conferred on the 130th Infantry Division, and the 416th Infantry Division composed of Azerbaijanians, and henceforward these Divisions shall be named:

The 130th Taganrog Infantry Division and the 416th Taganrog Infantry Division.

In honor of the victory at Taganrog, today, August 30th, at 7:30 p.m., the Capital of our motherland, Moscow, will salute our valiant troops which liberated the Rostov Region and the town of Taganrog—with 12 artillery salvos from 124 guns.

For splendid combat actions I express gratitude to all troops under your command which participated in the operation for the liberation of the Rostov Region and the town of Taganrog, and in the first place to:

The 130th Taganrog Infantry Division under Colonel Sychev, the 416th Taganrog Infantry Division under Colonel Syzranov, the 15th Mechanized Brigade under Major Tatirov, the 6th Tank Brigade of Guards under Lieutenant Colonel Shidkov, the 32nd Tank Brigade of Guards under Colonel Grinevich, the 4th Mechanized Brigade under Lieutenant Colonel Yepanshin, the 9th Kuban Cavalry Division of Guards under Major General Tutarinov, the 30th Cavalry Division under Major General Golovsky, the 31st Infantry Corps of Guards under Major General Utvenko, the Machine Gun-Artillery Battalions of Guards of the First Fortified Area under Colonel Sakseyev, the Second Artillery Division of Guards under Colonel Alexeyev, the 236th Fighter Air Division under Colonel Kudryashev, the 270th Bomber Air Division under Colonel Chuchev, the 9th Fighter Air Regiment of Guards under Lieutenant Colonel Morozov and the 31st Fighter Air Regiment of Guards under Major Yeremin.

Eternal glory to the heroes who fell in the struggle for the freedom of our motherland.

Death to the German occupationists!

(*Signed*) Supreme Commander-in-Chief, Marshall of the Soviet Union *Stalin*.

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This new victory, won by our troops in the south, has been achieved as the result of a bold maneuver of *cavalry and mechanized formations* which broke through into the rear of the enemy troops. As a result of the operation they carried out, our troops completely liberated the Rostov Region from the German invaders.

In the fighting for the liberation of the Rostov Region and the town of Taganrog, the following troops distinguished themselves: The Kuban Cossacks—cavalrymen under Lieutenant General Kirichenko of the Guards; the tankists, defenders of Stalingrad, under Lieutenant General of Tank Troops of the Guards Tanaschishin; and the troops under Lieutenant General Tsvetaev, Lieutenant General Zakharov, Lieutenant General Gerasimenko and Lieutenant General Khomenko, and the fliers under Lieutenant General of Aviation Khryukin. . . .

To mark the liberation of the Rostov Region and the town of Taganrog, the name of "Taganrog" shall be conferred on the 130th Infantry Division, and the 416th Infantry Division composed of Azerbaijanians, and henceforward these Divisions shall be named:

The 130th Taganrog Infantry Division and the 416th Taganrog Infantry Division.

In honor of the victory at Taganrog, today, August 30th, at 7:30 p.m., the Capital of our motherland, Moscow, will salute our valiant troops which liberated the Rostov Region and the town of Taganrog—with 12 artillery salvos from 124 guns.

For splendid combat actions I express gratitude to all troops under your command which participated in the operation for the liberation of the Rostov Region and the town of Taganrog, and in the first place to:

The 130th Taganrog Infantry Division under Colonel Sychev, the 416th Taganrog Infantry Division under Colonel Syzranov, the 15th Mechanized Brigade under Major Tatirov, the 6th Tank Brigade of Guards under Lieutenant Colonel Shidkov, the 32nd Tank Brigade of Guards under Colonel Grinevich, the 4th Mechanized Brigade under Lieutenant Colonel Yepanshin, the 9th Kuban Cavalry Division of Guards under Major General Tutarinov, the 30th Cavalry Division under Major General Golovsky, the 31st Infantry Corps of Guards under Major General Utvenko, the Machine Gun-Artillery Battalions of Guards of the First Fortified Area under Colonel Sakseyev, the Second Artillery Division of Guards under Colonel Alexeyev, the 236th Fighter Air Division under Colonel Kudryashev, the 270th Bomber Air Division under Colonel Chuchev, the 9th Fighter Air Regiment of Guards under Lieutenant Colonel Morozov and the 31st Fighter Air Regiment of Guards under Major Yeremin.

Eternal glory to the heroes who fell in the struggle for the freedom of our motherland.

Death to the German occupationists!

(*Signed*) Supreme Commander-in-Chief, Marshall of the Soviet Union *Stalin*.

RED CAVALRY—*In Mounted Attack**

by Colonel Alexander Vasilyev

ACTION of cavalry in modern warfare is considerably hampered by large quantities of technical equipment on the battlefield, by numerous fortified works, and by powerful fire from all types of weapons. It would seem that in many cases cavalry could not be employed generally without risk of its being completely destroyed in its first attack. Experience has shown, however, that cavalry can act effectively even under adverse battle conditions.

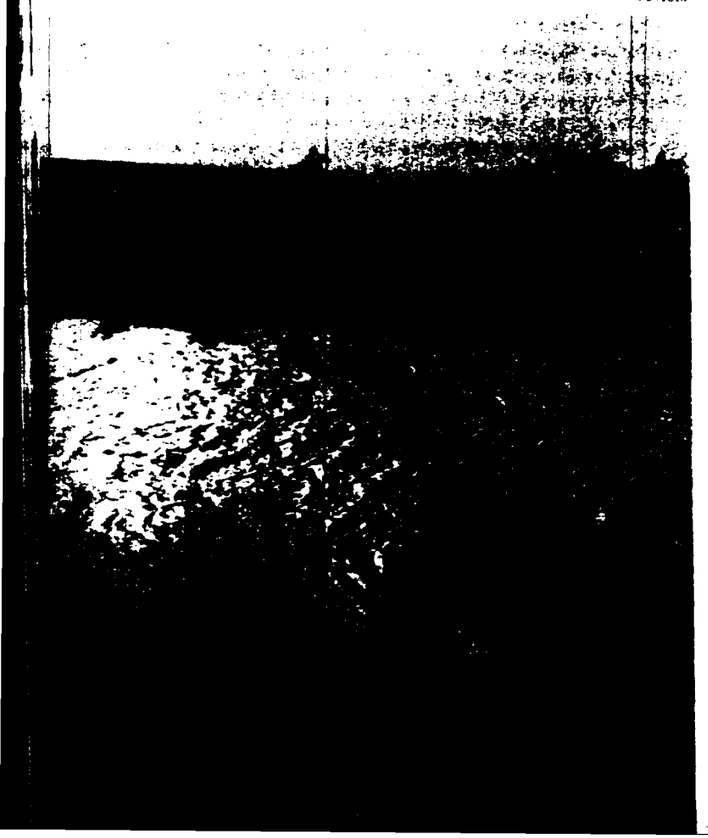
Noteworthy in this connection is the operation performed by the Soviet guards cavalry regiment commanded by Colonel Shubin on a certain sector of the Soviet-German front.

It is a generally accepted Soviet opinion that a cavalry attack is effective only when launched by *large masses* of mounted formations against dispersed enemy troops. The action of this particular regiment, however, shows that small cavalry units also are quite capable of successful independent operations.

*By cable to THE CAVALRY JOURNAL, from War Department, U.S.S.R., Moscow.

"In the dead of the night, Colonel Shubin's regiment massed in the vicinity of the village on the river's northern bank without encountering any of the enemy."

Sovfoto



On one occasion the enemy was in possession of a group of villages situated on the north bank of the river. A Soviet cavalry division, stationed some twenty or twenty-five kilometers north of this area, was ordered to make a forced march to the river, attack, and drive the enemy southward. In conformity with these orders, Colonel Shubin's regiment was instructed to proceed southward and seize the heights at —. On his right flank another cavalry regiment moved forward with orders to attack simultaneously; the left flank was left uncovered. Some ten kilometers behind the two cavalry regiments there followed a tank regiment which was also to take part in the operations at the river.

In the dead of night, Colonel Shubin's regiment massed in the vicinity of the village on the river's northern bank without encountering any of the enemy. A little while later the commander received information from his scouts to the effect that the village was held by about two battalions of enemy infantry and several tanks, that the outskirts of the village were guarded by isolated sentries, and that there were no enemy troops in neighboring villages.

Colonel Shubin decided to attack the village by surprise simultaneously from north, west, and east, press the enemy to the river, and annihilate him. There was a considerable element of risk in this decision, but one of the characteristic features of cavalry action is not to lose minutes of time when in a most critical situation.

The main blow was to be delivered from the north by the regiment's second and third squadrons supported by a gun battery of twelve antitank rifles and two antitank guns, and two platoons of heavy machine guns. The first squadron and part of the third squadron, together with a platoon of machine guns, were to deal a supplementary blow from the west and east.

The bulk of the regiment's fire weapons were massed half a kilometer north of the village. These firing positions had been taken up secretly and noiselessly during the night, and by dawn all preparations for the attack had been completed. Meanwhile, reconnaissance scouts reported the disposition of the enemy's fire weapons and forces and indicated the most reliable approaches to the objectives of the attack. The squadron and platoon commanders carried out a brief reconnaissance and definitely decided on routes of action.

Promptly at the appointed time, 4:00 A.M., fire from weapons was opened at the village. It lasted ten minutes, and signs of panic were observed among the German garrison, which opened desultory fire in return. At a given signal at 4:10 o'clock, the whole regiment attacked simultaneously. The cavalry burst into the village, and in the ensuing hand-to-hand fight, the entire German garrison was annihilated.

By six o'clock the battle was over.

—FILLING A GAP*

by Captain Nikolai Pavlov

RED cavalry has won a definite place for itself in Soviet-German fighting.

The successes gained by Russian horse-mounted troops have completely refuted the old arguments that cavalry would be useless in modern warfare. Horsemen, on the other hand, have come to realize that cavalry action can be effective only if troopers are able to fight equally well on horseback and on foot.

Soviet cavalry frequently has proved a stumbling block for the enemy. One outstanding example of this occurred during the fighting in August of 1942. The Germans had concentrated two tank and three infantry divisions on a certain sector of the front. Their air power, delivering a surprise stroke, first succeeded in cutting the railroad which was the only supply line for Soviet troops operating in that area, and made it possible for enemy infantry to break through the Russian defenses. This created a gap in the defense lines, and German armored units drove quickly into the breach.

A Soviet cavalry formation was immediately brought up with orders to close the breach and re-form the lines.

The terrain upon which this battle took place was a hilly plain, fronted by copses and cut by a winding river 5 to 8 meters wide with marshy banks. The area of the cavalry concentration was protected by a thick wood.

The cavalry advance guard, consisting of a regiment of guards commanded by Colonel Malinov, was assigned the task of forcing the river crossing and routing the German troops holding the village 5 kilometers south of the river.

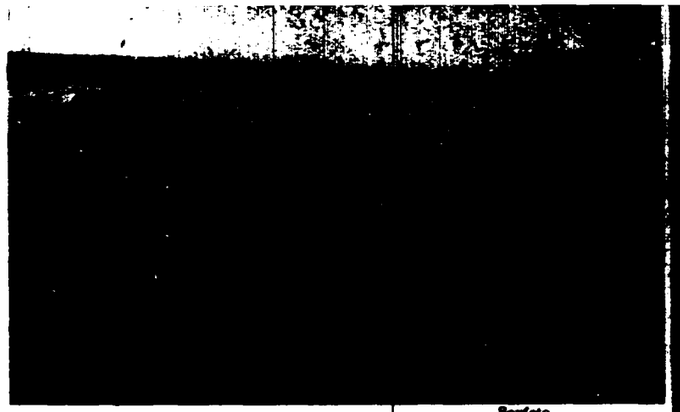
Immediately upon coming out of the woods, the cavalry regiment was subjected to fierce Luftwaffe attacks. Stukas, in flights of 20, bombed and machine gunned the cavalrymen, sometimes from an altitude as low as 200 meters.

Making use of the terrain folds, the cavalrymen proceeded forward at a fast pace in dispersed formations. Upon reaching the river, *they and their mounts started swimming across,* while the guns were ferried or drawn over the bridge. The Germans then turned their artillery and mortars at the cavalry force crossing the river and at the same time began moving their tanks forward from the village.

In spite of heavy fire, the regiment succeeded in crossing the river and establishing a bridgehead on the north bank. Colonel Malinov then dismounted his troops and ordered them to entrench the swells if possible in the short time that remained. The horses were taken to a safe spot on the northern bank.

Fifty German tanks and an infantry battalion came up and attacked the cavalry's right flank, held by Captain Konovalov's squadron. The German plan evi-

*By cable to THE CAVALRY JOURNAL, from War Department, U.S.S.R., Moscow.



Sovfoto

"Upon reaching the river, they and their mounts started swimming across, while the guns were ferried or drawn over the bridge."

dently was to crush Soviet resistance by a powerful artillery fire and air bombing and rout the cavalrymen by a tank pincer movement. The German tanks, followed closely by automatic riflemen, kept up a steady fire as they crawled towards the Soviet positions.

Captain Konovalov's cavalrymen, who were holding the strip along the river, held their fire. Then three yellow flares shot up from the enemy positions, and the tanks slowed down. Enemy planes in flights of six to nine machines appeared on the horizon. A moment later, three yellow flares were fired from Colonel Malinov's command post, and the German airmen, falling for this bait, circled and dropped bombs on their own tanks and infantry.

Withering fire from well camouflaged cavalry positions halted the German infantry, while supporting artillery rolled forward with their antitank guns firing over open sights. Several enemy tanks were put out of action. The few that did succeed in penetrating the Soviet positions were set afire by incendiary bottles and hand grenades. The enemy withdrew with heavy losses, but shortly afterward launched a series of fresh attacks with powerful air support.

Five hours had passed since the Germans had first assaulted the regiment's positions and the cavalrymen were being hard pressed by a numerically superior enemy force, supported by a large number of tanks and planes. The right flank which was still held by the 1st Squadron under Captain Konovalov, continued to battle the enemy infantry. In the center, German tanks managed to break through the Soviet lines and fight temporarily inside the defense zone, but despite their numerical superiority and strong air support, they were unable to reach the river's northern bank. Although greatly outnumbered, the cavalrymen held their dismounted positions until evening when the Germans withdrew to their initial positions.

The cavalry force, by the successful employment of their antitank platoons and supporting artillery, had crippled and destroyed a large number of German tanks and inflicted heavy losses during the five hour battle. By this action they successfully closed the gap and straightened the Soviet lines.

New Battle Lessons on Reconnaissance

by Lieutenant Colonel Bruce Palmer, Jr.

IT has been military usage from early times to put men on foot, or horseback, out in front of an Army to signal "enemy in sight." This duty has been entrusted to run-of-the-mill personnel. Such personnel, so long as ground reconnaissance remained a simple task, performed the duty as well as any other sort could. With the advent, however, of mechanization and long range weapons, ground reconnaissance has become a complicated and vital phase of military art.

Theoretically, at least, we place those with the greatest military talents in command positions, but no commander, no matter how fine his military characteristics or genius, can intelligently dispose his troops, strategically or tactically, without proper information of the enemy.

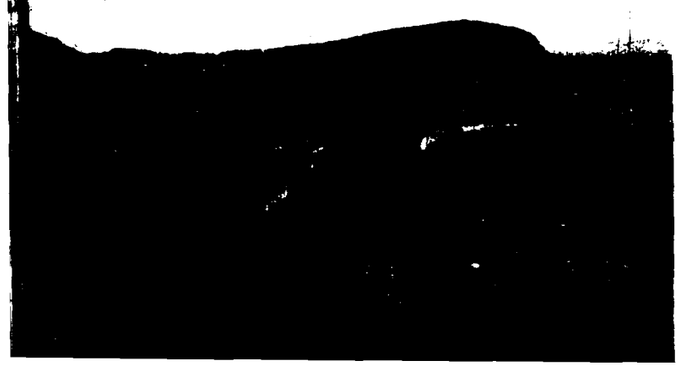
It has been fully demonstrated that men of the proper caliber can accomplish remarkable results in dissipating the so-called fog of war—our present alibi for mistakes in the operation of military forces.

It is plain that if suitable reconnaissance personnel can lift the veil from the commander's eyes (and unsuitable personnel cannot do this) reconnaissance personnel should be selected with the same care and with as much regard for its particular employment, as is the high command personnel.

A man performing a reconnaissance mission should have first, the intelligence to enable him to grasp general and special situations in order that he may seek the information which the high command most needs for evaluating conditions confronting it; second, knowledge of terrain, maps, military organization, and weapons; third, the ability to exercise good judgment under stress; fourth, bold courage; and fifth, physical stamina. In short, officer or noncommissioned officer material of the highest type.

It must be remembered that reconnaissance duty is continuous and never relaxed, that operations often will be conducted by individuals or by individual reconnaissance vehicles, that all the men of a vehicle crew, or of a dismounted patrol, are subject to the unusual hazards involved, and above all, that the information returned by these vehicles is always essential and vital to the success of the whole operation. From these factors it is evident that all members of a reconnaissance vehicle crew must be capable men, each prepared to take over the duty of driver, radio operator, gunner, or leader.

A U. S. reconnaissance group moves forward in Tunisia.
U. S. Signal Corps Photo



Training

Lieutenant Colonel Hoy comments on his experience in Tunisia as follows:

"First and foremost, I am positive that all reconnaissance personnel should receive uniform basic training and that training must be specialized. A properly trained reconnaissance unit can do reconnaissance for a corps, an armored division, or an infantry division.

"All the reconnaissance training you and I ever received is fundamentally sound. There are certain fundamentals, however, that I would stress. First, your information must be accurate, complete, and quickly passed. To be accurate you must always know your location; get expert in using map, compass and protractor to establish your position and the enemy's. Never surmise, embellish or exaggerate; inaccurate information is dangerous. Truth is war's first casualty, but reconnaissance leaders must protect it on the battlefield and fight rumors, lies and exaggerations with the same enthusiasm and ability that they fight the enemy. I cannot stress this too much, for I have found out that it is always the reconnaissance battalion that has to go out and check all rumors and all exaggerated reports. Never believe a straggler and seldom believe a casualty. The former lies to explain his absence from the battlefield; the latter, especially if he has been knocked out of his vehicle, is rarely rational. To be complete, report everything; and if no movement is seen, report that. That is information.

"To pass information quickly, we must use a definite sequence—a simple code, and I have found that when things are hot, I want to talk directly to the platoon leader who is actually in contact. I had all platoons and company commanders on the same net, ran as high as 13 or 14 sets in net. It worked fine after we got it rigidly disciplined. The company commander did not lose any of his prerogatives. In fact, he became more of a battlefield C.O. His place when things are hot is out there helping his platoons. With all of us on the same net, he and I could go bouncing off to any point and still be in communication. I had a 193 in a peep; it was worth a million.

"The reconnaissance personnel must be trained to handle their own mine sweeping. It's no mysterious science and most of the mines we have found were removed by us. Of course, the big areas were later swept by engineers, but our own paths were generally cleared by reconnaissance personnel.

"Reconnaissance personnel should attend a battle school and have mortars, artillery and antitank guns fired at them, not to make them braver, because I have my doubts about that, but to make them recognize the sound of the weapons. Everybody has a tendency to report anything bigger than a .22 caliber as an 88mm. I would not let my men report 88's, and we are the only ones who didn't. Let a mortar land, a mine explode, or an artillery shell land, and the report will be 88mm. This is dangerous, for if believed by higher command, it will denote German troops in an area which may or may not be so. (However, after we took Mateur I saw *beaucoup de* 88's). Now that we have so much of the enemy's equipment, all reconnaissance personnel should have an opportunity to see it. Don't put it in a motor park, put it out in a field.

"Last, but certainly not least, the best jobs that we have done have been where lieutenants with a small crew, through cunning and daring, get an OP deep in the enemy territory, or on his flank, and sit there for hours and report vital information. We used to say about such things, 'OK for maneuvers, but not in war.' This is not so. As an example, I had a lieutenant and three men go up on an OP about 4-5000 yards in enemy territory, stay there for two days with a radio set dismounted from a peep, and send back the information necessary."

Tactics and Technique

Mechanized reconnaissance vehicles, when not employed in reconnaissance in force, should be used in small groups for the following reasons:

1. Larger groups are often tempted to fight, and unless such fighting is merely to protect themselves, or to escape, they are losing sight of their mission while so engaged.
2. A wider, deeper, and more closely knit reconnaissance may be effected by the employment of many small groups than by the use of relatively fewer large groups.
3. Mechanized reconnaissance duty is arduous and hazardous and necessitates frequent relief. Such relief is normally possible where small groups are sent out, and becomes proportionately difficult if the groups are strengthened.
4. Vehicles in a small group can operate in support of one another on a mission at considerable distances apart by simply watching what the others do. In a larger group, orders must be exchanged on every change of purpose of the leader.

Interspersed in these notes are quotations from Lieutenant Colonel Charles J. Hoy, who commanded a reconnaissance battalion throughout the Tunisian Campaign. Colonel Hoy states that his experience has been further confirmed by that of Lieutenant Colonel Lawson, 11th Hussars, who has had five years service in Africa and three years of combat as a reconnaissance leader.

Colonel Hoy comments further:

"Beware of that misused word 'fire power.' Don't tie a reconnaissance unit down with tanks, 81mm mortars, 37 SP guns, because it makes the unit too unweildy, and few officers can take care of all those additions and still do the job of gathering information. Understand me, I am in complete accord with General Scott's statement that 'Reconnaissance capable of only observation is not worth the road space it takes.' The reconnaissance unit should have sufficient fire power, but too much is as bad as too little. Anyone in a reconnaissance unit who is not primarily a reconnaissance man must be there for a very good reason. If I get the armored car, then I don't want the light tank.

"For clarity, I give you my recommended organization at this time. Reconnaissance battalion of 3 reconnaissance companies and Hq. company; reconnaissance company to have 3 platoons and Hq. platoon; each platoon to have 2 sections. The section is the basic unit. Each section should have 2 armored cars and 3 peeps; the first section should have an assault gun; both sections should be commanded by an officer. We have tried it out by using the scout car in place of the armored car. We are sold on the assault gun. Our companies fired it more than anyone in North Africa. It gives us poise and confidence."

There is no theorizing in all this. In a command on the field which does not have a *professional* reconnaissance, the movement in a given direction is habitually a blind groping, or halting at a given place because of ignorance of the tactical situation. *Capable* reconnaissance personnel can return a flood of information that is remarkable—information that is never superfluous and is always valuable, and that enables the commander to know where he is going and why. If the Army invests only a small part of its most efficient personnel in reconnaissance units, its dividends in the form of increased fighting efficiency will be incalculable.

Lessons from a Tank Battalion Commander in Tunisia

IN continuation of the subject of my Notes in the July-August issue of The CAVALRY JOURNAL, which were devoted to lessons from the Tunisian Campaign based on the observations of an experienced commander there, I now give in substance some ideas of a very distinguished tank battalion commander on principles developed or demonstrated in battle during the latter part of the same campaign.

1. Tank battalion commanders must fight with their tank tops open and their heads out. They can see to direct the fight in no other way. Although they may have to pull in their heads when things get too hot, this is usually necessary for only a few minutes at a time. The open top is good for the morale of the rest of the crew, too.

2. Talk about teaching soldiers to hate the enemy is all nonsense. The men hate quickly enough in battle, and between battles it does not matter.

3. Emphasize physical conditioning. It is necessary for many important purposes—marching, advancing to attack, using cover while advancing, digging in or entrenching a newly won position immediately so as to repulse enemy counterattacks, and resistance to all sorts of fatigue including loss of sleep.

4. Battle orientation, so that NCO's know the mission of their units, is important.

5. Discipline cannot be taught on the battlefield. It must be taught in training. Obedience to orders seems a simple thing to the average mind, but in campaigns an officer, or soldier, is often tempted strongly to disobey in small ways or only slightly, and the sum of these disobediences sometimes amounts to a great failure as a whole. Disobedience must be punished immediately and without fail.

6. Although men must dig slit trenches frequently and must get into them when necessary, they must not be allowed to halt and take to cover when they should be advancing. Many artillery shells can hit within fifty yards of troops without doing any damage. It is right to duck when you hear a shell coming, but not to let yourself be pinned to the ground indefinitely because of artillery fire. Men should be made to understand that a few shells dropping near by are not going to destroy a whole unit.

Of course when holding a fixed position, men should take advantage of cover or trenches, provided they are able to fire upon any advancing enemy at the right time. An advancing battalion should take to cover when the enemy artillery fire becomes very hot, but that is always for only a few moments. When the fire slackens a little, the battalion should be up and again advancing.

7. When holding a rise of the ground or hill against an enemy attack, dig your trenches for your main forces on the reverse military crest, even though that shortens your field of fire. Then, after the enemy artillery preparation fire is over, and his infantry advances over the top of the crest you can mow him down at short range with your rifles and machine guns. On the other hand, when you are attacking, have your artillery preparation fire made by air bursts showered on the forward and reverse slopes. Your artillery, when firing over your advancing tanks, should use ground bursts to keep the enemy antitank gunners away from their guns.

8. On your division front, concentrate your artillery fire on one point of attack at a time. Thus, let your whole artillery support one battalion of infantry or tanks at a time; and when this battalion has driven in, switch your artillery fire upon another enemy front which is being attacked by another battalion. Space the attacks of the various division units so that this can be done. Otherwise, attack on only one narrow front and with great depth of deployment—practically a column of battalions.

9. Tank battalions, as well as infantry battalions, should practice defensive bivouac formations — outguards, machine guns laid for final protective bands, and cannon in tanks, or otherwise pointed in directions toward which they may have to fire point-blank against enemy night attacks. Grenades for close fighting.

10. Move your bivouac a little before dawn so as not to be caught by fire of the enemy who may have spotted your position and be awaiting dawn to fire on you. Another advantage in moving before dawn is that when moving slowly forward, the battalion commander can more easily arrange the elements of his command in the order that he desires than he can when halted or under heavy fire.

11. Don't try to move infantry in trucks or armored carriers in daylight without powerful air cover!

12. Practice scrupulous economy of tank ammunition. If tanks are to fire preparatory fire before the jump off, have the ammunition stacked beforehand so that the tanks will not have to use any of the ammunition of their load for that purpose.

13. Each tank platoon should be equipped with necessary instruments to fire indirect fire missions as a battery.

14. A tank battalion, an infantry battalion, and a cavalry squadron, all should have battle drill in which brief commands are issued and understood by all. These should be incorporated in Drill Regulations and provide a language common to all members of a command. Otherwise, it becomes necessary to issue instructions involving many words for each battle movement. Such lengthy instructions mean loss of time at a most critical moment and are often impossible to give under fire and difficult to understand thoroughly even if given. These "commands" can be given by radio, flag signals, arm signals and voice, or by a combination of these means.

Reconnaissance

ALTHOUGH much has been written on the subject of reconnaissance, many of these writings have been from a theoretical standpoint rather than from personal experience or even from careful study of the experience of others.

A very detailed narrative of all the experiences of an individual officer as commander of a small patrol which has had an extended experience of duty on reconnaissance in actual warfare would be worth its weight in gold. The same may be said of an account by an officer who has had command of a large force that has executed important missions of reconnaissance.

Such narratives, however, are rarely written and seldom available. Even when available, it too often happens that the narrator has left out many things or else that he lacked the ability for clear description and the imagination to understand the necessity for details—both so fascinating and instructive to the earnest reader. Of necessity we have to pick up bits of information from the personal experiences of others, and finally put it all together to make a pattern. If we form the habit of doing this, we can collect a lot of items which, taken together, make a fairly good picture.

The recent campaign in Tunisia should afford opportunity for certain officers to contribute much of value about reconnaissance. It must be remembered, however, that the lessons learned on this subject were learned on a very special terrain. Not all of these lessons may be applicable to other kinds of terrain.

The terrain of Tunisia is open—bare mountains, bare hills, both broad and narrow valleys without brush or woods or cover of any kind, except as may be found in gullies, ridges or reverse slopes of hills. Except when it is raining one can see clearly for long distances. Such terrain is ideal for vehicular and air reconnaissance, although motor vehicles can be ambushed even in that open country. Lessons learned in Tunisia, therefore, may be very misleading in a country like France where the hills are covered with trees and the valleys have patches of woods and some underbrush and small creeks. Reconnaissance in this latter kind of country is best done by cavalry.

IMPROPER RECONNAISSANCE METHODS

When any force of troops is sent on a mission of reconnaissance it should be in hand and under immediate control.

The old theoretical idea, taught for so many years, that the reconnaissance force or group should be divided into its spearate subordinate units and spread out over the area to be reconnoitered, is wrong.

With this false idea in mind, a brigade of troops would proceeds as follows: The area would be divided into two zones. The brigade commander would hold a small reserve under his personal control and then assign a regiment to each zone. Each regiment, holding out a small reserve, would divide its zone into two zones with a squadron or battalion assigned to each of these two zones. Similarly the battalion or squadron commander would divide his zone into two or more zones and assign a company or troop to each of these zones. Then a number of patrols would be sent out from each of these troop zones.

The whole command would be dispersed over the whole area and would have no real strength anywhere to break through the enemy screen of outposts or covering forces, or to meet any strong force of the enemy sent out on a similar mission. Thus the number of patrols became extravagant and dissipated the strength of every subordinate unit in the brigade to an alarming degree.

The idea seemed to be that the leaders of a few of these small patrols would obtain information that could be sent back to the army commander. But it never seemed to occur to any of these theorists that an army commander had sent out the brigade commander to obtain information which the latter himself had obtained and verified by various reliable means. Certainly an army commander was not going to act upon information obtained only by a few corporals or a few lieutenants. He wanted a report from the brigade commander himself. But, with this wide dispersion, how could the brigade commander verify the reports sent in from small patrols? Such information had to go through too many heads before it got to the brigade commander. It was all very well to say that the Army

G-2 could take all these various reports and evaluate them, but that was sheer nonsense.

Regardless of the value of information obtained by this method, it took too long to get it back. This whole system failed in every maneuver or actual campaign.

A Practical Reconnaissance Method

The only true and practical method is as follows: The brigade commander keeps his force in hand and ready to fight. He sends out numerous small patrols with orders or instructions direct from himself. These patrols are his feelers, like the long hairs of a cat's whiskers. When they send in information direct to the brigade commander, he is thus able to judge the direction that his brigade must take to break through the enemy screen with his whole force, and find out for himself some important information that he can guarantee to his army chief as correct.

Once the brigade commander has found out something of the strength and location of the enemy, he remains in contact and never loses this contact unless the army commander relieves him of this duty for some other mission.

The mission of screening is performed in the same way—by keeping the command in hand ready to oppose an enemy reconnoitering force. The possible infiltration of a few small enemy patrols is of little importance. The enemy cannot obtain enough important information in that way. He can obtain it only by intruding a sizable force into contact with our forces as already described.

Small reconnaissance patrols may, indeed, be sent out by the army commander himself under some circumstances. In fact, every commander of a force of any size whatever, may use small patrols to get the information he wants for himself. But if he himself is charged with a mission of reconnaissance he cannot use this unverified information to send back to his chief.

Training Patrols

The training of patrols is difficult because there are so many of them to train, and it requires such a large extent of varied terrain. This training can be accomplished satisfactorily only by dividing it into three phases.

First, a certain amount of indoor training is necessary to explain to the men what kind of information may be required. Map reading and little problems on the map are necessary. Resection or the location on the map of one's actual position on the ground is very important.

Second, the patrol must be drilled to take somewhat variable formations at the will of the leader in order to use properly the different kinds of terrain that may have to be traversed. Also, from any formation the patrol must learn to obey the commands or signals of the leader for a certain number of purposes. Those are as follows: To take cover, to the front, right, rear or left; to retreat rapidly without bunching but by a method of dispersion so as not to offer good targets to an enemy suddenly encountered in force; to move forward rapidly to attack the enemy suddenly and by surprise.

The patrol leader must practice his patrol in doing these things by well understood commands or signals.

Third, the patrol is taken out on the roads and across country and given different situations to meet and solve. This is best done by the commander of a company or troop by forming and instructing a patrol made up of the leaders of all the squads or sections or platoons which may have to function as patrols in maneuvers or actual service. After training such a patrol, the various individual members will be able to take over the training of their own units.

Types of Patrols

When a patrol is sent out on a mission of reconnaissance, there are certain things the patrol leader and members must be told. They will not be recounted here because they are prescribed in the regulations. It is desired, however, to warn the officers issuing instructions not to charge the patrol leader and his men with too many objectives—too many kinds of information desired. Give them a few simple orders as to what information is desired in particular, and leave it to the patrol leader to bring back certain other information that may have come to him accidentally or incidentally in the course of his operations.

Voluminous textbooks can be and have been written on the subjects of reconnaissance, security, and the different kinds of patrols used for these difierent purposes. For example, combat patrols and covering detachments for security purposes are very essential, and these security elements need a great lot of practical instruction. Combat patrols need as much instruction as reconnaissance patrols. Also important are liaison patrols to keep contact between elements of a command. Instruction in all of these three types of patrols can be and should be given to the same squads, sections and platoons, so that any one of these units can perform any of these different classes of patrolling that may be required.

The efficient conduct of a combat patrol is just as difficult as that of a reconnaissance patrol, and, indeed, to avoid surprise by flank or rear attack by the enemy, is perhaps even more important. Yet, instruction in this important duty is generally neglected. The modern battle of maneuver is very swift, and efficient combat patrolling is very vital. A Russian officer writes that there is no excuse for an armored force to be caught by an enemy attack on its flank or rear if it has properly trained combat patrols and knows how to use them. But there is the rub.

The same three-phase training indicated herein for reconnaissance patrols is recommended for combat patrols.

Sicily—First Battle for Europe

On July 10, 1943, the greatest invasion armada in all history successfully landed two Allied armies on the shores of Sicily. Masterfully planned and executed, this tremendous land-sea-air operation was protected by swarms of airplanes and units from the navies of Great Britain, the United States, Poland, Greece, the Netherlands, and India. Aviators returning from bombing missions over Sicily described the Mediterranean as "black with boats that stretched for more than forty miles."

The Allied invasion force, under the supreme command of General Eisenhower with General Alexander as his deputy, consisted of the British Eighth Army under General Montgomery, the U. S. Seventh Army under General Patton, and a Canadian division which had joined the invasion fleet at its North African base. The grand strategy for the invasion of Sicily was laid at Casablanca last spring. Details of tactical coördination were worked out and perfected from lessons learned during the Tunisian Campaign.

Because of the speed with which Sicily was conquered (from beginning to end— 38 days) it is easy to overlook many of the important factors involved. They fall into two groups—Allied accomplishments and the strength of enemy resistance:

1. An enemy shore, proclaimed by the Axis as a fortified part of the *Fortress Europa,* was successfully invaded and, as a tribute to Allied air and naval superiority, only six of the 3,000 vessels were lost (as announced August 30).

2. Air, land, and sea forces were coördinated in a manner never before employed in warfare.

Naval guns, in addition to their normal missions of combating enemy sea power and transporting troops, shelled tanks at Gela, blasted a path for the Eighth Army into Augusta, and paced both the north coast and east coast advances.

Air power, after destroying enemy airfields and neutralizing enemy air strength (most of which was a pre-invasion job), turned to the assistance of the ground troops by blasting enemy infantry and dugouts, especially in the northeast mountain section.

Following the surrender of Axis troops in Tunisia, the Strategic Command of the Allied Air Forces had bombed and destroyed principal airdromes, communications, and key installations in order to weaken the enemy's resistance once Allied ground troops were ready for invasion. By the time of the invasion, therefore, enemy air power had been largely neutralized. Many Axis hangars lay wrecked, and the majority of planes were too severely damaged to rise. As the invasion itself got underway, the *Strategic Air Force* moved up to bomb targets on the Italian mainland in a softening-up preparation for the future invasion of Italy; and the *Tactical Air Force* moved in to work in close harmony with ground troops in Sicily. This was another successful demonstration of the new air tactics, applied so effectively during the last two months of the fighting in Tunisia.

3. The Blitz across the middle of Sicily from Agrigento to Palermo was a fast maneuver, cutting the island's defenses so quickly that the brilliance of the maneuver itself is overlooked in the apparent ease of accomplishment. (Lieutenant General George S. Patton, Jr. commanded the American Seventh Army; Major General Geoffrey Keyes commanded the force that made the march; Major General Lucien Truscott commanded the 3d Infantry Division; and Major General Hugh J. Gaffey commanded the 2d Armored Division.)

4. The difficult mountain terrain and the enemy's extensive use of demolitions in his retreat from the Mt. Etna line to Messina seriously impeded the Allied pursuit. The dynamited hillsides and destroyed roads blocked motor traffic for many miles. Wherever available, Sicilian mules were employed as pack animals for the transport of guns and ammunition to difficult mountain positions.

5. Although Allied losses were comparatively small, the Sicilian operation was far from a runaway routing of the enemy. Many Italians appeared to have lost all heart for the war; a few were strong fighters and hard to beat, but not as hard as the Germans. German troops were well fed, well equipped, and fought hard and bitterly. The German army as yet has shown no signs of cracking or weakening. Instead, it seems to have determined to conserve men and machines rather than expend them on defending territory considered too costly.

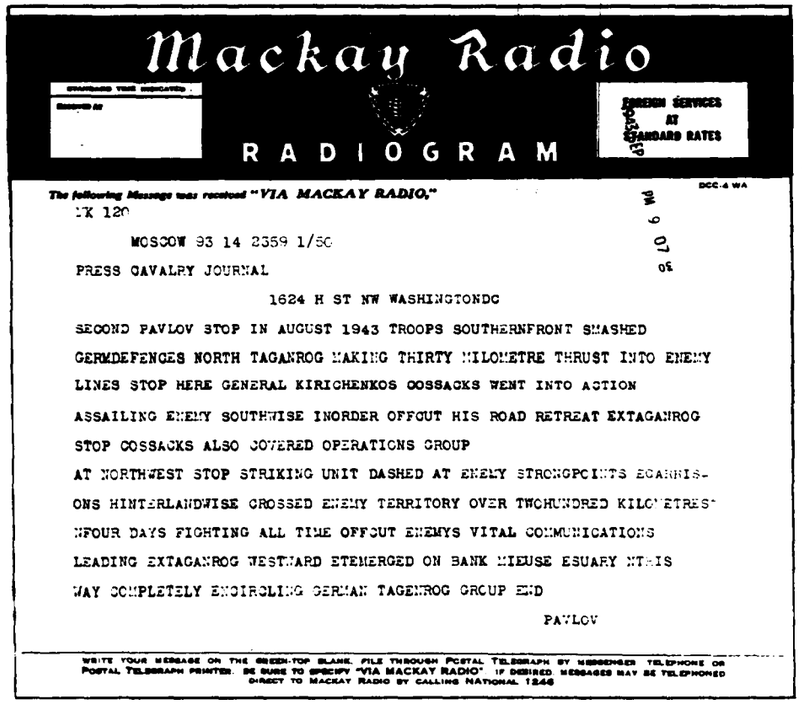
Sicily—the first battle for Europe—was merely "the beginning of the end."

Stalin's Cavalry-Tank-Infantry Team

A careful analysis of the Soviet offensive during this past summer reveals the undisputed fact that the Red Army is taking advantage of its large force of cavalry to exploit its many successes. That fact in itself is significant because of the numerous opportunities that cavalry has had while being employed as a division or corps acting independently.

Even more important, from our standpoint, is the development of the Soviet cavalry-tank-mechanized infantry team. Coördinated by the high command, the operations of these combined forces have culminated in

by Cable from Moscow to The Cavalry Journal



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PRESS CAVALRY JOURNAL

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SECOND PAVLOV STOP IN AUGUST 1943 TROOPS SOUTHERNFRONT SMASHED GERMDEFENCES NORTH TAGANROG MAKING THIRTY MILOMETRE THRUST INTO ENEMY LINES STOP HERE GENERAL KIRICHENKOS COSSACKS WENT INTO ACTION ASSAILING ENEMY SOUTHWISE INORDER OFFCUT HIS ROAD RETREAT EXTAGANROG STOP COSSACKS ALSO COVERED OPERATIONS GROUP AT NORTHWEST STOP STRIKING UNIT DASHED AT ENEMY STRONGPOINTS ECANRIS-ONS HINTERLANDWISE CROSSED ENEMY TERRITORY OVER TWOHUNDRED KILOMETRES NFOUR DAYS FIGHTING ALL TIME OFFCUT ENEMYS VITAL COMMUNICATIONS LEADING EXTAGANROG WESTWARD ETEMERGED ON BANK MIEUSE ESUARY NTHIS WAY COMPLETELY ENCIRCLING GERMAN TAGENROG GROUP END

PAVLOV

WRITE YOUR MESSAGE ON THE GREEN-TOP BLANK. FILE THROUGH POSTAL TELEGRAPH BY MESSENGER TELEPHONE OR POSTAL TELEGRAPH PRINTER. BE SURE TO SPECIFY "VIA MACKAY RADIO" IF DESIRED. MESSAGES MAY BE TELEPHONED DIRECT TO MACKAY RADIO BY CALLING NATIONAL 1246

SEPTEMBER 15, 1943

In August 1943, Soviet troops on the southern front smashed German defenses north of Taganrog and made a thrust of about eighteen miles into the enemy's lines. At this point General Kirichenko's Cossacks went into action and attacked the enemy in the southern sector in order to cut off his road of retreat from Taganrog. Cossacks also covered the operations of the group in the northwest. Striking at enemy strong points and rear garrisons, one unit crossed more than 125 miles of enemy territory in four days of fighting. They cut off the enemy's vital communications leading from Taganrog westward and, emerging on the bank of the Mieuse River estuary, completely encircled the German troops in Taganrog.

brilliant victories for the Red Army and disaster to the German forces opposing them. From Orel, Belgorod, Kharkov, Taganrog, and now (as this is written) from Mariupol, communiques have been filled with accounts of the dominance of these combined arms on the battlefield.

As a Russian military expert stated to us a short time ago, "This is the result of months and months of careful planning and hard incessant training by military strategists who had the courage of their convictions." These Red Army leaders have welded arms of different strategic mobility into a strong offensive combat team that is taking its place in battle in such a manner as to utilize the maximum capabilities and minimize the limitations of each individual arm.

Some military men have long argued that the vast difference in mobility between the air, the tank, and the horse preclude their combined use as a hard hitting weapon of attack. But Stalin, in his "Order of the Day," frequently mentions the exploits of this combination in glowing terms. When conferring battle honors, he gives it much credit for the outstanding successes of the Red Army during the past few months.

Now that the value of the combined employment of the oldest and the newest of combat arms has been proven on the field of battle beyond any doubt, is it not worthy of emulation?

Bombing and German Morale—Dr. Goebbels' Admission

"Press policy cannot take into account only the actual international and military situation.

"It must, in contrast to England, take into consideration the mentality of the German nation.

"The power of endurance of the German nation is not as great as that of the British nation. . . ."

"Enemy air attacks on German cities will, in forthcoming months, create a most decisive problem in internal politics. It will become a decisive problem of German war policy."—(*From instructions by Dr. Goebbels to Nazi editors on how to counteract the war weariness and discouragement of the German people. Sept. 23, 1942.*)

"Nothing will turn us from our endeavor and intention to accomplish the complete destruction of our foes by bombing from the air in addition to all other methods.

"Loud and lamentable outcries are being made by the enemy now that this form of warfare, by which they thought to obtain the mastery of the world, has turned markedly to their disadvantage.

"These outcries will only be regarded by us as a very satisfactory proof of the growing efficiency of our attack."—MR. CHURCHILL, June 8.—*In Perspective*, June 1943.

Please Send Us Your Back Issues!

Certain issues of The CAVALRY JOURNAL have become "out of print." If you have such an issue that you have finished reading, will you send it back to The CAVALRY JOURNAL office, so that it can be placed with some library or organization that will put it to *multiple* use?

Following is a letter from the *Imperial War Museum*, London:

My dear Colonel,

I am pleased to inform you that we have received the (requested) copies of The CAVALRY JOURNAL with the exception of the *March-April, 1942, issue*.

We are very pleased indeed to be able to add this valuable publication to our collection of similar journals, and we very much appreciate your kindness in so generously responding to our request. We look forward with much interest to receiving the future issues of your journal which, I can assure you, will be preserved carefully in our archives for the benefit of future students of the war.

May I suggest that a paragraph in the journal itself may result in one of your readers presenting us with a copy of the missing number and so completing our file?

Yours sincerely,

LIBRARIAN.

Back issues particularly desired are:

January-February, 1941
March-April, 1941
March-April, 1942
May-June, 1942
July-August, 1942
September-October, 1942

Conservation of Supplies and Equipment

A sobering report from an active theater of operations states that some American soldier drivers, if they experienced trouble with their vehicle's carburetor, immediately demanded a new carburetor, or threw away the old one, even though the only trouble with the old one might have been malfunction of one small part. Also, if any vehicle was left along the roadside and not placed under guard, it was immediately "cannibalized" by every passer-by.

Our men are not vicious in intent, although the results of this waste are vicious. But the American soldier who fails to keep his equipment in good repair, who robs a vehicle of a tool instead of keeping an eagle eye on his own tools and making them last, is being dangerously careless.

It is possible that the fallacy of "present plenty" makes these men decide that "there's more where that carburetor came from." Of course there's more! But at what a cost of scarce manpower, scarcer metals, already overburdened shipping space, and prodigious labor is that stock supply kept up! It is a difficult thing to visualize, and that is the whole trouble. The men see only the quantities of new carburetors, not the supply line that lies behind them.

Suppose as a hypothetical case, a lone American soldier is wandering over the stricken countryside of Greece. On every hand he would see the emaciated bodies of men, women, and of children too weak to cry any more—walking, stumbling ghosts of human beings. Then suppose he were admitted to a Red Cross storehouse, and saw there hundreds of sacks of grain, bottles of olive oil, and other food. Would he feel right about sitting down and helping himself to a lot of food, simply because he was in the midst of plenty?

The comparison is not fantastic. The soldier would know instinctively that every item in that storehouse was destined to fill a certain need. In the same way, every engine part, every tool and every piece of equipment produced by industry must fill a certain need. Their value to us is not calculable, because money will no longer buy them. Consequently, *nothing must be thrown away. Nothing must be lost. Nothing must be improperly used.*

The officers of our Army must impress upon their men as often and as seriously as possible, the fact that waste will make our situation even more critical.

The soldier of the United States Army is famous all over the world for his "tinkering" skill. He is mechanically minded. What he must now realize is that a good mechanic is a thrifty mechanic; he respects his machinery and tools, and makes them last. And by such careful practices he will know that he is actually shortening the war.—*Headquarters, Army Service Forces.*

Your Cavalry Journal Address

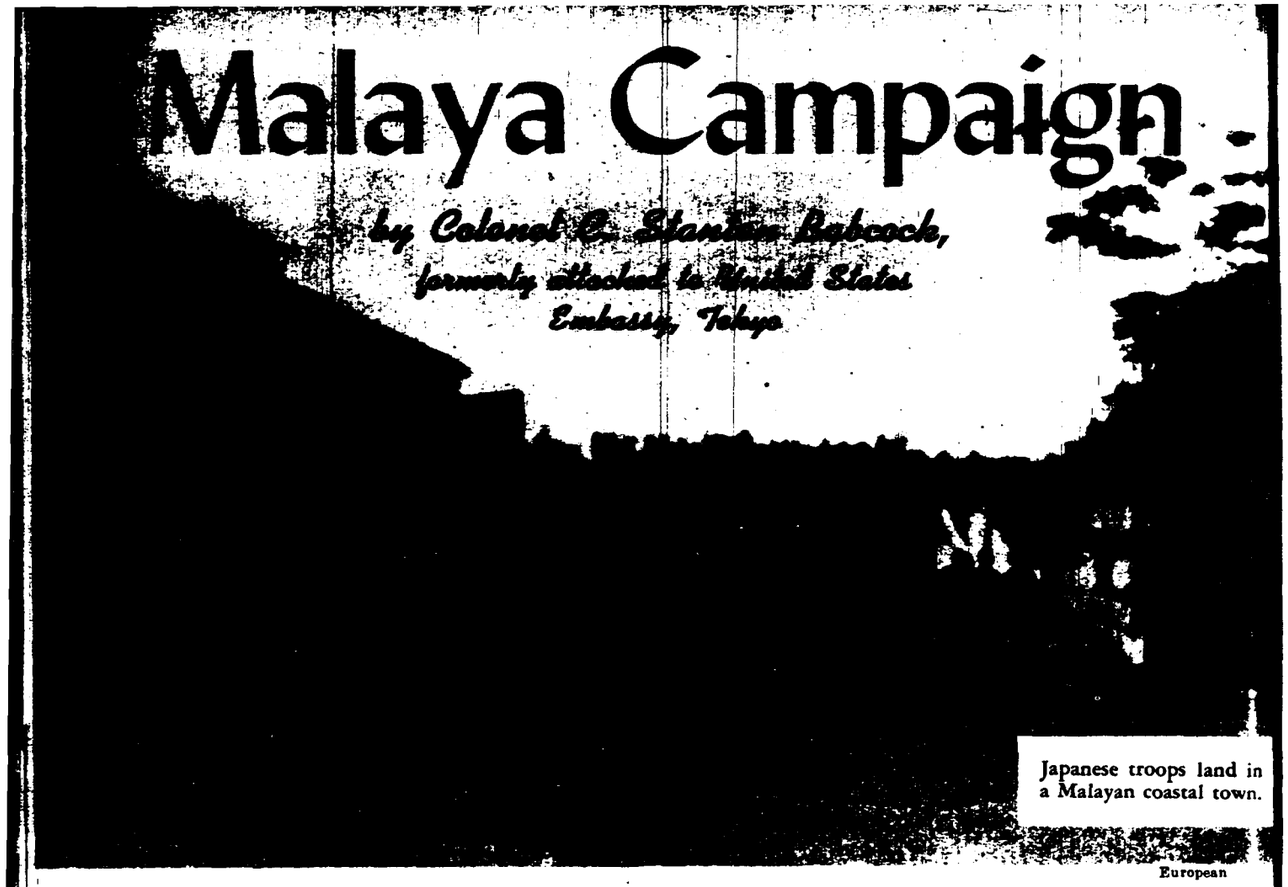
Immediately following publication of the July-August issue of the JOURNAL, we started keeping a record of all changes of address, and the source of information from which these changes were made. From August 15th to September 10th, we made changes of address for 14% of our subscribers! Of this number, only about 50% had themselves notified us of the change. The rest of the changes were obtained in various ways, often with inaccurate results.

Our circulation has increased more than 50% this year, and with so many changes being made it is difficult to keep our addresses up to date. If you move without giving us your new address, we know nothing about it until your mail is returned, or we receive a notice from the Post Office. This all takes time, and before we catch up with you again, several JOURNALS may have gone astray.

The JOURNAL is written for you. You are paying for it, and we want you to receive it. When you are transferred, won't you *please take a minute to fill out the card which is in each copy of the* JOURNAL? That is the only way you can be sure that each issue will reach you promptly.

Malaya Campaign

by Colonel C. Stanton Babcock,
formerly attached to United States Embassy, Tokyo



Japanese troops land in a Malayan coastal town.

European

Japanese Preparations

THE capture of Singapore was vital to the success of the Japanese campaign in the southwestern Pacific. Not only was the British fortress and naval base a material obstacle to operations against the Netherlands East Indies and India, but it had come to have tremendous psychological value in determining the attitude of the peoples of all southeastern Asia. Rightly or wrongly, these peoples felt that if Singapore were to fall their fate was sealed; and, similarly, the Japanese felt that as long as the fortress held out, complete success could never be achieved. Singapore was thus a symbol to both sides in this war—a symbol of the *Will to Victory*.

The Japanese, with their keen sense of psychological values in war, were more aware of this than were the British and Dutch. Plans for the campaign were worked out in minute detail, and the best troops and equipment designated to carry them out. Japanese accounts give only a hint of their years of painstaking surveying and espionage work throughout the Kra Isthmus and the Malay Peninsula, but they are quite frank in describing preparations made during the summer and fall of 1941. These included negotiations with Thailand for the landing of troops on the Kra Isthmus, for use of the Bangkok-Singapore railroad, and for arrangements to cache supplies for use of the expeditionary force.

The troops assigned to make the initial landings were selected officers and men, drawn from units that had had long service in China and organized into two divisions specially equipped for the work they had to do. All of the troops that were to be used in this campaign had been given exhaustive training during the fall in selected areas of Indo-China and Hainan Island, where the terrain approximated that over which they were to fight. When these units landed in Malaya, far from being unused to the climate and the country, as the British expected them to be, they were trained and seasoned jungle fighters, the equal of any troops with whom they were to come in contact. The divisions that made the landings had spent the month of September in executing landing operations on the South China coast in conjunction with units practicing for similar tasks in the Philippines.

As the time appointed for the attack drew near, the troops were withdrawn from their training areas and assembled on Hainan Island, where large forces could be concentrated in complete security far from the eyes of prying "foreigners." Here they were completely re-equipped with brand new guns, vehicles, and other (equipment) of the latest type. A few weeks' training with the new matériel, and the expedition was ready for its big test.

Transports and supply ships began to arrive at Kungchow, Taichow, and Yaichow, singly and by twos and threes, during the last half of November. The problem of loading this large expedition at these three ports with their limited harbor facilities was a difficult one. To make sure that the operation could be accomplished smoothly and within the time allotted, Lieutenant General Yamashita embarked his entire force twice in practice runs while awaiting orders from Tokyo to set out on the expedition. When the orders finally came, the troops were embarked quickly and without incident (the matériel having been left aboard ship after the last practice loading), and the transports put out to sea, where they were assembled by the navy into two large convoys, well off the beaten track of commercial traffic. Careful handling of the convoys resulted in their reaching their destinations at the appointed time (1:30 A.M., December 8th), without having been discovered.[1]

Landings at Kota Bharu

Singora, on the Kra Isthmus in Thailand, and Kota Bharu, on the eastern coast of Malaya near the Thai border, were the two points selected for landings. No resistance was encountered at Singora except for a couple of attacks from the air; but at Kota Bharu there occurred one of the fiercest fights of the campaign.

The convoy heading for Kota Bharu was divided into two parts: the first carried an advance detachment consisting of a regiment of combat engineers, a regiment of infantry, a two-company battalion equipped with 37mm guns and mortars, and a unit of light tanks; the second consisted of the remainder of the division and followed about six hours behind the first. The mission of the first group was to establish a beachhead to cover the landing of the main body of the division. A squadron of heavy cruisers and two aircraft carriers were detailed by the navy to support the operation.

The transports bearing the first detachment crept silently into the bay that dark night and dropped anchor without drawing any fire or eliciting any other sign that their presence had been discovered. The entire 15-mile stretch of beach with the dark forests behind was silent and appeared deserted, although the Japanese knew that at least a part of the British 9th Division was in the sector and probably manning the line of concrete pillboxes and entrenchments that had been constructed along the shore. From the decks of the nearest transports, the men could see the elaborate system of wire entanglements strung along the beach, and the obstacles built out into the sea, designed to wreck small boats.

The crews of the ships, working hard and fast, lowered the steel assault barges (each of which carried a tank), the motor launches, and the lifeboats, while each combat team quickly and without confusion loaded into the boat to which it was assigned. There was still no sign from the shore, though the presence of such a large number of ships could hardly have remained unknown to any watchers on the beach. In less than an hour, the boats of the first assault teams were in the water and ready to make the dash for shore. Suddenly a rocket went up from one of the transports, and a few seconds later every cruiser and destroyer in the convoy opened up at almost point blank range on the entanglements and obstructions along the beach. Meanwhile, the assault boats, moving out on their long trip to the beach, were followed by motor launches towing strings of crowded lifeboats. Then, at last, the British lines came to life. From every pillbox, machine gun fire flashed out against the darkness, while the slap of shrapnel balls on the water showed that the beach defense batteries were laying down their barrages.

It was a long, slow trip to the beach through that rain of fire, and the attackers suffered many casualties. The Japanese themselves, in their accounts of this engagement, refer to their losses as "heavy." Most of the casualties occurred among the men in open launches and ship's lifeboats. In fact, the Japanese say that had they ferried the entire command ashore in steel assault barges their losses would have been materially reduced. A number of those barges were wrecked by obstacles on the shore and many men were drowned, but there were virtually no gun-shot casualties among their personnel.

The covering barrage from the naval vessels was heavy and effective. Thirty minutes after the attack began, the fire from the shore began to weaken, and gaps in the line of flashes along the beach indicated where a pillbox or other strong point had been silenced. Resistance faded rapidly at the southern end of the British line, where two heavy cruisers were concentrating their fire. It was obvious that if the Japanese were to get a foothold on the beach, it would have to be at that point, since the attacks on the northern and central sectors had been repulsed with heavy loss. Two more ships switched their fire to the southern strip of

[1]This Japanese claim was in error. Both of these convoys were reported to the American Embassy, Tokyo, as having rounded Cape Camau, the southern tip of Indo-China, on December 5th.

The Conquest of Malaya from the Japanese point of view.

Like the two installments of "Philippine Campaign" and the account of the Hong Kong Campaign written by Colonel Babcock, this account of operations in the Malaya Campaign is based on information drawn entirely from Japanese sources: official bulletins, news reports, speeches, radio commentaries, magazine articles, and personal experience accounts written by officers and men at the front. The only Allied bulletins used were those quoted in the Japanese press.

Colonel Babcock says: "While confined to the compound of the American Embassy in Tokyo from the outbreak of war until June 17, 1942, I was cut off from any outside news. Consequently, the preparation of this paper has not been influenced by information received through any but Japanese sources. It should also be remembered that all dates are one day advanced over those used in the United States."

beach. The survivors of the attacks in the other two sectors were reorganized and moved over to support the regular combat team assigned to take this objective; and the division commander joined the assault to lead what was literally a "forlorn hope." Upon the success of this final attack hung the fate of Singapore—and perhaps the outcome of the war in the Far East.

The boats moved in slowly this time. There was no wild rush for the beach, in an attempt to avoid the defenders' fire, with a consequent piling up of boats and barges on the obstacles built out into the water. Instead, they picked their way carefully, looking for spots where the navy's barrage had cleared out the obstructions. Casualties were light, for the British fire, now smothered by the naval guns, was weak. Just as dawn was breaking, the first Japanese assault teams struggled ashore from their barges and ran their tanks up onto the beach.

Now ensued the most critical period of the battle, if not of the whole campaign. The Japanese had gained a foothold on shore in a weakened portion of the British defense line. But their reserves were used up, and if the defenders could organize and launch a vigorous counterattack, either with reserves or with some of the battalions in the neighboring sector, the exhausted troops on the beach would be driven back into the sea, and the main body of the division, which was just then steaming into the bay, would be deprived of its covering force and would have to attempt a daylight landing under fire. It was clearly a situation that called for resolution and aggressiveness—two qualities which have been characteristic of the Japanese in this war. The division commander, who was on shore with the landing party, directed the units on the beach to push on as fast and as far as they could to break up any counterdrive that might be forming, and sent word to the newly arrived convoy to rush men and matériel ashore into the occupied sector *as rapidly as possible* and *regardless of losses*. To the naval escort was entrusted the task of keeping down the fire from that part of the line not yet in possession of Japanese troops.

Orders were carried out promptly, and soon a steady procession of boat-trains, crossing from ships to beach, was carrying reinforcements of men and equipment. All branches and all units worked in excellent cooperation, except that *the carrier-borne bombers assigned to raid Kota Bharu airfield came over five minutes after the British planes had taken off, and that short delay cost the Japanese many lives and very nearly wrecked the expedition.*

The nine British Blenheim bombers, coming in singly, flew very low out of the east, where the rising sun shone in the eyes of the antiaircraft gunners. The transports lying at anchor in the bay presented an ideal target, and the damage inflicted must have been terrific. The official Japanese communiqué admits the "loss of four transports, without loss of army personnel, as all troops had already landed." But personal-experience narratives tell of loaded transports being bombed and sunk and men swimming ashore. Antiaircraft fire brought down four British planes, and another was wrecked trying to land on the airfield, which had been heavily bombed by Japanese carrier-borne bombers while the British were away.

Forty Japanese dive bombers carried out the raid on the airfield, and left hangars, shops, and barracks a mass of blazing ruins. A second wave of attackers, which came over shortly after the British had landed from their raid, caught the Blenheims as ground crews were attempting to service them amid the confusion and wreckage of the bombed field, and destroyed all four of them. So, in one short hour, the Japanese deprived the British troops of their close-up air support. Until late that afternoon, when a squadron of bombers from some base farther down the peninsula came up and attacked the convoy, the British troops had to fight under a sky filled with unopposed Japanese planes.

Air Superiority

Throughout this campaign, as in all their campaigns of this war, the Japanese made air superiority their primary consideration. Day after day their bombers, hammering away at all British airfields on the peninsula, paid special attention to those in the north closest to the advancing Japanese columns. At first, this work had to be done by naval squadrons operating from carriers off the coast, but within a very few days, bases had been established in Thailand from which both army and navy land-based heavy bombers and fighters operated to good effect.

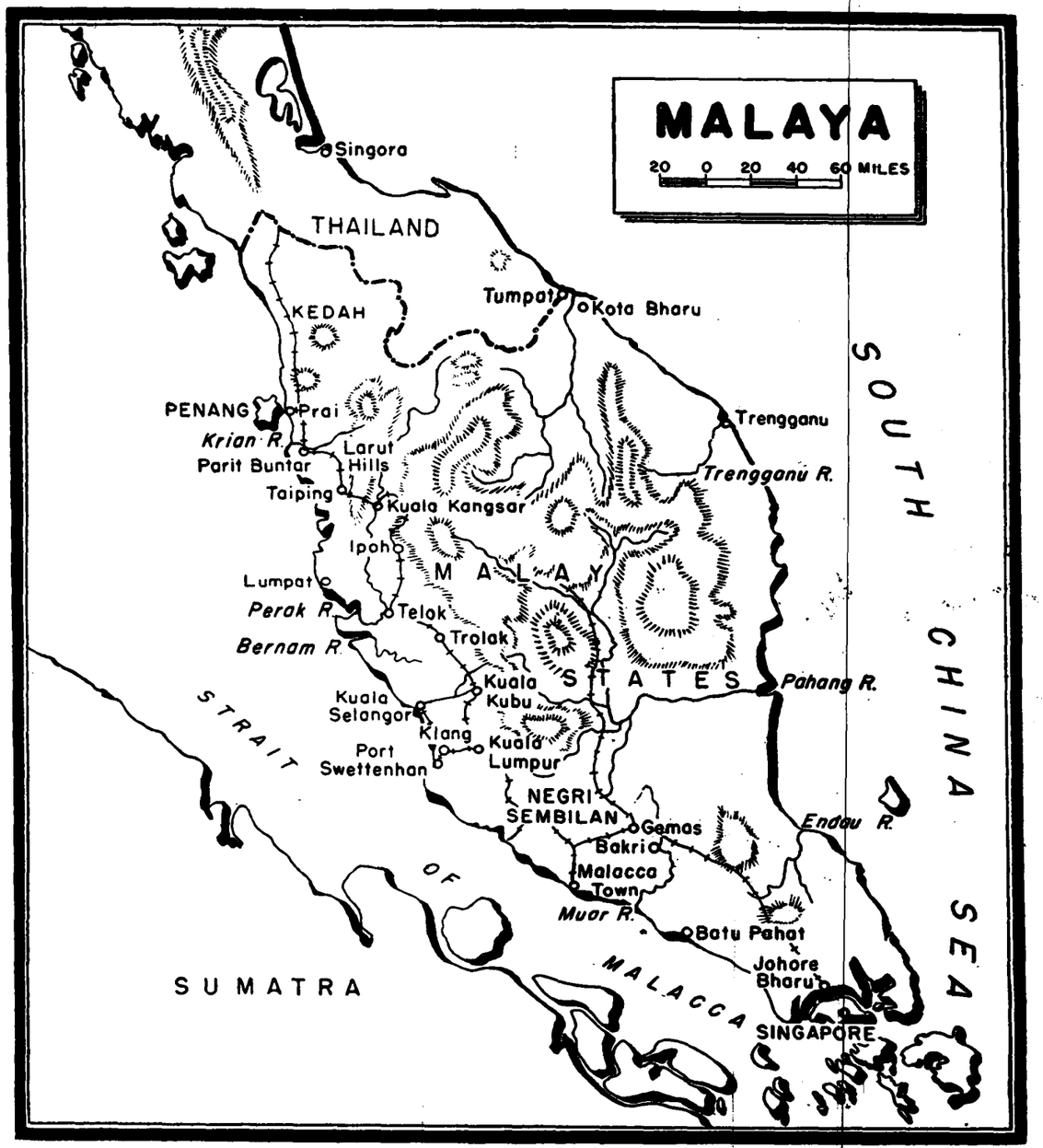
Until the RAF in Malaya had been rendered virtually impotent, the Japanese devoted their entire bombing strength to the task of blasting the enemy's air bases, and never permitted a single air unit to be diverted to any other use. Once complete command of the air had been gained, they used their reconnaissance and dive bombers to strafe British ground troops and supply columns, and their heavy bombers for long-range bombing of bridges and similar important objectives. Twice the British sent air reinforcements to this area in an effort to wrest superiority from the Japanese. Both times, all Japanese air squadrons were called off their previous assignments and concentrated again on the job of smashing the British Air Force.

These tactics served them well. The prodigal use of masses of planes more than compensated for any technical superiority of the British machines; and, though losses were heavy, the Japanese won unquestioned control of the air in the first four days of the war. Thereafter, except for a few days during the fighting near the Selangor River, they never permitted their ground troops to be hampered seriously by any British attacks from the air.

British Withdrawal

The British counterattack on the landing party at Kota Bharu came at noon, but by this time the Japanese had established themselves so strongly in the southern sector that it was impossible, with the limited number of troops available, to drive them back into the sea. The British were occupying such an extended line that they had very few reserves and had to execute the attack with troops from the central sector who had been fighting all night. Although the invaders were not pushed back, the Japanese admit that their advance was halted for the rest of the day by this attack and by subsequent "futile efforts lasting all day on the part of the British to drive our troops from their foothold on the shore."

In spite of the Japanese assertion, it would appear that the British purpose was to contain the Japanese troops in the southern sector in order to permit the main body of the British force to withdraw from a very



precarious position. Because the Japanese were in full possession of the southern sector of the British line, which ran north and south along the 14-mile stretch of beach, and were astride the only road leading to the south, the entire British force had to withdraw across the front of an aggressive and superior enemy force. In order to do this, it was necessary to sacrifice a part of their division in containing attacks so that the Japanese would not be able to cut them off entirely from their route of retreat.

The actual withdrawal, after dark, was executed in a masterly manner. While the troops in the central sector attacked the northern flank of the Japanese salient, the units which had been garrisoning the northern sector (the 18th Brigade) marched south through the jungle behind their own troops until they attained a position on some high ground about a mile south of the farthest point reached by the Japanese. Here they established a line facing north and straddling the road over which the remainder of the British division was to withdraw. As soon as this brigade was in position, the troops in the central sector broke off their attack, and, under cover of a barrage fired by the supporting artillery of the 18th Brigade, withdrew down the road and through the position established by the 18th. At the same time, the remnants of the 20th Brigade, which had originally occupied the southern sector and had been driven well into the jungle by the Japanese penetration of their position, attacked the point of the Japanese salient. Although repulsed with heavy losses, they succeeded in pinning down the Japanese long enough to permit the troops from the central sector to retire. All units had now been withdrawn from contact with the Japanese except the battalions of the 20th Brigade, and it looked as though they would have to be sacrified for the sake of the remainder of the division.

About 2:00 A.M., after twenty-four hours of almost continuous fighting, the commander of the 20th Brigade broke off the engagement and directed his battalions to make their way individually south through the jungle and to reassemble at Kota Bharu airfield, south of the position occupied by the 18th Brigade. These instructions were made known to the Japanese through the capture of the brigade commander and his staff. Many of the men of the 18th Brigade were lost in the jungle, and only two skeleton battalions arrived at the assembly point just before dawn. Nevertheless, in spite of the desperate position of these troops and the exhausted condition of officers and men, none surrendered as a unit; the only prisoners captured by the Japanese were a few stragglers who had become separated from their companies in the darkness.

The Japanese, worn out and disorganized by the continuous fighting, made no attempt to pursue the British, but spent most of the next two days in consolidating their position and reörganizing their badly mixed-up units. During this period, they lost ground contact with the British, but learned from their incessant air reconnaissance that the enemy had withdrawn and was marching south down the east coast road in the direction of Trengganu.

Attack on the West Coast—Parit Buntar

On the evening of December 9th, the first of a number of convoys bearing the main body of the expedition arrived in the Kota Bharu Bay. Within ten days three infantry divisions, a mechanized division, and a number of corps and army troops were landed at this point and marched south in preparation for an attack on the reinforced British 9th Division, which during this time had taken up positions on the southern bank of the Trengganu River.

In the meantime, the second of the two initial Japanese convoys from Hainan Island had arrived off Singora in Thailand, just before dawn on December 8th. The landing of these troops was unopposed. In fact, the local Thai authorities did all in their power to assist them. Japanese accounts describe how their advance units found three empty railway trains standing on a siding in this out-of-the-way junction of the Bangkok-Singapore railway—and immediately appropriated them. To this detachment, which consisted of a motorized division reinforced with tanks, had been assigned the mission of cutting across the Kra Isthmus, following the railroad and the highway that parallels it, and entering British Malaya through the Province of Kedah on the western coast.

The debarkation was carried out in a most efficient manner. The first troops ashore were a specially organized mechanized regiment of armored cars and tanks, which set out at once for the Kedah border without waiting for the rest of the division to debark. Then, behind the protection of an outpost line established by the first infantry units, the division with all of its heavy equipment was brought ashore before nightfall. By the time that the division had moved into its assembly area, the commanding general had received word from his advance mechanized detachment that the Kedah border was lightly held by only a few frontier guards. Early the next morning the division moved out from Singora. At the same time, the advance detachment was ordered to cross the border into Kedah and push south until it encountered resistance which it could not overcome. As the last of the division was leaving Singora, the convoy carrying the advance units of the next division arrived off the port.

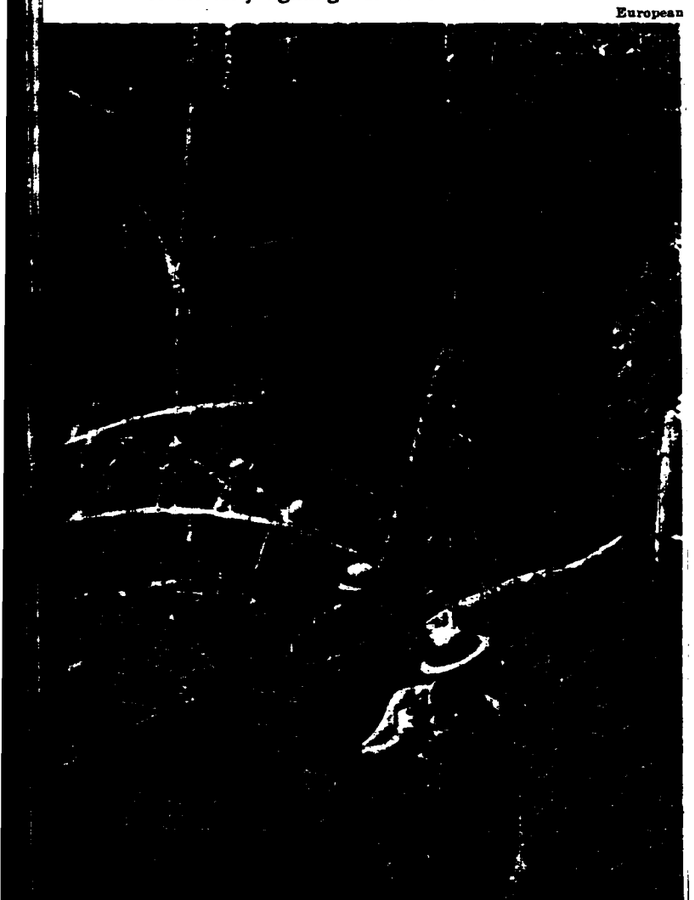
It was just about then that a strong British air attack took place. According to Japanese accounts, the raid was heavy and sank "several transports of the first convoy, which of course were empty." But in view of the time of the raid, it is likely that the planes intercepted the second convoy as it was approaching the shore. Before the British airmen could get away, they were engaged by fighters from an accompanying Japanese aircraft-carrier, and all but two of the eleven bombers were shot down.

General Yamashita, Commander-in-Chief of the Malayan Expedition, who had landed with the division at Kota Bharu, now flew to Singora to join his west coast column, because he realized that the most serious fighting would take place in this area.

The road along which these troops were marching ran through low, flat country, covered with such dense jungle growth that it was impossible to move more than a few feet off the road on either side. In spite of the large number of troops (a total of five divisions by the time they had reached the Perak River), the actual fighting was done by small units at the head of the column. Because of the narrow road and lack of maneuver space, the British as well could use only small bodies of troops. But by the clever use of demolitions, road blocks, and small rear-guard detachments armed

These Australian troops are shown in the Malayan jungle during training just prior to the Japanese invasion. Much of the early fighting was done in terrain similar to this.

European



European

Two Japanese tanks, smashed and fired upon by the Australian antitank gunners, are seen among the felled trees which were placed along jungle roads to form a blockade to the Japs. Many other tanks were destroyed by the Australians along this road with the help of blockaded roads. The Jap in the foreground was shot while trying to escape.

European

This road block, constructed by the Australian forces, was intended to cause damage to the Japs' motorized vehicles. The caption that accompanied this picture says that when the photograph was taken the invading Japanese were less than a quarter of a mile away.

with motorized antitank guns, they were able to slow up the Japanese advance in its early stages and to inflict heavy losses in both men and matériel.

The fighting in this area was similar to the mountain-pass fighting engaged in by the Germans in Norway and the Balkans, in that the troops were limited to a narrow maneuver space, and all targets could be located easily along the narrow route of advance. Profiting by the example of the Germans, the Japanese made good use of dive bombers in reducing the road blocks and centers of resistance which the British had established at frequent intervals. The Japanese say that these targets were easily located from the air, and that a few bombs dropped in the vicinity usually sufficed to clear the way for their advance units. During the first three days, the Japanese never used their artillery. Indeed, it would have been impossible to find a space wide enough to deploy a battery. Not until the leading motorized division reached the Krian river on December 11th did they encounter their first real resistance.

It was the advance mechanized detachment of the Japanese motorized division, traveling five or six hours ahead of the main body, that first encountered British resistance along the Krian river, at Parit Buntar, where the highway and railway bridges had been destroyed. Because of the thick jungle on the British side of the river, the detachment commander was unable to determine by observation the extent of the British dispositions. He brought up his machine guns and riflemen and opened fire on the British lines in an attempt to draw answering fire and so gain some idea of the British dispositions and strength. But the British refused to open fire so long as no favorable targets presented themselves.

Acme

An Australian antitank gun blazes away at Japanese tanks trying to pass trees felled across a road during fighting in Malaya.

As soon as the Japanese reached the river, the detachment commander asked for dive-bombing support, and directed his engineer company to prepare to cross in rubber assault boats. At the same time, he sent the column commander a message describing the situation and reporting his action. The commanding general immediately issued orders halting all units of his column in place, in order to prevent his force from jam-

ming up on a narrow road within artillery range of the British position.

The Japanese column had been marching at widely extended intervals. The head of the main body was at Prai opposite Penang island, occupied by the Japanese only that morning; while the remaining divisions were strung out along the road to the north, with the last one still in bivouac at Singora. It is true that the Japanese force, stretched out in this way, presented an unfavorable target for bombing attacks. But the fact that General Yamashita allowed his command to become so strung out that it would require several days to assemble for battle, showed that he had little fear of any offensive action on the part of the British.

Immediately on receipt of his advance-guard commander's message, Yamashita drove forward to inspect conditions for himself. He arrived at the riverside just in time to see the engineer company (which had attempted a crossing by rubber boat under protection of a heavy dive bombing attack) driven back to its own shore before it was half way across. Realizing at once that crossing this river was a major task, he directed the advance-detachment commander to cease attempts at offensive action, to maintain his position until relieved by infantry which would be sent up later, and to reconnoiter up and down the river for a distance of 12½ miles to locate any fords or other places where crossings might be effected.

Patrols soon located two fords, one about 3 miles upstream, and one 6 miles down, and reported that both were strongly defended by the enemy. The jungle on both sides of the road leading up to Parit Buntar was extremely thick, but a narrow native track branched off this road to the west about five miles from the river and led to the western ford. For a distance of about 2 miles before reaching the ford, the path paralleled the river and was only five or six hundred yards away. Careful reconnaissance by officers' patrols during the afternoon of the first day and throughout the night had revealed that the British were defending the river bank between the fords and the bridge with only a few patrols.

The Japanese decided to attempt a crossing between the bridge and the western or downstream ford. During the night, the engineer regiment of the motorized division moved up close to the river and, with the assistance of some infantry detachments, cleared positions in the jungle for the division's artillery batteries and widened the footpath so that it could be traversed by wagons carrying the assault boats. Because of the difficult nature of the country on the British side of the river, this crossing would have to come as a complete surprise if it were to be successful. The Japanese therefore kept the air over Parit Buntar filled with fighter planes during daylight hours to insure that no British observation plane could get wind of their plans.

By the night of the 19th, artillery positions had been prepared, and the guns opened up a heavy fire on the three British defense positions behind the fords and the destroyed bridges. At the same time troops, moved up opposite those positions in full view of the enemy, gave every indication that when the Japanese attack came it would be launched at one or more of those points.

On the morning of the 21st, just about daybreak, after almost twenty-four hours of continuous bombardment, two squadrons of Japanese dive bombers flew over and attacked the British positions at the eastern ford and at the bridges. Shortly afterwards, the Japanese infantry started out across the river in small rubber boats; but, in spite of the heavy bombardment to which the British had been subjected, they were able to bring to bear enough fire to stop this attack in its tracks. This, however, was all according to Japanese plan. Their main attack had gotten under way before dawn, when the engineer regiment crossed the river at an undefended point about one mile upstream from the western ford. Almost the entire regiment had reached the opposite bank before it was discovered by a small British patrol that happened to run into one of the Japanese companies. The entire patrol, however, was captured, so that no word of the successful crossing got back to the British commander until some three hours later, when the Japanese engineer regiment, after having forced its way through the jungle, attacked the flank and rear of the defensive position opposite the bridges.

In an attempt to save the situation, the British brought up a reserve battalion and executed a counterattack. But by that time an entire brigade of Japanese infantry had followed in the footsteps of the engineers, and there were far too many troops on the southern bank of the river to be dislodged. The counterattack had succeeded, however, in delaying the Japanese long enough to permit all British troops to withdraw from their positions and to assemble in the vicinity of Taiping without serious interference.

Japanese shocktroops in Malaya take cover behind automobiles left by the British. Photograph received from neutral sources.

European

The Japanese did not take up the pursuit that night, and early the next morning the British withdrew along the railroad into the Larut Hills, where their rear guard established itself in the only pass where the railway and highway cross the mountains. The main body continued on and occupied previously prepared defensive positions on the eastern bank of the Perak River, which at this point runs south, parallel to and behind the Larut range.

The Fight in the Larut Hills

The Larut Hills fight was a small one, for the forces involved on both sides were not large. It was important, because it held up the Japanese columns for two days. It is interesting, for it shows the extent to which the Japanese had studied the technique developed by the Germans for fighting in mountain passes in Norway and the Balkans.

Larut Hills Pass, which at the time of this engagement was occupied by a battalion of Australian infantry supported by two 6-gun batteries of light artillery, is an ideal position for defense. The road and the railway rise steeply out of the jungle and climb to an elevation of about fifteen hundred feet in the short distance of 6 miles. The thick jungle floor of the plain provides no space for maneuver or development; and as the road rises out of the forest towards the high land, the country becomes steep and rocky, so that it is extremely difficult to move more than a few yards to either side of the road.

The position occupied by the Australians was organized in depth, with mutually supporting strong points extending from about half way up the pass to the summit. Because of the nature of the terrain, the Japanese were unable to use more than one battalion of infantry in the assault, and had to direct their attacks straight up the road without having recourse to any outflanking maneuvers. In order to accomplish this, it was necessary to bring an overwhelming fire against the British line. Battery positions were cleared in the jungle at the foot of the pass, and a couple of 155mm gun battalions shelled the area for several hours prior to the assault. But the observation from the jungle floor was poor, and the assault troops would never have been able to advance had they been forced to depend on this support alone.

Here, for the first time, mention is made of self-propelled artillery. The Japanese description of this piece corresponds quite closely to what we know of the 105mm gun, mounted on a self-propelled tractor, used by the Germans in all of their campaigns since May, 1940. In the Larut Hills fight, the Japanese seem to have used a battery of six guns, which followed the infantry-engineer combat teams in close support and engaged the enemy's strong points with direct fire from positions on the road close behind the assaulting units.

The Japanese proceeded in the only way possible, by a series of direct, limited frontal attacks against each strong point in turn. The objective each time was limited to the strong point immediately in front, and after its capture, fresh combat teams would be brought up to defend the area against counterattacks launched by the British from strong points in the rear. Because of the small size of the garrison, such attacks were never very large nor very heavy, but in the early stages of the fight there were frequent local counterattacks made by units the size of a platoon.

It was a slow, painful advance, and it cost the Japanese heavily in both men and matériel. Although they were able to use only one battalion at a time in the assault, this was constantly replaced, so that before the fight was over, four in succession had been moved up against the lone battalion of defenders.

The Japanese ground troops were aided in this attack by an almost continuous series of dive bombings. By the evening of the 22nd, two British artillery batteries mounted on the high ground on either side of the summit of the pass had been bombed out of action. Deprived now of all artillery support except that furnished by one howitzer battery firing from the valley on the far side of the pass, the Australian defense began to crumble. By noon on the 23rd, all but the last two strong points located in the summit of the pass had fallen to the Japanese, and it was clear that if the defending battalion was to extricate itself as a unit it would have to withdraw before the next onslaught. Probably under orders from his division commander, the British battalion commander withdrew his companies from their positions in the pass, loaded them into trucks behind the crest of the hill, and started down the road into the Perak valley in an attempt to rejoin the main forces which had constructed a defensive position in the hills to the eastward.

While the Bren gun carriers and trucks were winding their way down the steep mountain road, a squadron of Japanese dive bombers came over intending to deliver the preparatory bombardment for the final assault. Catching sight of the convoy, and realizing that the enemy had pulled out of their position, the squadron commander directed his attack on the column of vehicles. There appears to have been no antiaircraft fire, and the troops sitting in open trucks, moving down a narrow road at a snail's pace, suffered terrible losses. When the Japanese infantry passed the spot a few hours later, they found more than fifty charred and overturned trucks and gun carriers scattered along the road.

The capture of Larut Pass gave the Japanese possession of the entire range of the Larut Hills. From their position on the crest they could look eastward across the Perak River valley some 6 miles to the high ground where the British were entrenched. As the British had withdrawn to the left bank, the Japanese were able to use the entire area west and north of the river without opposition.

(To be concluded in November-December issue.)

Filipinos Train for Combat

The U. S. Army is proud of the First and Second Filipino Regiments—tough fighting men of the same mold as the 92,000 Filipinos who saw action under General MacArthur on Bataan, in Corregidor, and elsewhere in the Battle of the Philippines.

The Filipino regiments are an outgrowth of a special Filipino battalion created by the War Department in February, 1942.

The original Filipino battalion rapidly grew in size and soon expanded into the First Filipino Regiment. Subsequently, as more and more Filipinos came into the service, the Second Filipino Regiment was activated.

U. S. Signal Corps Photos

In the two regiments are serving a number of Filipino veterans who were among the 92,000 Filipino troops who fought beside General MacArthur's 14,000 Americans against the Japanese invaders in the Philippines. Typical of these veterans of the Philippine Campaign is Sergeant Eustacio Corpuz, who was wounded and crossed the Pacific to the United States on a hospital ship with both legs in plaster casts.

Fifty Filipino commissioned officers are on duty with the regiments, among them a number of West Point graduates.

—U. S. War Department Bureau of Public Relations.

BATAAN WILL BE AVENGED

*by Major General Basilio J. Valdes**

ON December 7, 1941, without warning—at Pearl Harbor, Midway and in the Philippines—Japan attacked. Only 16,000 American troops were in the Philippines when the Japanese attacked 300,000 strong. Pearl Harbor lay shattered, a smoking, twisted mass of wreckage. The Japanese believed that the conquest of the Philippines would be a simple matter of a few days, strenuous only to the extent of wiping out a handful of Americans. Then, they believed, the conquest of the entire Southwest Pacific would proceed apace—there was Australia and New Zealand ahead, and later Hawaii, and then—who knows?—perhaps the American mainland.

But a bitter surprise was in store for them. The devotion of the seventeen million Filipinos linked them solidly with America. Ninety-two thousand Filipino soldiers leaped to the side of the Americans, all under the command of that great soldier, General Douglas MacArthur. Overnight, the Filipinos became a world-wide symbol of hard-hitting, dogged courage. Twenty thousand Filipino soldiers were killed in the Battle of the Philippines, and lie today in their jungle graves beside their American fellow-heroes. For months that battle raged, and when it was done the United States and the other United Nations had been given a precious respite in which to mobilize their far-flung Pacific defenses. On the bloodstained peninsula of Bataan had been fought one of the greatest delaying actions in all military history.

When the Filipino people resisted the Japanese invaders with their very lives, they gave final proof that here was a nation fit to be respected as the equal to any on earth, not in size or wealth, but in the stout heart and national dignity which are the true measures of a people.

—Franklin D. Roosevelt.

Those are the facts, simple, undeniable, understandable. They are the answer to those who do not have faith in international coöperation. They are an answer written in the blood of the Filipino and American martyrs to the cause of human freedom.

As President Quezon has said: "The Filipino people fought back because they knew that America had made a promise and that she would keep that promise. When we fought for your flag, we knew we were fighting for our own freedom. When we resisted the invasion of our country, we did so because we knew the Philippines was our country, not only *de facto* but *de jure*. And we were loyal to you, to your flag, and to your country, not because under international law we owed you that allegiance, but because you have won our undying friendship and affection—because you did by us what no other colonizing power has done by the people who had fallen under their sway. The presence of your flag in the Philippines was a symbol of our freedom. It was there only to allow you to finish the work you had started to do—to help set up an independent Philippine Republic."

Much has been said and written about the magnificent stand made by the combined forces of the American and Philippine Armies in Luzon, Bataan, and Corregidor. I saw those boys fight, and they deserve fully every bit of the praise that has been given them.

The Congressional Medal of Honor was awarded to Sergeant Jose Calugas, Battery "B," 88th Field Artillery, Philippine Scouts. The action for which the award was made took place near Culis, Bataan Province, Philippine Islands, January 16, 1942. A battery gun position was bombed and shelled by the enemy until one gun was put out of commission and all of the cannoneers were killed or wounded. Sergeant Calugas, a mess sergeant of another battery, voluntarily and without orders ran 1000 yards across the steel-swept area to the gun position. There he organized a volunteer squad which placed the gun back in commission and fired effectively against the enemy, although the position remained under constant and heavy Japanese artillery fire.

Paralleling Sergeant Calugas' gallantry on land were the exploits in the sky by Captain Jesus A. Villamor of the Philippine Army Air Corps, who was awarded the Distinguished Service Cross. In the face of heavy fire from strong enemy air forces he led his flight of three pursuit planes into action against attacking Japanese planes. His flight routed the attacking planes and prevented appreciable damage to matériel at this station.

On another occasion, during an attack on the airdrome at Batangas by approximately fifty-four Japanese bombers Captain Villamor led six pursuit planes and engaged the enemy. By this action against enormous odds, part of the attacking planes were driven off and one of the enemy planes was destroyed by fire from Captain Villamor's plane.

There is also the story of two Q-boats of the Offshore Patrol, which were on duty in Manila Bay off the east coast of Bataan when a group of nine enemy dive bombers appeared and began attacking nearby shore objectives. The commander, Captain Navarrete, maneuvered the boats of his squadron at high speed to positions from which he could attack the hostile planes. When subjected to dive-bombing attack, he continued the fire of his machine guns with such accuracy that at least three of the hostile aircraft were hit and badly damaged, and the enemy forced to discontinue the attack.

And then there is the story of that memorable battle of February 15, 1942, in which the Filipino soldiers from the Mountain Province especially distinguished themselves. General MacArthur's communiqué reads:

"During a recent enemy offensive, the 20th Japanese Infantry made an attack on a position held by a single Igorot company. To a man, the Igorots died in their foxholes without flinching or thought of retreat but exacting a tremendous toll from the Japanese. To restore the situation, our high command ordered an immediate counterattack by a tank unit, supported by the infantry. The infantry soldiers were Igorots, eager to even the score of their lost tribesmen.

"The bamboo jungles and the heavy, irregular terrain of the section of the front were almost impenetrable and apparently made it impossible for the tanks to operate. Without a word the Igorot commander hoisted his men to the tops of the tanks in order that they might guide the machines through the matted morass of underbrush, thickets and trees. The exposed Igorot soldiers on top of the tanks served as the eyes of the American drivers. Each guide signalled his driver with a stick, and as the unit closed in on the enemy, the Igorots fired continuously with their automatic pistols. Bataan has seen many wild mornings, but nothing to equal this. No quarter was asked and none was given. Always above the din of battle roared the fierce shouts of the Igorots as they rode the tanks and fired their pistols. When the attack was over, the remnants of the tanks and of the Igorots were still there but the 20th Japanese Infantry was completely annihilated."

In recounting the story of the battle to a group of his officers, General MacArthur said, "Many desperate acts of courage and heroism have fallen under my observation on many fields of battle in many parts of the world. I have seen forlorn hopes become realities. I have seen last-ditch stands and innumerable acts of personal heroism that defy description. But for sheer breath-taking and heart-stopping desperation, I have never known the equal of those Igorots riding the tanks. Gentlemen, whenever you repeat this story, stand in tribute to those gallant Igorots."

U. S. Signal Corps Photo

Troops of the 1st Filipino Infantry Battalion train at San Luis Obispo, California, for anticipated action against the invaders of their homeland.

The young Filipinos and Americans who died on Bataan and elsewhere were brothers-in-arms in a battle that will live forever in the annals of gallantry.

I saw those men fight. I was with them through their terrible ordeal. I saw untrained Filipino soldiers, hardly out of their teens, turn into veteran soldiers overnight. I saw your American boys, most of whom had never been under fire, fighting like heroes. I saw the wounded suffering quietly; and the Japanese bombs dropping viciously on the field hospitals clearly marked with the red cross of mercy. I saw the Japanese planes roaring continuously overhead, and the shells from the Japanese artillery crashing everywhere, and the snipers' bullets whipping through the underbrush.

Twenty thousand Filipinos and three thousand Americans died for freedom on Bataan and other Philippine battlefields. Our Filipino soldiers willingly made their sacrifice for liberty—for they were the youth of a people who had tasted freedom and were determined never to give it up.

If democracy is to remain a living ideal, we must follow their example in our acts and in our thoughts. Unless we are wise in planning for a better, safer world—unless we apply, throughout the world, some of the lessons of America's relations with the Philippines, all of the fighting, suffering, and dying of this terrible war will have been in vain. I believe that we will meet that challenge, and that the heroic fight waged in the Philippines was only a prelude to ultimate victory—our victory.

*Chief of Staff, Philippine Army, and Secretary of National Defense in President Quezon's War Cabinet

Chinese infantrymen fire at Japanese lines on the Salween River front. Artillery shells explode at right. This action, from a newsreel, took place in Yunnan Province, when the Chinese broke up a three-pronged Japanese drive headed for the interior.

Photos by Press Assn.

This Chinese sharpshooter is reported to have killed 100 Japs during the battle along the Hupeh Hunan Front which started late in May as Chinese troops defended the gateway to Chungking.

Lt. General Kuo Tsai, Chief of Staff, (*left*) looks at a map with General Chen Chen, victorious commander of the Chinese armies in the Upper Yangtze battle.

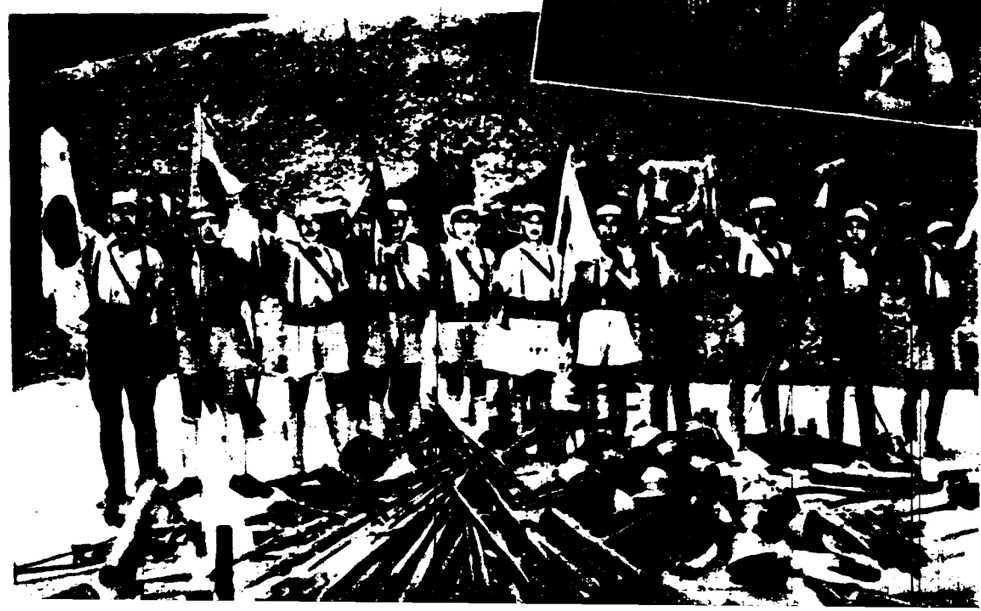
Chinese troops, strung along a road in Yunnan Province, headed for the Salween River Front near the Burma border to relieve men in action against Japanese forces. This scene is from a newsreel.

Constantly harrowing the Japs on China's "back door" Salween Front, these Chinese soldiers move up across a rushing mountain stream. A line across the river helps them keep their feet. Branches on their backs help them merge into the foliage.

Chinese Defend the Gates to Chungking

In the Battle of the Upper Yangtze, between May 25 and June 6, 1943, victorious Chinese armies inflicted 40,000 casualties on the Japs.

On the Hupeh Hunan Front, during the battle of the Upper Yangtze, Chinese soldiers move up for battle.



Victorious Chinese troops with some of their war booty which they captured from the Japs during the battle of the Upper Yangtze.

Tactics of Street Fighting

In the ruins of Stalingrad, each building became a prize of war.

Sovfoto, from official film, *City That Stopped Hitler*.

Military Lessons of Stalingrad*

by
Lt. General V. I. Chuykov
Red Army

IT IS wrong to think that urban fighting is in every case, and in the literal sense of the word, street fighting. When the enemy has entrenched himself in a town, urban fighting means fighting for a house, for a building, for a block. Operations develop along alleyways, inside houses, in ruins, underground. But the streets are empty, and so are the squares.

Military students, devoting ever increasing attention to the problems of urban fighting, are now studying this type of battle from every angle. Attempts are being made to summarize the tactical experiences of street fighting, to determine the rôle played by the various arms, and to elucidate the problems of coöperation.

We now have every opportunity to debate these problems intelligently, as we now possess the extensive experience amassed at Leningrad, Odessa, Sevastopol and Stalingrad, all of them large cities whose defenders demonstrated many new methods of fighting.

The men of Stalingrad especially were called upon to make a major contribution to the military art of urban defense. They held their city after repulsing the innumerable armored hordes of the enemy, ground 27 of his divisions to dust, and then took the offensive.

The struggle for the city of Stalin, for the stronghold on the Volga, taught us much and greatly enriched our store of tactical experience. One of the most important lessons learned at Stalingrad relates to commando action in cities.

*From *Soviet War News Weekly*, June 24, 1943.

Shock Groups

The defenders of Stalingrad created a peculiar type of shock groups as an instrument for street fighting. These groups, flexible, maneuverable, strongly armed, are equally valuable in active defense and in attack.

They are unlike the usual shock groups. In field conditions shock troops approach enemy blockhouses or firing points in order to destroy them completely. Inside a city, on the other hand, the shock group is required not merely to destroy the enemy but to use the conquered strong point for its own purposes, to turn it into a reliable stronghold, into a fort which can be used for a further development of active operations.

The thrusts of the shock groups are short, their actions bold and rapid.

The very nature of urban fighting determines the nature of these shock groups. All street fighting is at close quarters. An offensive inside a city means the storming of fortified houses which the enemy has turned into firing points, strong points or centers of resistance.

Here there is no opportunity for offensive operations by large units, conducted under usual field conditions. Here it is the small infantry group that dominates the scene. The small infantry group is best adapted for taking single buildings or blocks of buildings from the enemy step by step, i.e., for liquidating firing points or centers of resistance. Thus, it is a small group which is the spearhead of attack in urban fighting.

Let us begin by elucidating the conception "small group." The first stage of urban fighting arises when the enemy has only just seized a section of a city, and his defenses are still split up. At this stage a small group may operate independently without immediate organic contact with the larger group to which it belongs.

The second stage of urban fighting arises when the enemy has settled down in the city, has been there for two or three months, and has established an unbroken line of defenses, hanging well together and secured by serious technical works and a sufficiently developed fire network. Under such conditions, it is useless to imagine that a party of from three to five men has only to "go, see, and conquer."

Even in this complicated stage of urban fighting the shock group still remains numerically small, and the character of its operations, i.e., its job, is still the same. But under these conditions the group acts only as the spearhead of a larger unit striking a strong blow planned to the last detail.

The success of the storming of the "Railwayman House" in Stalingrad was decided by three groups of six to eight men each. It was they who actually stormed the building, but they were supported by 82 other fighting men of various military specialties, all using a variety of weapons. It would have been impossible to operate in any other way against such a formidable enemy strong point.

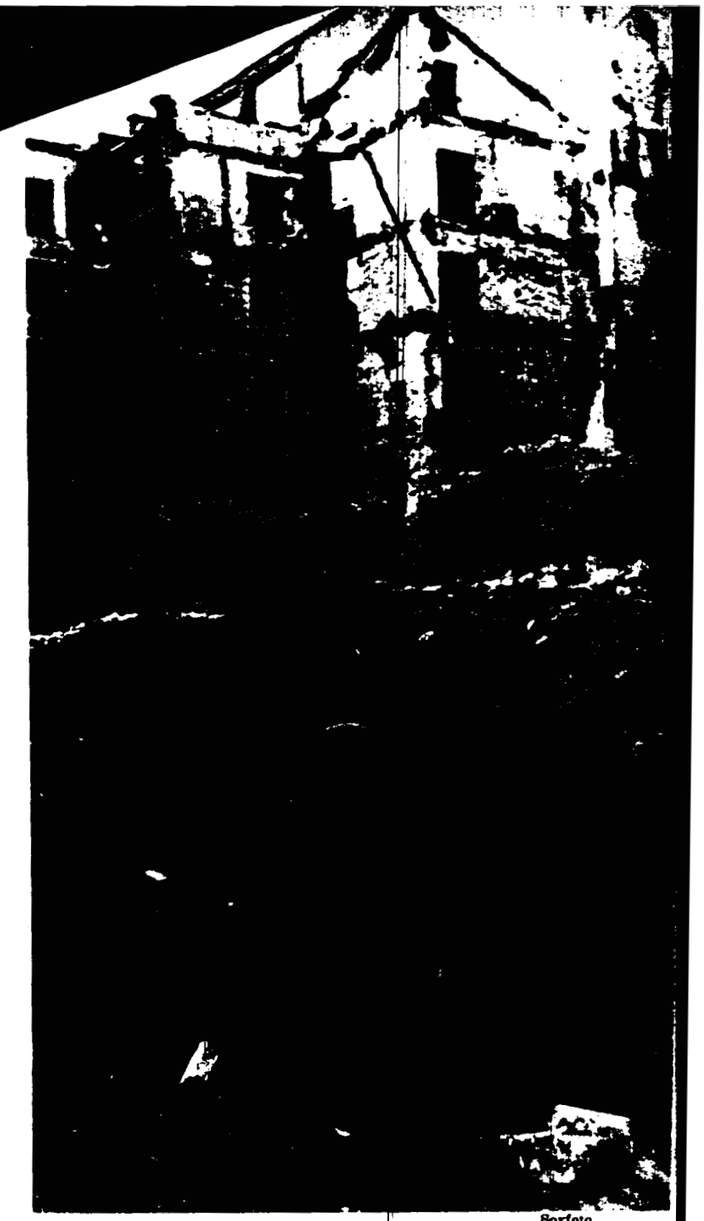
Consequently, the shock group cannot be considered separately from the conditions in which it operates and the peculiarities of the battle objectives.

In referring to the shock group, we shall assume that the objective is the typical one in offensive urban fighting, i.e., the taking of strong points or of centers of resistance in which the enemy has entire garrisons.

Composition and Structure of Shock Troops

The experience of active operations at Stalingrad taught us that if an attacking unit is to fulfil its task, it must have storm groups proper, reinforcement groups, and reserves. These three battle teams, all tuned to fulfil the same common task, form the shock group.

The number of fighting men in each group cannot be stated as a hard and fast principle. It must be left to each commander to decide, after he has studied the enemy's fire power, fire system and garrison strength. But the peculiar tasks of each component of the group need to be understood fully. These can be stated very precisely, and if they are not understood it is impossible to understand the tactics of the intra-urban storm.



Sovfoto

A shock group advances through a trench to forward positions, whence the attack will be launched on this house, still occupied by Germans.

The actual storm groups are the basis of the whole shock group. They are not large numerically, but consist of about 6 to 8 men each. They are the first to force their way into the house or other building. They rush in, in most cases, from various points of their initial po-

sition. Each group has its specific task. The storm groups fight inside the objective, destroy the enemy, and go through the whole building with each group handling the section allotted to it. They are lightly armed. Their weapons are the grenade, the tommy gun, the dagger, and the shovel. The latter is used as an ax in hand-to-hand fighting.

The groups have a common commander, who has at his disposal signal rockets, flares, and sometimes a telephone.

As soon as the commander of the storm groups signals, "I am inside," the reinforcement groups rush the buildings from various directions. They occupy the firing points and establish new ones, create a fire system of their own directed towards the enemy, and cut across all the enemy's attempts to come to the aid of his garrison.

The reinforcement groups are heavily armed. They carry light and heavy machine guns, antitank rifles, mortars, antitank cannon, crowbars, picks, and explosive charges. They necessarily include sappers and other men equipped with the most effective means of destroying the enemy.

The reinforcement group is subordinate to the commander of the storm group.

The reserves are used to fill up and strengthen the storm groups, to ward off lateral counterattacks by the enemy, and also, in case of necessity, as a blocking group. New additional storm groups can be formed quickly from these reserves and thrown into battle.

Such was the structure of the shock group which took the celebrated "L-shaped house." This center of resistance was so strong that it permitted the enemy to dominate the Volga on a sector of the greatest importance to us, and also the approaches to the Volga in considerable depth. The commander, Lieutenant Sedelnikov manifested striking tactical gifts, and his operation has been incorporated in the battle experience of the Red Army as one of the most outstanding instances of this type of warfare.

"A house is, after all, more suitable for peaceful living than for battle operations," but every room in Stalingrad became a battleground, and gains were counted street by street and house by house.

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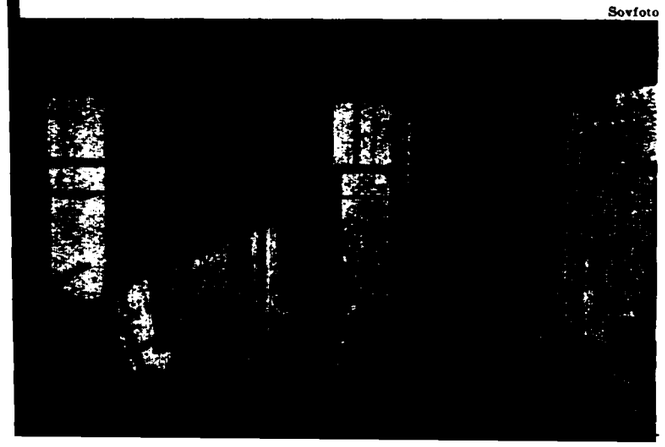

There should be no special, permanent storm groups in the sub-divisions. Every Red Army man should be capable of acting in a storm group. Platoons, sections and companies should be trained in this maneuver, just as they are trained in any other infantry maneuver. What is more, it is important that any storm group should be recruited from the personnel of a single unit.

Preparation and Reconnaissance

However heroic a shock group may be, if the operation is not well prepared, the commander will hope in vain for success. The storm must be prepared most carefully and calculated most accurately. Preparations are based on two things: study of the objective, and elaboration of a storm plan.

The study of the objective must provide a complete picture of the enemy's firing points and fire system. It must produce complete familiarity with the roads of approach and enable the commander to estimate the

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"Don't stay put in a house. Immediately begin again to establish routes of communication, new blocks and trenches. Work your way persistently nearer to the enemy."

best time for the storm. Reconnaissance also must give information on the nature of the defenses, the thickness of walls and obstacles, the position of entrances, concealed loopholes and ways of communication, on the directional sectors covered by enemy fire, on the obstacles in front of strong points, and on the position of the firing points of neighboring strong points which can keep the approaches under flanking fire.

If necessary, the information supplied by reconnaissance must be checked up by battle patrols.

When "Railwayman House" was stormed under the command of Yenin, all the data that I have mentioned were absolutely complete. His profound study of his objective enabled him to work out an accurate practical

plan and to mislead the enemy. As a result, Yenin could use the factor of surprise at a time when the storm was, so to speak, already in progress. Opening fire from the south, he provoked the enemy to turn his main fire power in that direction, and then seized the objective by advancing mainly from the east, with his three groups of daredevils of whom I have spoken previously.

It was careful study of his objective which enabled Sedelnikov, when storming the "L-shaped house," to direct his blow against a part of the house where enemy fire power was weakest, and where a dead space made it impossible for the enemy to attempt flanking fire.

Plans for a storm must be worked out on the basis of a thorough study of the objective. Careful reconnaissance will help the commander to solve his six main problems, which are:

1. Composition and structure of the storm groups.
2. Composition of the reinforcement groups.
3. The extent of reserves.
4. The tasks of the groups in all stages of the battle.
5. The degree to which the attack should be supported by fire from the rear; cut-off fire.
6. Signals and communications.

Tactical Methods

The tactics of a shock group must be flexible. Speed, drive, great initiative and boldness are demanded of every man, if for no other reason than that all sorts of unexpected things are bound to turn up.

Hurry up, be on time, look sharp!

The fighting man finds himself in a labyrinth of rooms and foxholes, all full of danger. Never mind. Chuck a grenade in every corner. Go on. Put a tommy-gun burst into the remains of the ceilings; if that is not enough, then a grenade and forward again. The next room—another grenade. Comb it out with the tommy gun.

Never dawdle!

Inside the objective, the enemy may try a counterattack. He knows how to fight as well as you. Don't be afraid. You have already taken the initiative and it is in your hands. Storm more fiercely, use your grenades, your tommy gun; then go for the dazed enemy with dagger or shovel.

Fighting inside a house is savage fighting. Blind your enemy by every means and then hit him out of the darkness. Be prepared for surprises.

Let me tell you what happened in one objective. The men had reckoned on a struggle in the basement, but it was later found that this basement had collapsed across the whole width of the building. In order to penetrate into the rest of the building, it was necessary to get through this same basement, which was under enemy fire to a considerable depth.

The second surprise was that the enemy had walled up the entrances to the building and left only narrow passages which led to the firing points through the basement.

"There must be two of you to rush a house—you and a grenade. Both of you should be lightly dressed—you without your haversack and the grenade without its shirt. This is how you rush a house. Let the grenade go in first, and then you follow. Go through the whole house the same way—first the grenade, and then you yourself."

The third surprise was that a blank wall divided the building in two. Beyond the wall was the enemy. The Germans shouted from the other side:

"Hi, Russ! Let's have a rest. We're tired."

That was when the reinforcement group went into action. Crowbar, pickax, and lead piping all came into play. Where the crowbar did no good, an explosive charge would help. The walls were pierced to permit the throwing of grenades and a subsequent advance in force through the building.

In the 26th hour of the battle inside the "L-shaped house," the remnants of the German garrison, who had escaped into the basement, were called upon to surrender. They refused. After this the reinforcement group did one of its specific jobs. The entire left wing of the six-floored house was blown up and the Germans were buried under a mountain of rubble.

The reinforcement groups have worked out their own tactical methods, which have passed the severest tests. These methods include the careful consideration of every trifle as well as of major problems.

1. Machine gunners, mortar gunners, number ones of antitank rifle crews force their way into the building. Their number twos, carrying ammunition and food for 24 hours of battle, follow them.

2. Having forced their way in, they must immediately seize the upper or middle floors of the objective, in order to keep the surrounding terrain under fire and prevent the bringing up of enemy reserves.

3. Having occupied and established firing points in the building, supplementary firing points must first be established outside the building on the flanks and then moved forward towards the enemy, in order to come to close quarters as a prelude to further active operations. This is most important. A house is, after all, more suitable for peaceful living than for battle operations, and especially offensive operations.

Don't stay put in a house. Immediately begin again to establish routes of communication, new blocks and trenches. Work your way persistently nearer to the enemy.

Speed and Surprise Are Basis of Maneuver

Speed and surprise are the two factors on which the maneuver of the shock groups is based. These two factors are inseparable.

"Railwayman House" was attacked at 10 A.M. The storming groups, commanded by Yenin, had three min-

utes in which to accomplish their task. No more than three minutes separated the last discharge of the guns, the last burst of machine gun fire directed against the enemy's firing points, and the moment when these points could be expected to spring again into life.

The storm groups made brilliant use of this period of time, so brief according to ordinary conceptions, and rushed the house before the enemy could recover from the murderous fire directed against him just before the storm. In 30 minutes all the firing positions of this strong point had fallen, the first prisoner had been taken, and the garrison—consisting of two infantry companies and one heavily armed company—was surrounded.

Such is the effect of the time factor!

The "L-shaped house" was attacked at night without previous fire preparation. The storm groups threw grenades into the house while still running forward and climbed through the windows one after the other without losing formation. The enemy had no time to fire a single shot. In 20 minutes the storm group had been through one-third of this enormous six-storied building sprawling over two blocks.

Such is the effect of the surprise factor!

Every commander who is given the job of storming an enemy strong point center of resistance above all must make use of both the time factor and the surprise factor, for both factors merge in hand-to-hand fighting.

The shock group is a product of hand-to-hand fighting. Its indispensable weapon is the grenade. The grenade dictates the distance of the storm—the nearer the enemy, the better.

If we consider from this point of view the more or less important storming operations carried out by our troops, we find that they present themselves above all as consisting of a persistent and concealed progress, aimed at bringing the attackers to close quarters with the enemy.

The forward area of the sector occupied by Sedelnikov's men was 180 yards from the "L-shaped house," but the daring shock groups of this remarkable commander stormed their objective from an initial position only 30 yards away. Our numerous shock groups have now made it their tactical rule to storm from such a distance.

The lesson of experience is that the enemy should be approached through trenches, or by crawling along while using shell holes and ruins as cover.

Such trenches must be dug at night and camouflaged. The men must gather for the storm rush without being seen by the enemy, without noise, through trenches, in shell holes and ruins. Tommy gun round the neck, ten grenades within easy reach, boldness in the heart! Now act! If you do this, speed and surprise will both be yours.

Mutual Coöperation

Commanders and men are working diligently to solve the tactical problems involved in mutual coöperation between shock groups and artillery, tanks, and other arms. At present the position is quite definitely thus: if the enemy's fire-power is concentrated only inside a building or other objective which he has transformed into a strong point or center of resistance, the storm must be sudden, without artillery preparation. In such circumstances, artillery preparation would have no effect.

Nevertheless artillery must be brought into action in the course of the storm. Small caliber guns, supported by antitank rifles, brought forward at night or behind a smoke screen after detailed reconnaissance, can effectively belabor the enemy's firing points. These guns, moved forward suddenly to a previously chosen position, should give cut-off fire and paralyze the enemy's attempts to assist the garrison of the objective to be stormed.

One method of giving artillery support to a storm without sacrificing the suddenness of the attack may be noted here. Commander Korishny made an artillery attack on firing points in the depths of the enemy defense ten minutes after the storming groups had forced an entry into the objective—instead of before the storm or at its beginning.

Skilful support of the shock group by tanks which fire point-blank at the loopholes, or undermine buildings by their fire, considerably increases the force of the attack.

Other weapons must also be widely employed to give support to the shock groups.

Some commanders have raised the point: "Darkness or smoke screen?"

Our answer is: "Both." The important thing is that during operations under cover of darkness or behind a smoke screen, the commander should be sure to keep the directing of the battle in his grasp. That is the essential problem.

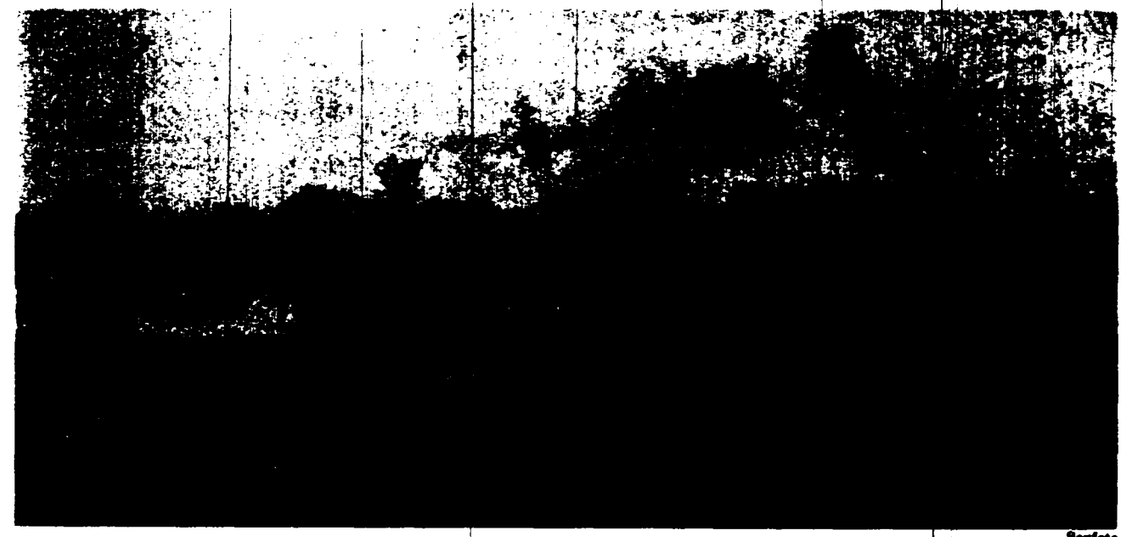
"Railwayman House" was stormed under cover of a smoke screen. The screen held for 13 minutes and hid the movements of our groups, storming from the south, from three German blocks pushed out on their flank. That was just what we wanted. The smoke did not interfere with the directing of the operations.

In the storm of the "L-shaped house," darkness made no difference to the direction of operations. Here the storm began at first light, but the initiative was ours, and the concentration was carried out in complete darkness. Flares were used.

Underground mine attacks are undertaken if an approach to the objective by other means would entail unnecessary losses. Our shock troops are employing this method with increasing frequency. There is only one thing to be said: *Be daring!*

The sapper is an important figure in street fighting. His place in the shock group is a place of honor.

Such, approximately, are the tactical problems relating to the operations of storming groups. They are born of the basic factors of all fighting—speed and surprise.



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Tank-Infantry Attack

*by Major General M. Korolev, Red Army**

Plan of Operation

THE chief aim of infantry-tank coöperation is to effect simultaneous blows at enemy personnel, support points, and centers of resistance. Such blows can be planned in detail and organized in advance for only the first stage of a battle. Once the enemy front line defense has been broken through and the primary objectives achieved, problems of coöperation must then be solved on the spot in accord with the ever changing battle situation.

The infantry first tries to break-through enemy defenses and take up initial positions for attack as near the enemy front line as possible in order to strike short decisive blows in coöperation with the tanks. On favorable terrain, initial positions may be some 200 meters from enemy trenches. At times, when the general situation and terrain make early concentration along initial positions for attack either impossible or inadvisable, infantry will be brought up while the artillery barrage is still in progress and will be moved forward within a kilometer of the enemy lines.

Tanks must drive through battle formations of infantry while the latter is concentrated along initial positions for attack. This moment in the coördination scheme must be thought out carefully beforehand. Infantry cannot await armored vehicles in initial positions, and tanks in their turn cannot stop until the infantry is ready. The situation may be such that the infantry will be obliged to start the attack immediately after the march. Even in that case, however, it is important to launch the infantry attack simultaneously with the tank attack. The assault begins all along the line at an hour determined by the commanding general. Depending on the distance that they must cover, the tank detachments leave their initial positions at different times, but they attack simultaneously.

An artillery barrage coupled with powerful air attacks will undoubtedly disorganize the enemy's defense system, but he will certainly take measures to protect his infantry from artillery and aircraft action. It is a well known fact that during Soviet artillery preparation, the German command shelters its personnel in blindages and leaves only observers in the trenches. As soon as the barrage dies down, the German soldiers return to their posts. For this reason, stereotyped tactics should be shunned in organizing a break-through, and a prolonged artillery bombardment may not always be advisable.

Sometimes, when sufficient artillery guns and plane service are available, it might prove advantageous to thrust simultaneously with tanks, infantry, artillery, and planes without any sort of preliminary bombardment. In many cases, it will be found best to employ a moving barrage strengthened by air attacks to ensure successful tank and infantry assault.

The choice of break-through tactics must be made in relation to the situation. Movement of tanks towards initial positions should not follow a stereotyped

*Armored Corps.

pattern either. It might sometimes prove profitable, for instance, to establish tank concentration areas some distance from the front and have armored vehicles remain in initial positions for attack for not more than 30 minutes.

Enemy minefields, which prove serious obstacles to attackers, should always be taken into account. The plan of operation must indicate methods by which landmines are to be rendered harmless.

Mutual Support

The next item in the coördination scheme is the support to be rendered tanks by infantry weapons—field pieces, mortars, antitank rifles, machine guns. Crews must have a clear conception of the points to be attacked and the task facing the armored vehicles, while tankmen must be informed of the fire tasks of infantry weapons. Mortars, field pieces, and antitank rifle fire are all coördinated with tank action.

In a break-through operation, infantry and tanks strike simultaneous coördinated blows. After negotiating forward positions, the infantry points out to the armored vehicles such targets and attack objectives as appear on the battlefield. Tankmen, on their part, inform infantry of antitank ditches and other obstacles that they encounter.

It must be emphasized that without dependable signal service, coöperation is out of the question. Under modern conditions, wireless is the most reliable signalling device. Dependable two-way wireless communication must be established between infantry and armored vehicles. If infantry possesses no radio sets, the officer commanding the tank unit must detail a liaison tank to the infantry regiment or even battalion. By means of this liaison machine, the rifle unit commander remains in constant communication with the supporting tanks. Another possible method for tank-infantry communication is to equip the tank with a short range but reliable battalion set.

Tankmen, moreover, should keep to within 200 to 400 meters of the infantry in order to be in a position to observe infantry action. In case all communication means fail, the tank commander should send his machine to the regimental or battalion commander. If the situation permits, the infantry commander may keep in contact with the armored vehicles by means of runners or groups of automatic riflemen.

It takes time and effort to gain possession of enemy forward positions and centers of resistance. Even after an intensive artillery barrage and air bombing, the enemy will retain sufficient fire resources to offer resistance to attacking infantry and tanks. Remaining bunkers, containing two or three machine guns each, may harass or even stop advancing riflemen, and the possible effect of these bunkers should always be borne in mind.

It is a well known fact that the Germans strive to separate Soviet infantry and tanks by means of fire from bunkers. During a recent break-through operation, Soviet tanks negotiated barbed wire entanglements and trenches, and drove past the defense line, but the infantry was stopped by fire from the bunkers. The tank commander then sent several machines to remedy the situation, but they proved incapable of coping with the enemy firing points. He then drew upon his reserve and with himself taking part in the action against the bunkers, had the tanks open withering point-blank fire that smashed enemy fortifications. Only after firing points had been destroyed was the infantry able to proceed.

Tanks entering an enemy defense zone must fight on even though infantry may have tarried behind. Part of the machines should return to help the riflemen, but the task of the main body of tanks is to hold the captured ground and neutralize the enemy fire until the infantry comes up to consolidate the success. There have been occasions when a whole tank unit returned to help the infantry, while one company would have been sufficient.

Flexibility

Following is a short account of a battle in which a Soviet tank unit had battered the enemy pill boxes until they were razed to the ground. The attacking force came up against armored firing points—German medium and heavy tanks, buried in the ground. The process of reducing these improvised pill boxes demanded an intensive three-hour effort on the part of Soviet tanks, artillery, and infantry. Only after the enemy firing points had been silenced was the infantry able to push forward.

On the whole, the struggle along the enemy's front line proceeded according to plan. As usual, however, fighting on the inside of the enemy defense zone deviated from the prearranged scheme. 1st Lieutenant Kresov, commanding the tank company, took the initiative in launching a flank and rear attack on an important enemy center of resistance which was hindering the advance of one of the regiments of a neighboring division. The attack came at the moment that the enemy battalion was marching up to reinforce the center of resistance. The tank company destroyed the enemy bunkers and raked the infantry battalion with fire. This done, Lieutenant Kresov turned his machines and, finding himself on the flank of another enemy reserve column of 300 men approaching a tactically important height, he immediately pressed forward in coöperation with the infantry.

Effective action of Soviet tanks and artillery employed against enemy bunkers and pill boxes completely annihilated this enemy reserve detachment and ensured the swift advance of the infantry. Proceeding to fulfil its mission, the tank unit then assaulted a powerful center of resistance inside the defense zone, garrisoned by German sappers. The attack was again carried out in close coöperation with infantry and an artillery brigade, which happened to be nearby. Blows at the center of resistance and both flanks led to its destruction.

The point to be emphasized in an analysis of this particular battle is that various arms of the service coöperated according to a prearranged plan, but in such a way as to meet the requirements of each situation on the spot. Coöperation was organized swiftly, and fighting commanders made full use of such battle resources as were in their possession.

It must furthermore be noted that coöperation was effected by means of liaison tanks and ordinary runners. The momentum of the advance increased with the progress of the fighting until it had reached 20 kilometers on the day that the engagement described took place. Despite this fact and the constantly changing situation, communications were never disrupted, because all arms of the service were well equipped with principal signalling means and were thoroughly familiar with the battle mission assigned to each. Not being in wireless communication with the tanks, the infantry transmitted its requests to the tank commander through headquarters or by means of liaison personnel and runners. The tanks, operating in close coöperation with the infantry, never drove too far ahead and kept constantly in touch with the riflemen. When the situation so demanded, liaison tanks were sent toward the infantry. Coöperation thus established between various arms ensured the successful termination of operations.

Tank Maneuvers on the Battlefield*

by Major A. Zvorykin

MANY tank commanders have shown that victory can be achieved by skilful maneuvering even when the enemy has superior forces and the possibilities of tanks are definitely limited.

During July of 1943 the Germans made a mad rush at a village on the Belgorod sector of the Soviet-German Front. Although their main drive consisted of a direct frontal attack, they attempted at the same time to use tanks to envelop the village from the flanks, and thirty of their heavy and medium tanks attacked on the Soviet left. On this particular sector Soviet artillery was not over strong numerically, and the Soviet commander, Captain Melnikov, with only six medium tanks under his command, had the task of repulsing the attacks.

With the enemy forces outnumbering them five to one, the tankmen realized that the situation was unfavorable for a direct counterattack. There was, however, nothing else to be done; so the success of the counterattack had to depend on skilful maneuver. Knowing the direction of the German attack, the company commander selected his own battleground, where it would be possible for him to deploy his tanks quickly from the road and where some of the tanks could reach the enemy's flank under cover of the hillside.

Timing their actions carefully, the Soviet tanks went out to meet the enemy, and the maneuver was brilliantly accomplished. Four tanks deployed from the road and, firing as they advanced, delivered a frontal attack on the enemy, while two others passed through the woods and approached unobserved from the flank.

The skilful maneuvering of individual tanks attacking from the front was one of the deciding factors in the outcome of the action. The tanks first maneuvered along the rear slopes of the hill, then appeared at the crest, fired, and again disappeared. This method of attack made the Soviet tanks invulnerable and created the impression among the Germans that they were being attacked by a larger number than actually existed.

Another case of tank maneuver which resulted in the capture of an important enemy center was executed by Major Silchenko's tank battalion plus motorized infantry. Going into action, they wiped out a large number of enemy officers and captured guns, transport, and other stores. At that time the Soviet troops, conducting a successful offensive, were approaching a town situated on an important railway line. The enemy hurriedly began to fortify the town for defense by laying minefields on the eastern approaches, bringing up artillery reserves, and building a system of blockhouses.

Major Silchenko gathered all necessary information about the enemy and carefully worked out a plan for the capture of the town. The main feature of this plan was an extensive enveloping movement in which the tank battalion made a thrust from the direction that the enemy least expected—from the rear. The tank attack was both sudden and tempestuous, so that the Germans had no time to turn their guns in the direction of the Soviet tanks.

During the battle, the commander kept a close eye on the enemy. When the Germans moved their tanks to attack Soviet forces from the rear, the commander used his light tanks, which he had held in reserve, to deliver a counterblow. The railway station, which was the center of resistance, was captured in a few hours.

The art of maneuvering lies in the ability of the commander to select the method of action required by the concrete situation and to bring it swiftly into effect so that he may paralyze the enemy counterattacks in their embryonic stage. The best planned maneuver may collapse if carried out too slowly. The decisive factors in maneuver, therefore, are suddenness and speed of action.

In maneuvering, the commander often places himself in a difficult situation—opens his flanks, and cuts himself off from his base. For this reason, maneuver requires constant reconnaissance, good communication, and excellent direction.

*By cable to The CAVALRY JOURNAL from U.S.S.R. War Department, Moscow.

German Accounts of Combat

AA Cannon vs. American Tanks*

IT was 3:30 P.M. Suddenly the AA platoons discovered, on the heights ahead of them, two tanks that at first they took for German tanks. They had no time for closer examination since a few Spitfires, which suddenly broke out of the clouds, attempted to strafe them in their positions with the plane weapons. They fired their first rounds, but German pursuit planes immediately rose and the "English ghosts" were driven away without being able to do much harm.

The troops were still searching the sky with their eyes. They still followed the flight of the German pursuit planes. Suddenly they saw a Messerschmidt 109 plunge down upon one of the two tanks and open fire on it. At the same moment they recognized about twenty tanks rolling down on them, broadly deployed and spaced in depth.

A cloud of dust hung like a smoke screen behind the advancing tanks. Six of them could be distinguished clearly. At about 1,300 feet they recognized the yellow star on turrets, the American airplane insignia, and immediately our guns began hammering out their exact, comforting tak-tak-tak against the earth colored, onrushing tanks. They would not be stopped. They deviated not an inch from their course. "Hard boiled!" This thought went through the minds of the men, and "hard boiled," or so they thought they were, the frightful monsters continued to roll toward our men. The gun layers concentrated on certain tanks—they were perhaps some 600 feet away now—with accurate aim.

The first of them was soon on fire. It stopped; deadly black clouds of smoke covered it. The rest, firing from their gun turrets, continued to advance. The light AT cannon gave them all that their barrels could give, and that was no small thing.

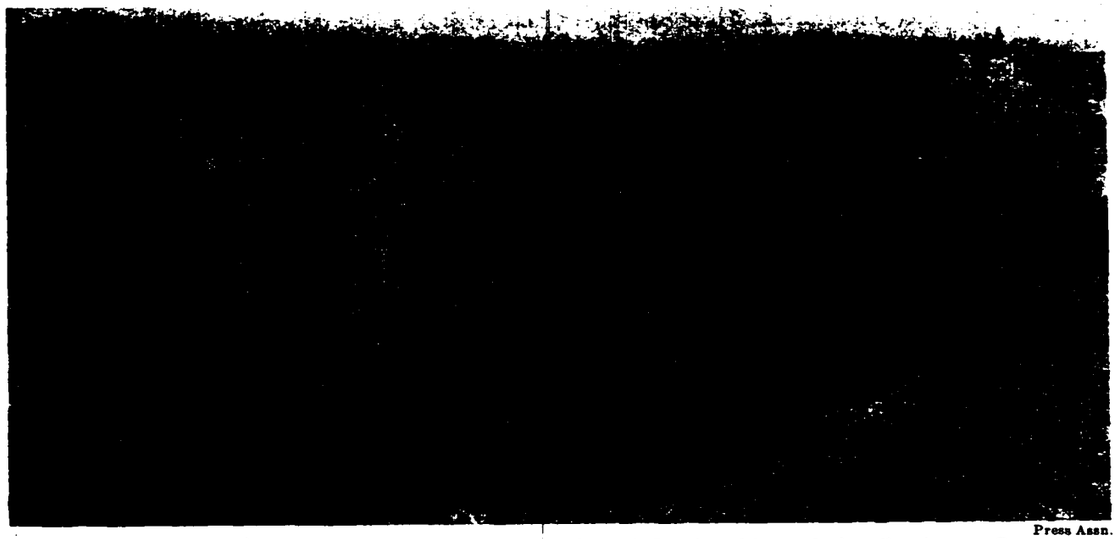
A second tank caught fire. A burst of flame came from it. Two, three men climbed out of it. They were swallowed up in the advancing cloud of dust. But the remaining tanks were getting dangerously close. Machine gun bullets were singing around the gunners, and shells from the tank cannon were bursting among them. But they remained unflinchingly at their posts and continued to fire, the steel of their shells striking the tanks at close range.

The American tanks were now but 200 feet away, and again one of them was brought to a halt. The leading tank then turned off and the second followed it. Finally seven other tanks recognized the hopelessness of their venture. In turning off, they displayed their sides with the gayly painted star-spangled banner on them.

In another place, however, with the second platoon, other tanks succeeded in rolling through our gun positions. But the guns, continuing on their heels with their fire, knocked out two tanks and forced the remainder to turn off their course. Only one of them roared senselessly toward the near-by highway, and our concentrated fire soon set it ablaze. It dragged its deadly trail of smoke behind it for some 150 feet and then stopped, helplessly exposed to the annihilating fire. The crew was taken prisoner.

That was our first encounter with Americans.

*Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article in *Völkischer Beobachter*, December 1, 1942.



Press Assn.

The caption on this picture, received from a neutral source through London, May 3rd, describes it as a German gun post on the Tunisian front, with the famous Ksar den Khrdache in the background. The gun is a Flak 38 (rebuilt Flak 30) and fires a 20mm shell.

First Day of Battle Along the Donez*

FRESH, well equipped enemy divisions with their ranks filled were at first to lead the attack on Kiev, but were now bending their efforts to the construction of a defense system such as would satisfy the desires of soldiers of their type. The land along the Donez River, beyond the gradually sloping east bank, is a labyrinth of marshy depressions, tributary streams, lakes and ponds. It is only in a few places that a successful attack is promised by the presence of bridges and solid land—an attack such as is necessary for the formation of bridgeheads as the prerequisite of successful operations between the Donez and the Don—and these places had been built by the Russians into key positions.

Neither the small stream nor the village are shown on large maps, but their names are burned in the hearts and memories of the infantrymen of the Lower Saxon Division which was to form the bridgehead that day. The village of M... had been made into the central supporting point of the Russian key positions in the knowledge that the German command would conduct one of the most decisive attacks in this place.

Now, forced over to the defensive, the Russians had thought out a new manner of employing their rolling, armored monsters. Around the village of M..., a fortification consisting of a circle of brown tanks was established. Their bastions were the artillery positions and their communication trenches and defense lines were represented by the field positions.

The Soviet command had not given up the thought of taking advantage of the mobility of their tank forces. Rather, they planned in case of a German tank attack (on which they certainly counted) that the Bolshevik tanks would come out of their earth positions and be used in a counterthrust against the infantry following our tanks. This was to be accomplished after the brown Soviet tanks, from their cover, had shot up our attacking tanks one after the other.

In place of this, there descended on the Russian key position, in the gray light of early dawn, a rolling artillery barrage that had not been anticipated in such intensity. In the concentrated fire of 130 guns the Soviet infantry was broken in this sector, and was beaten down by thousands of shells. But instead of the expected tanks, it was the German infantry that moved forward to the attack. The Soviets made one last effort. They rolled their tanks out of their pits and started a counterattack. The first six were shot to pieces by the antitank units of the division, and the second wave, consisting of five tanks, fared no better.

Because of this assistance, which had been provided in advance by the command, the infantry made good progress in its advance. What artillery the Russians had left, was held down by continuous employment of the Stukas. It was a great day of battle, such as the men had been wishing for during the months of the devastating winter operations and during the days of defensive operations east of Kharkov.

The thing that had to be done now was to form a bridgehead. If we succeeded in getting the bridge into our hands undamaged, it would mean not only a gain of many hours before the engineers could complete the war bridge, but also it would mean relief for those portions of the infantry that had already reached the far side of the river and whose flank was threatened by stubborn enemy resistance.

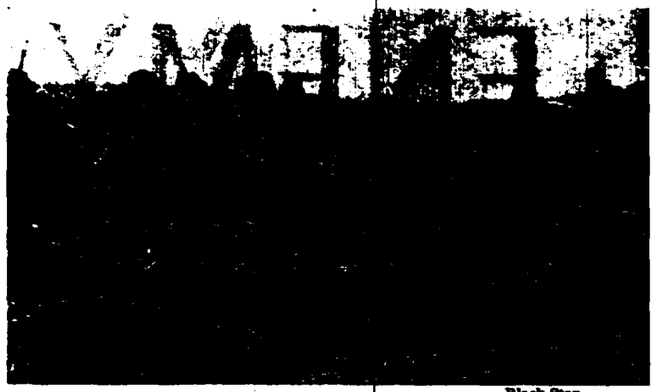
With the bridge in German hands, the armored forces, which were all ready for action, could dash ahead and be employed in crushing pursuit of the enemy. We succeeded. The regiment on the right was closest to the bridge. The engineers attached to the regiment were sent out ahead of all others.

When they were close to the bridge, which was all prepared for blowing up, a lieutenant gathered all available engineers and infantrymen together and risked the dash across. The Russian blasting detachment was still engaged in its work. The lieutenant succeeded in taking them prisoners and in cutting the detonating conductors.

While the lieutenant was getting ready to make the dash across the bridge, a sergeant from the same battalion of engineers sprang into the water and tore the explosive charges away from the bridge supports. Thus the bridge fell unharmed into German hands.

At 2:15 A.M., the attack began. At 10:00 A.M., both bridges and bridgehead were safely in German hands and tanks were rolling across into the country between the Don and the Donez.

*Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from the German article, "*Was wir erlebten in diesem Jahr im Osten. Der erste Tag der Schlacht am Donez.*" From *Die Panzertruppe*, September 1942.



Black Star

German SS troops move an antitank gun over a fascine road in Russia.

ENEMY PROPAGANDA

*by Major Fred Herzberg and Captain Willard M. Wallace**

"Hitler's most powerful ally, the very basis of his victories, has been the ease with which he could divide his enemies by playing upon the dislike and distrust of one nation, or race, or religion, or party for another."

THE Axis powers have declared that this is to be a total war, and we have every reason to believe that they mean it. Just what is a total war? It has been said that modern warfare rests on four pillars.[1] These include all of the elements of total warfare. They are:

1. Production
2. Transportation
3. Combat
4. Morale

It is apparent at a glance that production and transportation are essentially civilian tasks, combat is the primary military task, and morale is a quality required of both civilian and military personnel.

Production, transportation, and combat are factors which existed in all previous wars. In modern warfare we have merely specialized the several activities so that separate groups of individuals conduct each type of activity.

Our particular interest lies in the factor called "Morale." This has always been present in wars as it is today, but only to a relatively small degree. In present day warfare its importance exceeds probably any other single factor. The approach to the mind of the enemy takes on an importance it never achieved before. Wars are no longer merely physical in character, but psychological as well.[2] It therefore becomes the mission of the enemy to lower our morale and raise his own, as it becomes our objective to lower his morale and keep our own at a high level.

Morale may be said to be a state of mind which permits men, despite obstacles and defeats, to struggle on toward their goals. It is a form of faith in the ultimate victory of a cause, even though the individual or group may perish in the fight leading to the victory.

Characteristic Enemy Propaganda

The greatest morale breaker in existence is enemy propaganda, aimed at destroying faith in cause, leadership, and possibilities of victory. Every difference, real or imaginary, is exploited by the enemy in his attempt to govern the mental reactions of our people. He has had certain successes.

One of the earliest pieces of German propaganda was concerned with selling to the world the thesis that German arms are invincible. The purpose of this is apparent. If the Germans are invincible, then why fight them? It is an effort to weaken the fighting will of the opponent by making victory appear hopeless. The armies of Russia have destroyed this myth so completely that further comment is unnecessary.

The Japanese have permitted us to view them as the great imitators of modern times. When Commodore Perry opened the Japanese islands to the Western world in 1853, he found a feudal and agricultural society. The Japanese adopted the easiest method of learning from us, that of imitation. They were then the great imitators. That situation long ago ceased to exist. The Japanese have become original in many ways, including some of their methods of fighting. It is as dangerous to look upon them as imitators as it was to look upon the Germans as invincible. The danger lies in accepting them as easy marks, and consequently not exerting our best efforts in opposing them. Underestimating the enemy is as dangerous as overestimating him.

That the Japanese are a dangerous and potent enemy has been stressed many times. Among the best authorities on the subject is former Ambassador Grew, who said, "Probably no other factor has contributed more heavily to the preliminary victories achieved by the Japanese in this war than the offensive spirit which permeates all of the armed forces of the Empire. This spirit, recognized by competent military men as the most vital intangible factor in achieving victory, has been nourished and perpetuated since the foundation of the modern Japanese Army."[3] They are indeed formidable if this is true—as it appears to be.

"Divide and Rule"

It is the desire of the Axis that we and our Allies of the United Nations be separated from each other. A divided fighting effort on our part is of distinct advantage to our enemy and makes his task ever simpler.

The Japanese have adopted the anti-white technique in the Far East, and played upon all of the anti-white prejudice of that region. That they should use such propaganda is certainly understandable, but that we should help them is deplorable. They are trying to make this a race war, which it very definitely is not. How many of us have unwittingly helped them? Whenever we refer to them as "those little yellow bastards" we are encouraging the race war attitude. Expressions of that type should be eliminated. We are not fighting the Japanese because of the color of their skins. There are far more yellow-skinned peoples on our side of this war than on theirs.

Most of us have looked upon the Chinese as being "different." Our distance from them has prompted such an attitude. "Because the Chinese live on the other side of the globe; because they wear white instead of black for mourning; because their books begin on what would be the last page of ours; because their family names come first instead of their given names . . . they used to be regarded as people who stood on their heads.[4] Any so-called "differences" between the Chinese and ourselves are certainly most incidental and of no consequence to the conduct of the war.

The effort to separate us from our Russian allies has met with considerable success in many places. Germany has actually had the crass nerve to say that she is the bulwark in Europe against the Russians. Too often we forget that the Germans attacked the Russians, not the Russians, the Germans. The Red Scare is an old technique, and the Germans will use it more and more with each mile that they are pushed westward by the Red Army. Wendell Willkie stated it well when he said, "Whatever our views may be about Communism, Russia stands today as the savior of democracy in Europe. Had her resistance been less stalwart, it is difficult to see how Naziism could have been brought to the defensive."[5] We must not be fooled into non-coöperation with the Russians when our problem is fighting the Germans.

Name-calling and labelling with words are old propaganda techniques which have been used with great success. The scapegoat technique was born in antiquity and has been used routinely on all peoples and during all ages. Its purpose is to accuse a group, generally a minority, of being the cause of all evil. It works on the assumption that human beings will forget their difficulties if they can be persuaded to wreak vengeance on other humans. It has been used internationally by the German propaganda machine.

In France the people were told that they were fighting for the British and, of course, that "Britain would fight to the last Frenchman." This served the purpose of removing from many Frenchmen their reasons for opposing the Germans. They did not want to fight for England. Those Frenchmen who still fought the enemy were hampered by their fellow citizens and their talk and actions. France was thoroughly divided by this and other means. The results speak for themselves. The groups who argued so loudly are not able to speak above even a whisper now. They are no longer groups but rather isolated individuals. The Germans did a thorough job of division.

The same technique has been used on us. We have all heard the accusation that we are fighting to preserve the British Empire. The accusation itself is quite incidental, but the fact that we take time out now to argue the point is not at all incidental. While fighting amongst ourselves, we use energy which should be utilized to fight the enemy. That we are fighting to preserve the British Empire may be quite summarily dismissed by the reminder that Pearl Harbor, Dutch Harbor, Wake, and the Philippines did not belong to the British.

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[1] *The School of the Citizen Soldier*, by Second Army.

[2] *Methods of Psychological Warfare*, by Lt. Colonel F. E. Gillette, Command and General Staff School, Fort Leavenworth, Kansas.

[3] *The Japanese Are Tough*, Radio Address, August 30, 1942, by the Honorable Joseph C. Grew.

[4] *The Thousand Million*, Office of War Information, Washington, D. C.

[5] *Friends for Tomorrow*, by Wendell L. Willkie, from This Week Magazine section, Chicago Daily News, February 13, 1943.

*Department of Training, Medical Field Service School, Carlisle Barracks, Pennsylvania.

Our Allies

Who are our Allies of the United Nations? How many of them are there? What are their characteristics in combat? Our allies number upward of a thousand million people, representing every race, creed and color, and belief of mankind, and every area and continent inhabited by man.

The Chinese, for over six years, have fought against the Japanese. They have fought with bare hands and bamboo poles against a superbly armed enemy. They have not only fought but have inflicted tremendous losses and drained equipment and men on a vast scale. When the war started, the great bulk of Chinese industry, schools, and population was concentrated along the seacoast, and along the two great rivers. As the Chinese retreated into the interior of their great country they moved with them their industries and their schools. They walked hundreds of miles, and they carried their belongings on their backs and in their hands. They died like flies, but they marched and fought on. Today they have established industries and institutions of learning in the interior, and these on an unprecedented scale. They still fight on. They still die by thousands; but the Chinese will never be defeated. These people are our allies.

The Czechoslovaks were denied the opportunity of formally fighting their enemies. Their armies were demobilized and the country tragically occupied without resistance. Under such circumstances one would normally expect that the Czechoslovaks would have had their morale destroyed. But this reaction failed to occur. In fact, the very opposite happened. The soldiers fled, many of them, to other countries. But they fled to fight another day. Today they fight on many fronts with other United Nations troops. But the real heroes of Czechoslovakia may turn out to be those who remained behind to fight. The first group have at least a soldier's chance. The second fight alone. Under cover of the blackout they remove pieces of machinery to cripple the war production of the Nazis.[4] Their sabotage, if detected, would lead to their death, at the very least. Reprisals on the family of such a person would not be at all surprising. Hostages have been executed for less cause than sabotage. It takes a peculiarly high type of courage to risk one's family. These people are our allies.

To describe the staying power of the Russians, their ability to take the offensive, and their high morale, can hardly be done in words known to us. President Roosevelt said, "Russian forces have destroyed and are destroying more armed power of our enemies—troops, planes, tanks, and guns—than all the other United Nations put together." These people are our allies.

While most of us were wondering whether or not we would ever be in this war, and whether or not it was proper to trade fifty over-age destroyers to England, the British were holding their islands, and much more, against the Axis. The bulk of the total casualties of the British Commonwealth of Nations came from the British Isles. The Axis would have us believe that only the Colonials did the fighting. The British held the Germans at bay across the Channel despite the terrific bombardments inflicted upon them. British morale and fighting spirit maintained itself against all odds while awaiting help from the outside. And these people are our allies.

The Termite from Within

The Axis finds it not only necessary to separate us from our allies but also to separate us from each other. The latter is an especially dangerous weapon in any country. Its intent is to play upon the prejudices, hatreds and various types of "natural" conflicting interests between groups. It takes advantage of all real and fancied grievances. By doing so, it gets the benefit of having the intended victim exhaust himself in internal dissension.

"Before Hitler attacks any country, his agents carefully sow seeds of hate and disunity—turning people against their own governments, governments against their allies, class against class. . . . In the early days of the war, before France was invaded, morale was lowered by professional weepers, clothed in deep mourning and wailing loudly, who wandered into subways and onto busses in Paris spreading the false belief that French casualties were enormous. Mothers received mysterious postcards informing them that their sons at the front had either been killed or were deathly ill. Soldiers received anonymous notes saying their wives or sweethearts were unfaithful and had run off with British soldiers."[6]

Group is set against group to produce as many subdivisions in the population as possible. The following quotation illustrates the system used: "For most evil, the Jews were to blame. Business is bad? Labor is to blame. Wages are low? Capital is to blame. War is hell? The British are to blame. Everybody was to blame *except* Hitler—the common enemy who would crush them all. National unity was destroyed by setting group against group. In Belgium, Nazis told the French-speaking Walloons that King Leopold was pro-German and was preparing to sell out Belgium to the Nazis; they told the Flemish that King Leopold had a secret treaty with the allies and was ready to declare war on Germany."[6]

Spreading terror is a vicious modification of the dividing technique. Its purpose is to put the victim on the defensive, to make him uncertain and afraid. It is the "War of Nerves." We all remember the system when it was used against Belgium. The newspapers reported the presence of large German forces over the border one day and their complete absence several days later. This process was repeated several times. Were they going to attack? The question was uppermost in the minds of the people. It is easy to understand the tremendous tension generated by such uncertainty. Such tension could be, and was, easily released in the form of discussion amongst the intended victims. It helped to divide the population.

[6]*Divide and Conquer*, Office of Facts and Figures, Washington, D. C.

The tactics generally used against all countries attacked by the Axis are used against us, too, and are well summarized in a statement of the Office of War Information: "To destroy our national unity, create unrest in all groups of the population, and deflect us from the major purpose—th defeat of the Axis—Hitler is trying to set capital against labor, white against Negro, Catholic against Protestant, Christian against Jew. He knows that prejudice, in any form, plays his game."[6] It would be well for each of us to remember this whenever we criticize others for their beliefs, their jobs or their color.

"Hitler's most powerful ally, the very basis of his victories, has been the ease with which he could divide his enemies by playing upon the dislike and distrust of one nation, or race, or religion, or party for another. Particularly have two 'hates' served him: anti-Semitism and Anglophobia. He is still making immense use of them. To meet this danger we must face it, study it, understand it, not deny its existence; must admit our liability to this kind of infection, our tendency to seek devils to hate as an emotional relief, and scapegoats to blame as a means of escape from recognition of our own faults and obligations."[7]

The Officer's Duty Regarding Propaganda

It is the duty of every officer to see that his men are instructed in the methods and purposes of enemy propaganda. This is known to be done on a large scale by the Russians,[8] and by the Germans, who have made a science of military morale.[10] The men must be cautioned, in their own interests, to avoid picking up and distributing rumors.

Instruction in why we fight, including showings and explanations of the films entitled "Why We Fight" must be conducted. Explanations concerned with the subject matter of these films should be mandatory. Orientation talks should be given at frequent intervals. "War begins and ends, not with dive-bombers and tanks, not with equipment and supplies, not with maps and terrain, but with human beings."[11] These human beings want to know what is going on; they are intimately involved! Every effort must be made to indoctrinate the soldier so that he may evaluate for himself what he hears and sees.

That it is the policy of our army to safeguard our troops and the entire nation must be apparent. Circulars have been issued on the subject.[12] All officers must make it their purpose (morale is a function of command) to instill a healthy respect for our country and a deep faith in our ultimate victory. To accomplish this, our soldiers must, above all, know WHY we are fighting, and what the personal and national consequences of our defeat would be.

Every American has been raised on the ideals of democracy. Each of us interprets this democracy with a somewhat different shade of meaning. But aside from the varying concepts, the basic principles of what each of us means are really identical. Our common ground might be accepted as being the abstract rights of free speech, free press, universal suffrage, freedom of religion, and a common set of traditions. We might reinforce these ideals by certain common, more tangible factors. The now proverbial Minute Man, the gruesome struggle at Valley Forge, the fight to preserve the Union, the freeing of the slaves, the opening of the great West are historic examples of the American's fight for his kind of freedom.

Another common ground often overlooked, is the fact that we are all the children of immigrants, differing here only in point of time of arrival. It might be safe to say that from the earliest colonists up to the present, the principles of the fight for freedom have always been present. We have with us the descendants of the oppressed peoples of almost every country in the world.

These have brought us the best of the human and cultural achievements of the Old World. These we have embellished with our own accomplishments. We have, in return, given to the rest of the world our distinct scientific, cultural, and industrial developments.

We have become renowned for the jealous defense of our attainments. This jealousy may at times have been so deep-seated that it defeated our own purposes and objectives. We have devised checks and balances and restrictions of many kinds, but their object has always been the greatest good for the greatest number. At various times in our history our vigilance has taken on different forms. The change of form was necessary in view of the changing conditions under which the world lived.

We may depend on our military forces, drawn from the ranks of the people, to preserve the rights of the people from whom they have risen.

It is significant that not only does our army represent every walk of life, but also the many nationalities which have gone into the making of our country. Our duty to bear arms, and our privilege of bearing them with men who have been reared in the traditions of human rights, offers us an opportunity to carry forward the best traditions of our own and other nations. At the same time we should be keenly alert to detect and counteract any attempts by enemy propaganda to disturb the unity which we enjoy as a people and as an ally of the United Nations.

There are many ways to win a war. Motivate the American soldier. This war will not be won by guns alone.

[7]*Let the People Know*, by Norman Angell.

[8]Leland Stowe, *Chicago Daily News*, November 16, 1942.

[10]*German Psychological Warfare*, Committee for National Morale.

[11]*Psychology and the Soldier*, by Norman Copeland.

[12]*Training Circular 99, Safeguarding Military Information*, W. D., Washington, D. C., December 4, 1942.

Training While Testing

*by Major Franklin M. Davis, Jr., Cavalry**

THE BATTALION TESTS now being conducted in the II Armored Corps are checking the technique of small unit operations in combat situations, as well as providing higher commanders with an accurate index to the capabilities of troop leaders and to the prospective combat efficiency of the units concerned.

Based on Army Ground Force directives, these tests, drawn up by Lt. Colonel A. D. Surles, Jr. (Cav.) and Lt. Colonel James B. Quill (Cav.), have proven invaluable as a check on unit and combined training, and as combat practice for the troops concerned. Every effort has been made to maintain realism, keep artificial control at a minimum, and to permit all commanders actually to handle their troops throughout.

Scheduled for all units of the II Armored Corps, whether divisional or non-divisional, the tests are scaled according to the training status of the unit concerned. Thus far, battalion combat firing tests were conducted for the 6th Infantry Division, while battalion field exercises, involving no firing, were conducted for the 13th Armored Division, and reinforced battalion combat firing tests were run for the 6th Armored Division.

In the 6th Armored Division, reinforced battalion combat firing tests were staged at Camp Cooke for each tank battalion and armored infantry battalion of the division. Basically, the tests for the two types of battalions were the same, and only slight changes were necessary to fit the tank problem to an armored infantry battalion.

The battalion—reinforced with a company of infantry, a battery of artillery, a platoon of the regimental reconnaissance company, and a platoon of armored engineers, in addition to the normal medical, maintenance, and service elements from the parent regiment—was acting as a flank guard for the armored division.

In the execution of the combat firing test, the battalion was required to make a short march to a rear assembly area, move at night to a forward assembly area, attack an enemy force occupying a hasty defensive position behind a minefield, rally, and reorganize.

Ammunition allowances were sufficiently liberal to permit an impressive display of actual fire—40 rounds per rifle, 150 rounds per machine gun, 10 rounds per heavy caliber weapon, and 16 rounds per battery of artillery. Ammunition was reserved from annual combat firing allowances.

Problem and Solution

Situation (see map). At Camp Cooke, as the problem opened, the enemy was moving in force on Lompoc. The 6th Armored Division, with the battalion being tested as the right flank guard, was moving south, with the head of the battalion at Schuman Canyon. The battalion commander was directed to meet a liaison officer from division headquarters at Marshall at 1630. Upon arrival at Marshall the commander was given a message which read: Obsn. reports enemy force of two light tank companies reinforced with AT guns moving into assembly area half-mile SE Weser, as left flank guard larger force. Move to concealed assembly area in Oak Canyon. Attack and destroy the enemy. Sq. Bomb. Avn. on ground alert at Santa Maria available on call. CG, 6th A. D."

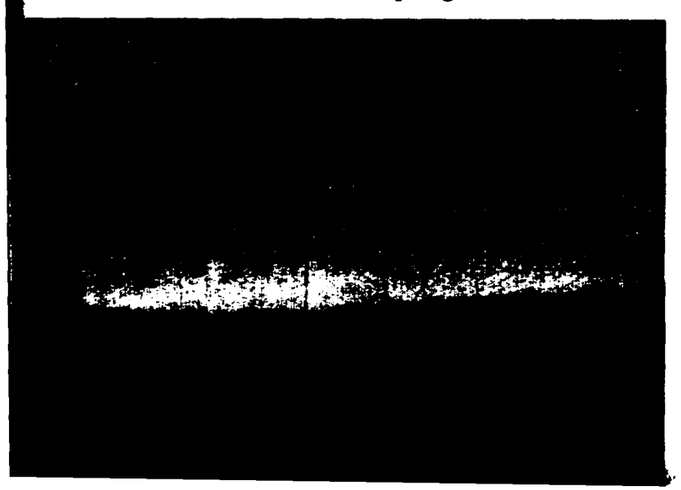
Enemy. The enemy referred to in the message was in position near Weser, behind a minefield that extended from Bear Creek Canyon to Lompoc Canyon. The high ground in the vicinity of Surf was actually occupied by a reconnaissance company, functioning as the enemy counterreconnaissance. Thus, before the battalion commander could reach the high ground to reconnoiter the position he was to attack, it was necessary that he use his reconnaissance platoon to make contact, and his attached infantry to drive in the enemy patrols. Distinctive uniforms and blank ammunition permitted the enemy to add considerable realism to the play, and it required decisive and convincing action on the part of the tested battalion to seize the high ground and permit reconnaissance.

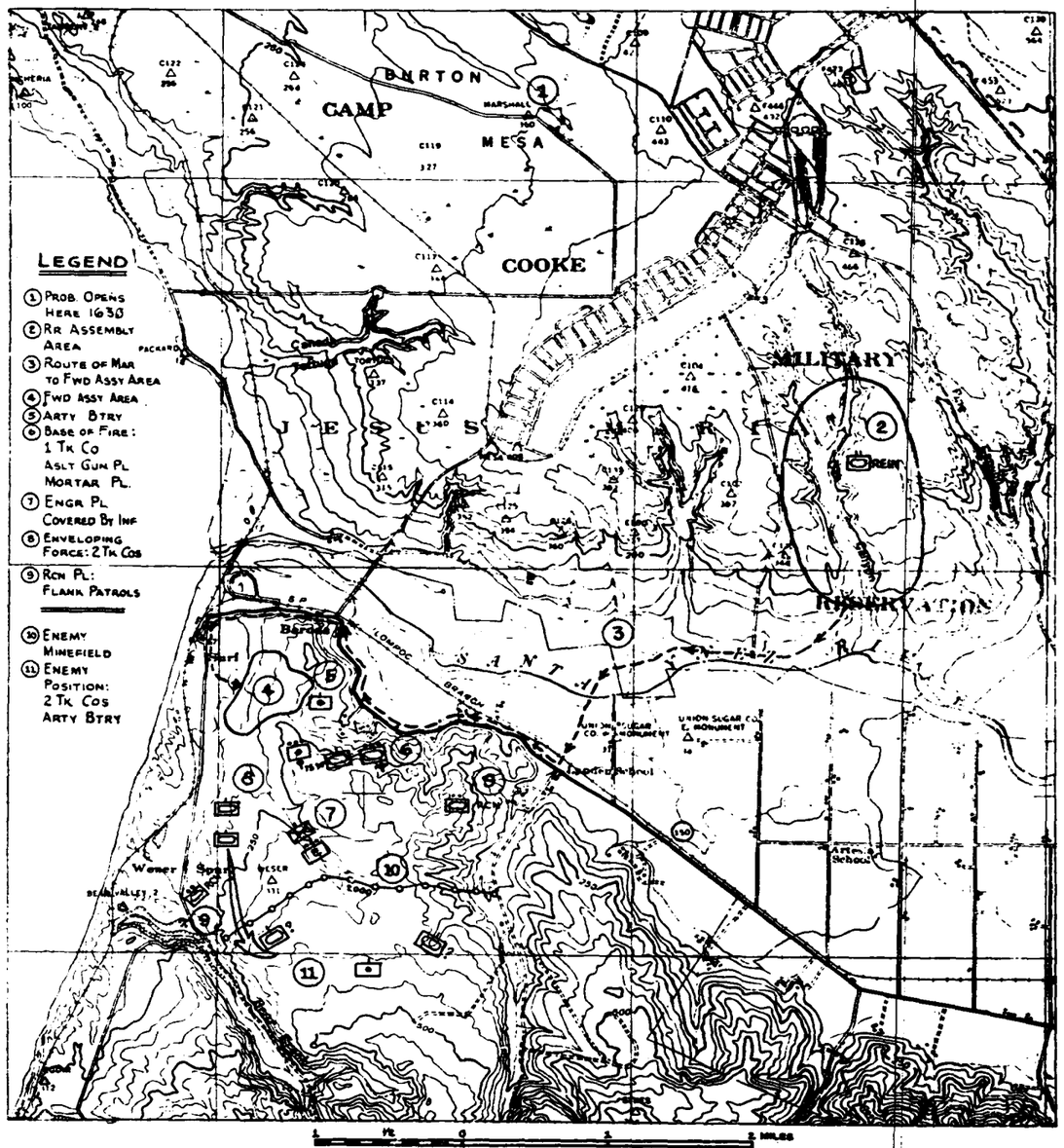
Enemy personnel was equipped with reasonably accurate overlays of the enemy assembly area and minefield, and when prisoners were properly searched and processed, the following information was revealed:

The targets, consisting of thirty tanks, ten trucks, and six antitank guns, in addition to two hundred E & F

*Hq., II Armored Corps.

At dawn a squad of attached engineers widens the gap in the minefield for the passage of more tanks.



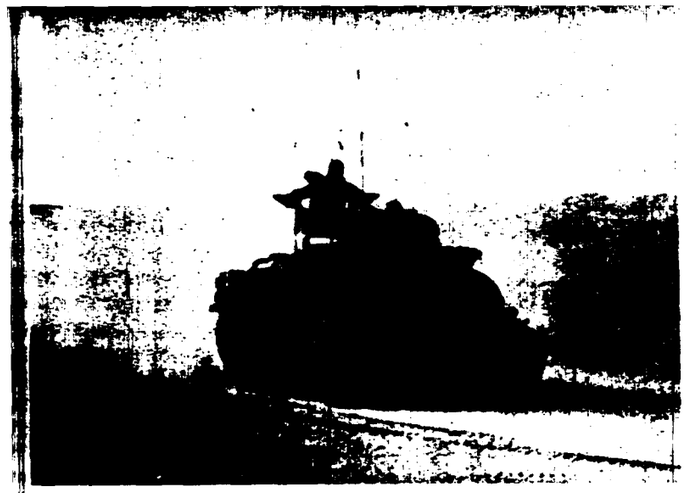


targets, were disposed in defiladed positions on the high ground some 1500 yards south of the minefield. All vehicles and weapons were accurate silhouette facsimiles of foreign matériel, constructed by Division Trains, 6th Armored Division.

In addition, the 25th Armored Engineer Battalion, 6th Armored Division, constructed an elaborate demolitions system, which permitted enemy antitank guns to fire, sprinkled the minefield with booby traps to snare the unwary, and salted the terrain with innumerable TNT charges to represent the enemy shell-fire during the attack.

Solutions. Moving to a forward assembly area at night, and scheduling an early morning attack, most battalion commanders elected to put a base of fire consisting of one tank company, reinforced with the organic battalion supporting weapons, on the ridge north of the minefield, and to envelop the enemy west flank with two tank companies.

Artillery. Artillery missions were initially counter-



An M-4 tank roars into the attack during the reinforced tank battalion combat firing tests.

battery fire on the enemy light battery located as indicated on the map, and thereafter on targets of opportunity, while the assault guns and mortars were used on the AT guns. In order to preserve the strict realism of the problem, only east and west safety angles were prescribed for the artillery. No minimum ranges were set, and in the nine tests conducted, the artillery forward observer was able to control the fire so as not to endanger the advancing troops.

Infantry. After using the infantry to outpost the area at night, and to protect the engineers while they blew gaps in the minefield, battalion commanders then ordered them to follow the tank attack and to mop-up, which gave them ample opportunity to use their weapons on suitable infantry targets.

Engineers. The attached engineers, equipped with bangalore torpedoes, blew anywhere from two to four gaps in the minefield, and received considerable practice in marking gaps, widening gaps, and handling the difficult task of preparing passages for tanks.

Supply. In order to check the handling of supply, all aspects of the normal battalion supply problem were maintained. "A" trains, initially accompanying the unit to the rear assembly area, after servicing the battalion, were pulled back for reservicing to an assumed DP, designated in a message received by the battalion commander at 2100 the day of the problem. Kitchen trucks were released to the battalion after dark, and then reverted to division control before daylight.

Ammunition supply was handled by causing the units to issue ammunition in the rear assembly area, and then, to requisition a resupply at the rally point.

Evacuation. Actual evacuation of casualties and vehicles was checked by issuing the umpires casualty tags, which were handed out during the course of the problem.

Communications. Normal communications were maintained, since the parent regiment provided a CW radio set to which SOP reports and other CW traffic was sent from the battalion. Messages ordinarily sent by runner were handled by the umpires at the CP.

Control and Scoring. To preserve the realism of the problem, umpire control was kept at a minimum. Though there were umpires with the battalion commander, battalion CP, company commanders and platoon leaders, they were in no wise permitted to "run" the problem. Members of the II Armored Corps Test Section outlined the necessary administrative details prior to the tests. Once the test was underway, the only control exercised was that which was necessary to observe safety limits and to cause the commitment of company supports and the battalion reserve prior to taking the final objective.

Scoring

In scoring the problem, a cut sheet, carefully detailed and annotated, was prepared for each phase of the problem. The total problem was scored on a basis of 2,000 points, broken down as follows:

Occupation of Assembly Area and Reconnaissance of Routes for Night March, 175.

Night March, Occupation of Forward Assembly Area, and Preparation for Attack, 175.

Conduct of Attack-Engineer Participation, 100.

Infantry Participation, 200.

Tank Attack, 400.

Reorganization, 200.

Supply and Evacuation, 100.

Communications, 50.

The combat firing proficiency was scored on a total of 400 points. Dispersion was scored on a basis of number of targets hit out of the total number of targets, with reference made to appropriate targets for the various weapons. Accuracy score, based on the number of hits for the number of rounds fired, was figured by using the low battalion accuracy score of all battalions tested as a mean, and adding to that figure the actual accuracy score attained by each battalion.

In addition, 200 points were allotted the Chief of the Test Section, to use as a score for the general overall performance of the battalion.

Coöperation

In the tests, the II Armored Corps was not interested in actual tactical solutions. Emphasis throughout was placed on technique, control, and coördination. The biggest training value in the tests came in the execution of the necessary close coöperation between the battalion and attached units in operations, such as blowing and passage of the minefield, in the coördination of artillery and support fires, in close liaison between commanders and troops, designation of specific commanders of mixed units, in the use and control of reconnaissance elements, and in the actual practice of attacking an enemy position under conditions as close to actual combat as the exigencies of training conditions in this country will permit.

Each battalion feels that it will not make the same mistakes again, and is looking forward to another chance—a test, if there is time, or *the* test if there is not.

Battle Training at ARTC

by Colonel M. E. Jones, Cavalry

BATTLE TRAINING at the Armored Replacement Training Center is more than a casual Cook's tour of a combat area. It is, essentially, a down-to-earth application of all the lessons that are taught in the earlier days of basic training. It is theory put into practice—the field manual come to life. The instructional material issued by the Plans and Training Office is the script for this dress rehearsal for the "Big Show."

Trainees crawl beneath a hail of machine gun fire, drive buttoned-up tanks through exploding mine fields, crouch in fox holes while half-tracks rumble over their heads, sleep in pup tents, eat field rations, use the creeks for bath tubs and stay on the alert 24 hours a day lest the "German" platoon, an *ersatz* enemy, round them up and herd them into a concentration camp.

Throughout the area are scattered red-splotched, straw-stuffed dummies—"horrible" examples that graphically illustrate the fate of the soldier who makes a mistake in combat. One of the dummies lies in a coffin at the edge of the infiltration course. A crudely painted sign on the lid warns: "Here lies John Doe; he wouldn't keep low."

On this 60-yard course, trainees crawl toward three .30 caliber machine guns that weave a leaden canopy only thirty inches above the ground. Meanwhile, instructors explode firecrackers, whistle-bombs and small mines among the men who must maneuver around logs, through holes and beneath barbed wire entanglements.

The Armored Command's "fire and movement" method is practiced on the gunnery ranges. Buttoned-up tanks, advancing toward their targets one platoon at a time, just as they would in a real engagement, withhold their fire as they move forward under the protection of other tanks covering their advance.

In the close combat zone the trainees crawl through a wooded area while firing .30 caliber rifles at movable targets. When the targets are jerked from sight the soldiers start springing across a clearing and hit the ground as the targets reappear. Instructors explode mines that have been hidden in the clearing. The trainees learn that a mine is infinitely less harmful if they lie flat against the ground.

Trainees are taught to attain a remarkable degree of efficiency in such simple field expedients as extricating vehicles from mud and in floating a peep across a stream by wrapping it up in a tarpaulin.

Even when they aren't engaged in a field problem the trainees' way of life is that of the soldier on the battlefield. There are no "hours." It's an all-day, all-night schedule. The day doesn't begin conveniently at Reveille and end at Retreat—or even at Taps.

Clad in makeshift, swastika-decorated uniforms, the "Nazi Platoon" impersonates the enemy with incredible accuracy. One of the platoon's missions is to keep the trainees on the alert. Having a half-track and a few motorcycles at its disposal, the platoon makes hit-and-run raids at all hours of the day and night. It may descend on three or four soldiers who are blithely repairing a disabled vehicle, lie in ambush for an unwary patrol or attack a segment of a bivouac area. The platoon likes to make a specialty of capturing cooks and mechanics to show the trainees how much they rely on them.

Captures are made by firing blanks from rifles and machine guns over the heads of the trainees. A referee usually accompanies the platoon to settle all arguments. Trainees avoid capture by firing over the heads of the "Germans." The platoon practices amazing feats of deceit and trickery, and makes effective use of booby traps charged with small amounts of explosive. Often two or three "Nazis" create a diversion and drive the startled trainees into the platoon's main body, hidden in ambush. The platoon, made up of volunteers, speaks German, and thus the trainee becomes accustomed to common battlefield expressions.

Prisoners taken by the platoon are questioned with Prussian thoroughness, and woe to the trainee who is intimidated into divulging more than his name, rank and serial number. The captives are detained in a miniature concentration camp and lectured on their mistakes behind a formidable 16-foot barbed-wire fence.

The mere presence of the "enemy" instills in the trainees the apprehension common to most soldiers when they come in contact with a hostile unit. The platoon's ceaseless patrolling and raiding develops a rare degree of alertness and encourages the adoption of fool-proof security measures.

"The 'Nazi Platoon,' clad in Swastika-decorated uniforms impersonates the enemy with incredible accuracy."

Night Tank Firing Can Be Accurate

*by Lieutenant Elmer F. Slovacek**

LIEUTENANT, the Squadron goes into bivouac for the night here. You will outpost the area with your tank platoon plus the reconnaissance section of your troop."

There you are, a junior officer of a support troop of a mechanized cavalry regiment or squadron. What is your problem? Perhaps you reach into your dispatch case and pull out FM 100-5 to brush up on the principles of security. The colonel, of course, will be pleased to see that you carry your texts and will not mind waiting while you improve your mind.

On the other hand, having been taught that a cavalryman makes quick decisions, perhaps you immediately gather up the elements assigned to you and proceed with all speed to the same road by which you entered the area. There you dispose everything you have so that a panzer division couldn't come through. Logical, isn't it? You came that way, so the enemy is honor-bound to come the same way. And, of course, he'll never find that crooked little dirt road far over to the other end of the area.

Or, perhaps, you're neither bookish nor brilliant but simply sensible and know that your particular problem is to cover somehow, with something, any possible avenue of approach into your area. You've been given the tools with which to do it. Now, how can they best be used?

One batch of tools is the reconnaissance section. You're not too worried about it, for it works on principles that are tried and true. There are men in that section who may be dismounted to act as your observation posts. There are machine guns that may be dismounted to cover defiles, trails or roads. There are fast, light vehicles that may be used as liaison agents between your outposts. All this you learned while still at O.C.S. or at Officer's Basic. Or, perhaps you were originally in horse cavalry, and have done much the same sort of thing hundreds of times.

But now we come to our other batch of tools. You still have your own platoon—five light tanks. Surely you should be able to make good use of them. 37mm guns and machine guns galore are at your disposal. There is a road net around your area that must be covered and, in these days, you can hardly depend upon a couple of dismounted LMGs. You happily place your tanks so as to cover avenues of approach open to mechanization. To check our story so far against authority, let us look at FM 2-30—Cavalry Mechanized Reconnaissance Squadron. Paragraph 41C tells us that "For protracted halts, such as bivouacs, outposts usually are detailed from the support troop. . . . Obstacles are installed to block avenues of approach open to mechanization. Armored vehicles are placed and their weapons laid so as to defend these obstacles."

Now, however, you begin to think of a dire possibility. Suppose, during the night, your tank weapons, which were laid on one particular spot, are disturbed. That 37mm gun and co-axial machine gun would then practically be worthless to you, for they have no way to relay accurately on a target hidden by darkness. Or, perhaps there are numerous avenues of approach. Perhaps there are three or four within easy range of one tank. Must you then assign a separate tank to each avenue? Obviously you must, since there is no way for that one tank to shift to other targets during hours of darkness. This, then, is the problem of the light tank on night outpost. Yet, surely there are a number of solutions.

In our unit, we went back to what we know about the machine gun to solve the problem. For years, machine gunners have been able to do what we, in the light tank, could not—namely, make out a range card and, using it, fire on any target they had plotted, even though it was obscured by fog, smoke or darkness. What enables them to do this? They have a graduated traversing dial and a graduated elevating mechanism. Very well, the light tank has a turret which has a 360° traverse. We elevate or depress our gun by means of a handwheel which operates a worm gear in the elevating arc. Here then we have all the essentials for evolving a system that will enable us to make range cards and to fire on plotted targets at night. We have only to work out a way to measure horizontal angles with our turret and vertical angles with our elevating handwheel.

Looking at our turret, we see that the gear teeth, which are engaged by the crank, are stationary at all times. The crank simply pulls the turret around on them. Now, if we get into the gunner's seat and look down at the gear teeth to our left front, we can see a zero mark stamped directly above one of the teeth. If, when the gun is centered so that it points directly to the front, a corresponding mark is made on the turret itself, we have something by which we can establish a constant relationship between turret and hull. In other words, we have a way to "zero" the turret on the hull. All of our tanks have long been marked in this fashion in order to enable the gunner to center his turret quickly and accurately.

If, then, we start from this zero mark, we can easily graduate our turret all around in mils. It is a simple matter to measure the inside circumference of the turret, divide that figure by 64, and get the exact measurement you will need for every 100 mils. We simply marked off the turret in hundreds of mils by painting lines and figures along the inside bottom edge of the

*101st Cavalry.

turret proper. We then further subdivided each 100 mil graduation into 20 mil graduations. The 20 mil graduations are far enough apart to permit accurate interpolation. We marked the entire turret off in halves, 3,200 mils right, and 3,200 mils left. The marking proved a bit awkward around the gun-mounting and, right there, the gunner must stretch a little in order to take a reading.

The second difficulty that we encountered is one peculiar to M-5 tanks. As soon as we move the turret of an M-5 to the right, we find that a plate along the bottom left edge of the turret, hides the zero mark on the gear tooth. We overcame this difficulty by simply soldering a pointer directly down from the zero gear tooth. This enabled us to read the azimuth circle all the way around. There is, however, one important thing to remember. With the pointer soldered to the gear tooth, it is not possible to turn the turret completely around since the crank, in engaging the gear, would immediately snap the pointer off. The turret can, however, be traversed at least 3,100 mils right or left, which certainly would provide a wide enough field of fire for any occasion. As far as the M-3 tank is concerned, the pointer might be desirable but is not essential.

Having solved the problem of reading horizontal angles, we turned to that of vertical angles. This we found to be very simple. Directly in front of the elevating handwheel is a stationary bracket which supports the elevating arc. On this bracket, we soldered a pointer that came directly to the rim of the elevating handwheel. Then, running our gun up to its extreme elevation, we painted a zero mark on the handwheel, directly opposite the pointer. We found that the elevating handwheel of an M-5, when turned through one complete turn, moves the gun through a vertical angle of 15 mils. It was then a simple matter to measure the circumference of the handwheel, divide that by 15 and, using the resultant figure, mark the wheel in one mil graduations, from zero to fourteen.

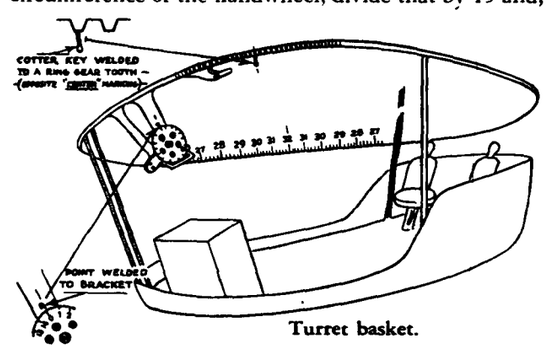
Now, in order to get the reading of a vertical angle for his range card, the gunner can simply run his gun up to its extreme elevation and then, turning slowly, count the number of complete turns plus the number of graduations that he must take in order to get on his target. At first we considered counting simply the number of complete turns plus a fraction of a turn. Graduating the handwheel insures much greater accuracy.

Data for a range card will then read something like this: "Cross Read—(800R)—(16-7M). The (800R) simply means that the gunner has moved the muzzle of his gun from center (or zero) to the right until his zero pointer corresponds with the 800 mil graduation on his turret. The (16-7M) means that he has moved his gun muzzle from its highest possible position, down 16 full turns plus seven mils on the handwheel. (Seven mils would be almost a half turn of the wheel, so that, if it were not graduated, one could say that the gunner had moved his gun down by 16½ turns of his handwheel.)

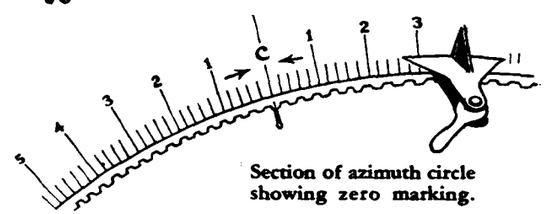
To test the accuracy of this method, after countless dry runs, we fired at a range of 200 yards on panel targets 5 feet high by 8 feet wide. Having made out a range card for these targets, we took away the gunner's periscope, set off his gun, and had him relay and fire solely by his range card data. Firing the co-axial machine gun, he very satisfactorily riddled the targets. To the best of my knowledge, there is no reason to believe that this will not work equally well at greater ranges, using the 37mm gun.

This is our solution to the problem of tanks on night outpost. Once the azimuth circle has been painted in and the handwheel graduated, there is no reason why this device cannot be used for other purposes. Estimation of range by a section of tanks, using the mil formula is one. Adjustment of fire is most certainly another. Battery fire by a tank platoon is, conceivably, another.

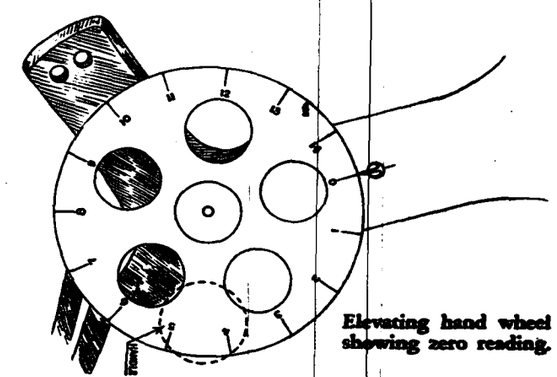
Believing that the results more than justify the small amount of effort expended, I submit this suggestion to tank platoon leaders who may often have thought, as I have, "How in blazes can my tanks fire at night?"



Turret basket.



Section of azimuth circle showing zero marking.



Elevating hand wheel showing zero reading.

Motor March Training

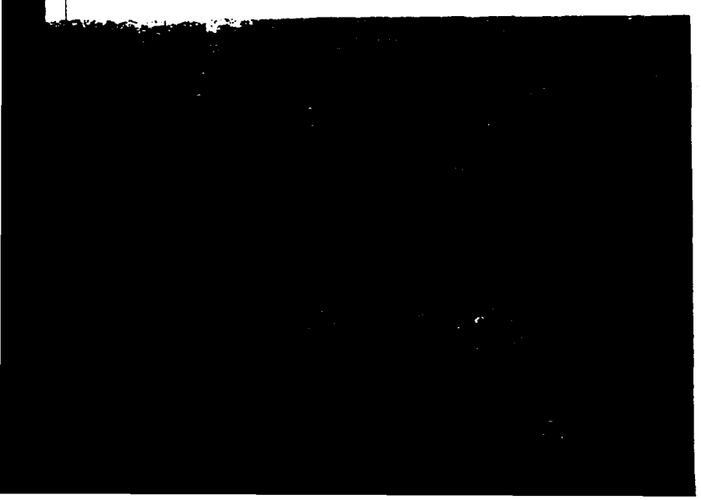
*by Lieutenant Andrew S. Robson**

THE problem on march technique, given by the tactics department of the Tank Destroyer School, is designed to give officer-candidates practical experience in taking command in a day and night march during an assumed combat situation.

The tactical march is made as realistic as possible by using a TD battalion comprising three tank destroyer companies, two reconnaissance platoons, a pioneer platoon, and a medical unit, all commanded by students. The exercise includes the organization of the companies at the initial point, reconnaissance for the march halt, bivouac, and position in readiness, daylight marches, and occupation of concealed positions. The evening meal is cooked on the march, and messing takes place in concealed positions. In the final phase, a warning order is issued and plans made for a night march and the occupation of a position in readiness, without lights.

The daylight phases of the march initiate the candidates into the difficulties of march control (with emphasis on SM). Special attention is also paid to the occupation of march halt and bivouac positions, route reconnaissance, the concealment and dispersion of vehicles, and appropriate security measures, including the digging of foxholes. These points are especially observed by tactics department officers who accompany student commanders. The march and concealment are also observed from the air by an officer in a light observation plane. Each phase of the march is critiqued to smooth out these basic march requirements before the battalion embarks upon the final blackout march.

*Tank Destroyer School.



Three destroyer companies and two reconnaissance platoons are in a concealed bivouac position in this aerial photo, taken at the conclusion of the second phase. Marked improvement in concealment and dispersion is always noticeable.

Prior to leaving the initial point at 1300, maps are issued, and a general combat situation is assumed. The size and location of fictitious attacking enemy forces is indicated. The battalion is then in mobile reserve at the initial point at Camp Hood, awaiting orders as to the first phase of their movement. The student commanders are given the first march order: "Move your unit into a concealed halt position at Point D (indicated on your map). The tail of the battalion column must clear the road by 1600."

During the completion of the first phase, special attention is paid to the more basic details of march technique. Forming the battalion, dispatching the reconnaissance elements, passing the IP, traffic control, and the use of SM are closely checked. Air observation aids in the control and criticism of the march. After occupying Point D, a critique is held and further orders are given.

The second special situation is an order from the group commander to move the unit by 1800 to the concealed bivouac position shown on their map. The commanding officer also must prepare a plan to occupy a concealed position in readiness at given coördinates between 2000 and 2200. This entails reconnaissance, security, and movement to the bivouac position, and daylight reconnaissance to the position in readiness.

The battalion is now moved from the march halt position into the bivouac position. The companies are dispatched according to a march table. Immediately upon arriving at the bivouac position, a detail is dispatched to reconnoiter the route to the position in readiness. Observing proper sanitation and dispersion measures, the battalion messes at the bivouac position. The students then gather for the critique and explanation of the third phase—the night occupation of a position in readiness.

At 1800 the battalion commander receives information from division headquarters that at 1730 approximately 80 enemy armored vehicles went into bivouac south of the Ivy Mountains, some five miles from the position in readiness. He is ordered to mine Ivy Gap, a vulnerable point in the mountain range, and to establish a march outpost there to prevent the enemy from forcing the gap during the night. This mining and outpost detail is to be limited to four vehicles and must complete its mission by 2130. Blackout restrictions are ordered.

With the explanation completed, the battle situation

Imprudent reconnaissance personnel attempt to remove a road block during the night march, without checking it for mines and booby traps. Dynamite charges, harmless but startling, show them their error.

is assumed realistically. Lights and smoking are prohibited, talking is curbed to a minimum, radio silence is ordered for all but the battalion reconnaissance net. The men move carefully through the darkness to their vehicles. Platoons and companies are formed and the battalion is moved out in the indicated order with reconnaissance, a pioneer detachment, and the traffic control party preceding the advance guard. The pioneer and reconnaissance groups are ordered to secure the position in readiness and continue on to mine Ivy Gap. The TCP marks the route and posts one guide for each platoon at the entrance to the position. The guides are equipped with lights, blacked out with colored pliofilm, in which the company designation symbol is cut. The cut-out symbol is covered with pliofilm of another color, so that no white light will escape.

During the third phase, it is evident that student commanders have more confidence and are more conversant with their duties as a result of the two daylight phases. With regard to judging time, passing the IP, and column control, the night march is technically much smoother, despite increased difficulties. During the night phase, special attention is paid to the placing of route markers, the various route marking expedients, and the use of the countersign and password. Emphasis is also placed on moving into the position in readiness, the use of dismounted guides for vehicles moving in the area, dispersion of the vehicles, and the use of security and outposts.

The roads selected for the march are barely discernible in daylight, usually lead through woods, open fields, creek beds, past bridges which must be inspected, and are broken by cross-roads and intersections. This route is selected purposely. These difficulties are increased by parties of instructors and enlisted assistants who ably simulate enemy patrols and harass the column.

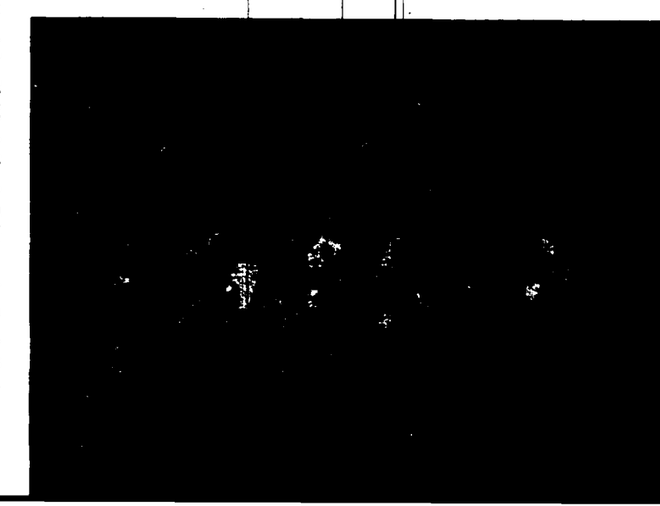
The "enemy" establishes road blocks, many of which are mined with light charges. Students who carelessly remove the blocks receive a thorough object lesson in caution. Road markers are captured and enemy substitutes, equipped with countersign and password, mislead platoons and necessitate an increase in the vigilance of the student officers. The individual platoons, usually traveling five minutes apart, are often attacked by enemy patrols at a favorable spot. Firecrackers are tossed into the vehicles, and flares and light dynamite grenades add realism. The platoon is forced to halt, dismount, and deploy in an attempt to round up the raiders.

The most realistic and effective ambush is staged at Ivy Gap when the combined pioneer and reconnaissance detail of four vehicles arrives to mine the area and to establish an outpost. An enemy patrol has preceded the detail and prepared a reception of flares, firecrackers, and dynamite grenades. In many cases, the vehicles barge imprudently into enemy hands. After the excitement is over, the instructor in charge of the ambush explains to the students how the ambush could have been avoided.

Meanwhile, back of the position in readiness, the battalion has moved in and taken cover. Guards have been posted and security measures taken. As soon as this is completed, the students gather for the final critique, held by firelight. The problem is concluded with an administrative march back to the camp area.

With an efficient motor march technique, especially under blackout conditions, becoming an increasingly important factor in successful combat, the tactical march exercise assumes an important rôle in the school curriculum. The instructor in charge of the exercise continually devises changes in route, situation, and enemy action to provide a more practical and realistic training.

The final critique is held following the night occupation of the position in readiness. Students check their procedure and note errors.



How to Prepare the 2½-Ton Cargo Truck As a Kitchen Vehicle

*by 1st Lieutenant Arthur Paddock, Infantry**

THE truck, cargo, 2½-ton 6 x 6, is one of the most versatile vehicles in the service and never more so than as a rolling kitchen. No War Department or Army Ground Force directives appertaining specifically the preparation of the 2½-ton cargo truck as camp or company is relatively simple if you are guided by the painful yet profitable experience of Lieutenant "A."

Ordinary tools and materials available in any camp or company are used and the ordinary soldier with a [illegible] do the work.

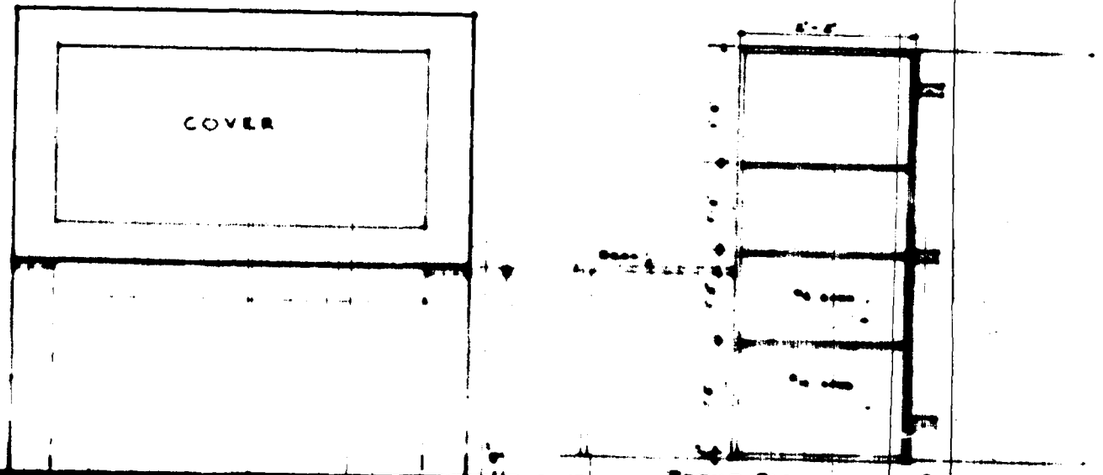
[illegible] A hole drilled through

ration is issued, dictates use of a refrigerator. SPE funds may not be used to buy refrigerators, which on the civilian market are generally unobtainable anyway. Safe drink companies and post exchanges are usually reluctant to part with any of their patented boxes.

Perhaps the best plan is to build one yourself. This can be done with scrap lumber. Requirements are:

- 4 [illegible] pieces
- 2 [illegible] pieces
- [illegible]
- Hinges and [illegible]

The door, or wall, as shown in sketch 4, can be



Night Tank Firing Can Be Accurate

*by Lieutenant Elmer F. Slovacek**

"LIEUTENANT, the Squadron goes into bivouac for the night here. You will outpost the area with your tank platoon plus the reconnaissance section of your troop."

There you are, a junior officer of a support troop of a mechanized cavalry regiment or squadron. What is your problem? Perhaps you reach into your dispatch case and pull out FM 100-5 to brush up on the principles of security. The colonel, of course, will be pleased to see that you carry your texts and will not mind waiting while you improve your mind.

On the other hand, having been taught that a cavalryman makes quick decisions, perhaps you immediately gather up the elements assigned to you and proceed with all speed to the same road by which you entered the area. There you dispose everything you have so that a panzer division couldn't come through. Logical, isn't it? You came that way, so the enemy is honor-bound to come the same way. And, of course, he'll never find that crooked little dirt road far over to the other end of the area.

Or, perhaps, you're neither bookish nor brilliant but simply sensible and know that your particular problem is to cover somehow, with something, any possible avenue of approach into your area. You've been given the tools with which to do it. Now, how can they best be used?

One batch of tools is the reconnaissance section. You're not too worried about it, for it works on principles that are tried and true. There are men in that section who may be dismounted to act as your observation posts. There are machine guns that may be dismounted to cover defiles, trails or roads. There are fast, light vehicles that may be used as liaison agents between your outposts. All this you learned while still at O.C.S. or at Officer's Basic. Or, perhaps you were originally in horse cavalry, and have done much the same sort of thing hundreds of times.

But now we come to our other batch of tools. You still have your own platoon—five light tanks. Surely you should be able to make good use of them. 37mm guns and machine guns galore are at your disposal. There is a road net around your area that must be covered and, in these days, you can hardly depend upon a couple of dismounted LMGs. You happily place your tanks so as to cover avenues of approach open to mechanization. To check our story so far against authority, let us look at FM 2-30—Cavalry Mechanized Reconnaissance Squadron. Paragraph 41C tells us that "For protracted halts, such as bivouacs, outposts usually are detailed from the support troop. . . . Obstacles are installed to block avenues of approach open to mechanization. Armored vehicles are placed and their weapons laid so as to defend these obstacles."

Now, however, you begin to think of a dire possibility. Suppose, during the night, your tank weapons, which were laid on one particular spot, are disturbed. That 37mm gun and co-axial machine gun would then practically be worthless to you, for they have no way to relay accurately on a target hidden by darkness. Or, perhaps there are numerous avenues of approach. Perhaps there are three or four within easy range of one tank. Must you then assign a separate tank to each avenue? Obviously you must, since there is no way for that one tank to shift to other targets during hours of darkness. This, then, is the problem of the light tank on night outpost. Yet, surely there are a number of solutions.

In our unit, we went back to what we know about the machine gun to solve the problem. For years, machine gunners have been able to do what we, in the light tank, could not—namely, make out a range card and, using it, fire on any target they had plotted, even though it was obscured by fog, smoke or darkness. What enables them to do this? They have a graduated traversing dial and a graduated elevating mechanism. Very well, the light tank has a turret which has a 360° traverse. We elevate or depress our gun by means of a handwheel which operates a worm gear in the elevating arc. Here then we have all the essentials for evolving a system that will enable us to make range cards and to fire on plotted targets at night. We have only to work out a way to measure horizontal angles with our turret and vertical angles with our elevating handwheel.

Looking at our turret, we see that the gear teeth, which are engaged by the crank, are stationary at all times. The crank simply pulls the turret around on them. Now, if we get into the gunner's seat and look down at the gear teeth to our left front, we can see a zero mark stamped directly above one of the teeth. If, when the gun is centered so that it points directly to the front, a corresponding mark is made on the turret itself, we have something by which we can establish a constant relationship between turret and hull. In other words, we have a way to "zero" the turret on the hull. All of our tanks have long been marked in this fashion in order to enable the gunner to center his turret quickly and accurately.

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*101st Cavalry.

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The second difficulty that we encountered is one peculiar to M-5 tanks. As soon as we move the turret of an M-5 to the right, we find that a plate along the bottom left edge of the turret, hides the zero mark on the gear tooth. We overcame this difficulty by simply soldering a pointer directly down from the zero gear tooth. This enabled us to read the azimuth circle all the way around. There is, however, one important thing to remember. With the pointer soldered to the gear tooth, it is not possible to turn the turret completely around since the crank, in engaging the gear, would immediately snap the pointer off. The turret can, however, be traversed at least 3,100 mils right or left, which certainly would provide a wide enough field of fire for any occasion. As far as the M-3 tank is concerned, the pointer might be desirable but is not essential.

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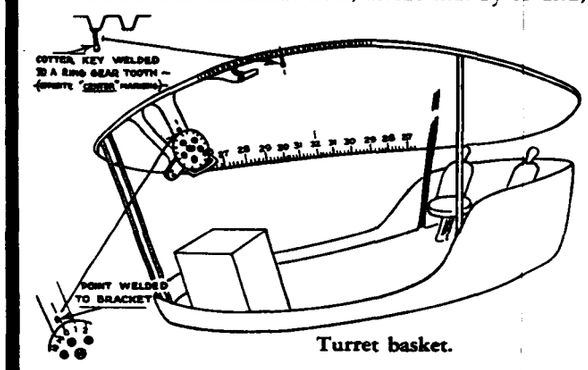

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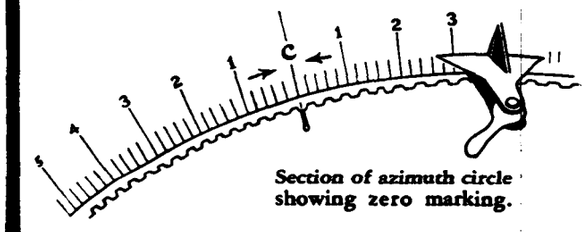

Section of azimuth circle showing zero marking.

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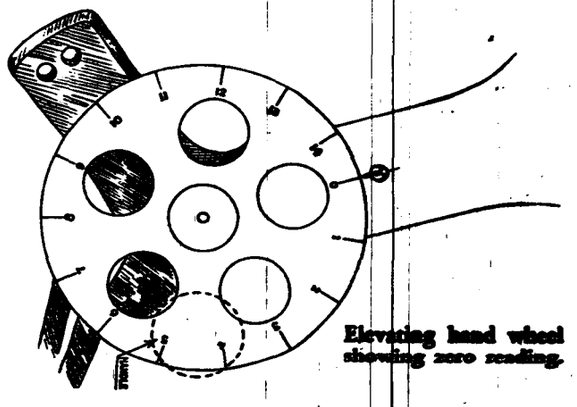

Elevating hand wheel showing zero reading.

Motor March Training

*by Lieutenant Andrew S. Robson**

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The daylight phases of the march initiate the candidates into the difficulties of march control (with emphasis on SM). Special attention is also paid to the occupation of march halt and bivouac positions, route reconnaissance, the concealment and dispersion of vehicles, and appropriate security measures, including the digging of foxholes. These points are especially observed by tactics department officers who accompany student commanders. The march and concealment are also observed from the air by an officer in a light observation plane. Each phase of the march is critiqued to smooth out these basic march requirements before the battalion embarks upon the final blackout march.

Prior to leaving the initial point at 1300, maps are issued, and a general combat situation is assumed. The size and location of fictitious attacking enemy forces are indicated. The battalion is then in mobile reserve at the initial point at Camp Hood, awaiting orders as to the first phase of their movement. The student commanders are given the first march order: "Move your unit into a concealed halt position at Point D (indicated on your map). The tail of the battalion column must clear the road by 1600."

During the completion of the first phase, special attention is paid to the more basic details of march technique. Forming the battalion, dispatching the reconnaissance elements, passing the IP, traffic control, and the use of SM are closely checked. Air observation aids in the control and criticism of the march. After occupying Point D, a critique is held and further orders are given.

The second special situation is an order from the group commander to move the unit by 1800 to the concealed bivouac position shown on their map. The commanding officer also must prepare a plan to occupy a concealed position in readiness at given coördinates between 2000 and 2200. This entails reconnaissance, security, and movement to the bivouac position, and daylight reconnaissance to the position in readiness.

The battalion is now moved from the march halt position into the bivouac position. The companies are dispatched according to a march table. Immediately upon arriving at the bivouac position, a detail is dispatched to reconnoiter the route to the position in readiness. Observing proper sanitation and dispersion measures, the battalion messes at the bivouac position. The students then gather for the critique and explanation of the final phase—the night occupation of a position in readiness.

At 1800 the battalion commander receives information from division headquarters that at 1730 approximately 80 enemy armored vehicles went into bivouac south of the Ivy Mountains, some five miles from the position in readiness. He is ordered to mine Ivy Gap, a vulnerable point in the mountain range, and to establish a march outpost there to prevent the enemy from forcing the gap during the night. This mining and outpost detail is to be limited to four vehicles and must complete its mission by 2130. Blackout restrictions are ordered.

With the explanation completed, the battle situation is assumed realistically. Lights and smoking are prohibited, talking is curbed to a minimum, radio silence is ordered for all but the battalion reconnaissance net. The men move carefully through the darkness to their vehicles. Platoons and companies are formed and the battalion is moved out in the indicated order with reconnaissance, a pioneer detachment, and the traffic control party preceding the advance guard. The pioneer and reconnaissance groups are ordered to secure the position in readiness and continue on to mine Ivy Gap. The TCP marks the route and posts one guide for each platoon at the entrance to the position. The guides are equipped with lights, blacked out with colored pliofilm, in which the company designation symbol is cut. The cut-out symbol is covered with pliofilm of another color, so that no white light will escape.

During the third phase, it is evident that student commanders have more confidence and are more conversant with their duties as a result of the two daylight phases. With regard to judging time, passing the IP, and column control, the night march is technically much smoother, despite increased difficulties. During the night phase, special attention is paid to the placing of route markers, the various route marking expedients, and the use of the countersign and password. Emphasis is also placed on moving into the position in readiness, the use of dismounted guides for vehicles moving in the area, dispersion of the vehicles, and the use of security and outposts.

The roads selected for the march are barely discernible in daylight, usually lead through woods, open fields, creek beds, past bridges which must be inspected, and are broken by cross-roads and intersections. This route is selected purposely. These difficulties are increased by parties of instructors and enlisted assistants who ably simulate enemy patrols and harass the column.

The "enemy" establishes road blocks, many of which are mined with light charges. Students who carelessly remove the blocks receive a thorough object lesson in caution. Road markers are captured and enemy substitutes, equipped with countersign and password, mislead platoons and necessitate an increase in the vigilance of the student officers. The individual platoons, usually traveling five minutes apart, are often attacked by enemy patrols at a favorable spot. Firecrackers are tossed into the vehicles, and flares and light dynamite grenades add realism. The platoon is forced to halt, dismount, and deploy in an attempt to round up the raiders.

The most realistic and effective ambush is staged at Ivy Gap when the combined pioneer and reconnaissance detail of four vehicles arrives to mine the area and to establish an outpost. An enemy patrol has preceded the detail and prepared a reception of flares, firecrackers, and dynamite grenades. In many cases, the vehicles barge imprudently into enemy hands. After the excitement is over, the instructor in charge of the ambush explains to the students how the ambush could have been avoided.

Meanwhile, back of the position in readiness, the battalion has moved in and taken cover. Guards have been posted and security measures taken. As soon as this is completed, the students gather for the final critique, held by firelight. The problem is concluded with an administrative march back to the camp area.

With an efficient motor march technique, especially under blackout conditions, becoming an increasingly important factor in successful combat, the tactical march exercise assumes an important role in the school curriculum. The instructor in charge of the exercise continually devises changes in route, situation, and enemy action to provide a more practical and realistic training.

*Tank Destroyer School.

Imprudent reconnaissance personnel attempt to remove a road block during the night march, without checking it for mines and booby traps. Dynamite charges, harmless but startling, show them their error.

Three destroyer companies and two reconnaissance platoons are in a concealed bivouac position in this aerial photo, taken at the conclusion of the second phase. Marked improvement in concealment and dispersion is always noticeable.

The final critique is held following the night occupation of the position in readiness. Students check their procedure and note errors.

How to Prepare the 2½-Ton Cargo Truck As a Kitchen Vehicle

*by 1st Lieutenant Arthur Paddock, Infantry**

THE truck, cargo, 2½-ton 6 x 6, is one of the most versatile vehicles in the service and never more so than as a rolling kitchen. No War Department or Army Ground Force directives appertaining specifically, the preparation of the 2½-ton cargo truck in troop or company is relatively simple if you are guided by the painful yet profitable experience of Lieutenant "A."

Ordinary tools and materials available in any troop or company are used, and the ordinary soldier with a smattering of hammer-saw-and-plane experience can do the work.

First, raise and secure bows. A hole drilled through each bow to accommodate a rivet or sawed-off nail will suffice for securing them.

Remove seats and secure on outside of body. This is easily accomplished by simply turning the seat clamps around. (See sketch 1)

Install the water tank against the cab. (See sketch 2). A convenient size is 14" x 52" x 79", which holds 292 gallons of water. Its length is such that the tank fits tightly in place and is secured by means of brackets welded to the tank to fit over the truck body. Lieutenant A used a third-class boiler plate obtained from a civilian junk dealer, but any substantial metal will do the job. An outlet can be installed in either or both ends, by means of a short ¾" pipe nipple and faucet to fit. This will necessitate drilling a ⅞" hole through the truck body. To obviate this necessity, an outlet may be obtained at the tailgate by extending the nipple along the bed of the truck body. The tank is filled through the gate at the top, as shown.

Perishability of foods, especially when the class A ration is issued, dictates use of a refrigerator. SFE funds may not be used to buy refrigerators, which on the civilian market are generally unobtainable anyway. Soft drink companies and post exchanges are usually reluctant to part with any of their patented boxes.

Perhaps the best plan is to build one yourself. This can be done with scrap lumber. Requirements are:

4 4"x4"x32" pieces
8 2"x4"x41" pieces
Sufficient ⅞" board to cover frame.
Hinges and nails.

The dead air wall, as shown in sketch 3, can be stuffed with sawdust, peanut shellings, cornstalks, or other non-conductor material. It should be dampened when filled. The box should be lined with zinc or galvanized iron and drained by means of a ½" pipe nipple soldered through one corner.

Ration B carried in the vehicle varies as to quantity. Most of it is in canned form, and must be stored, along with bread, in a secure chest. A practical chest is illustrated in Sketch 4. It can be built from scrap lumber. Note in the sketch how the shelves are spaced to accommodate No. 10, No. 6 and No. 2 cans. Note in sketches 4 and 5 that the position of the chest in the floor plan necessitates hanging the door from the right. The chest is fastened to the vehicle by means of clamps screwed or nailed to the chest and secured to the body.

Assuming that meals will have to be prepared on the move, and with work table space limited, the kitchen crew must be provided with "knock-down" work tables. One of these is shown in Sketch 4. Both table top and leg are hinged so that when the table top is raised to position the leg falls to the floor.

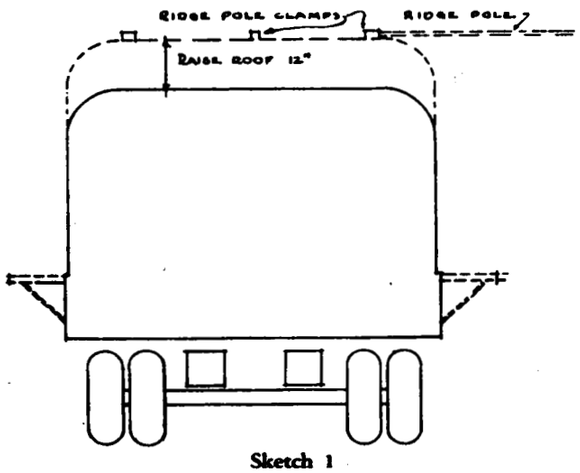
If the kitchen unit is halted for long periods, the crew may wish to prepare meals dismounted. An auxiliary work table may be stowed beneath the truck bed between frame and bed. This table, also built of scrap lumber, is of 2"x12"x14' stock cleated together with scrap iron and screws.

The kitchen fly on the march can be carried atop the cab on a rack equipped with straps or ropes for securing purposes. Ordinary suction cups affixed to the rack will hold it to the cab roof.

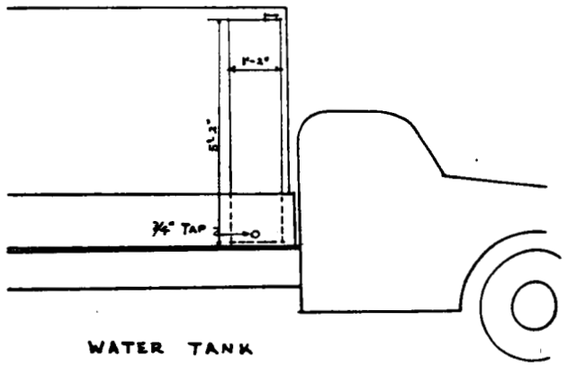
When halted, the fly is put up with speed by means of one upright and one ridge pole. The ridge pole is held in place at the truck end by a stove bolt secured to the bow with five inches exposed to the pole.

To install the M1937 Field Range battery properly

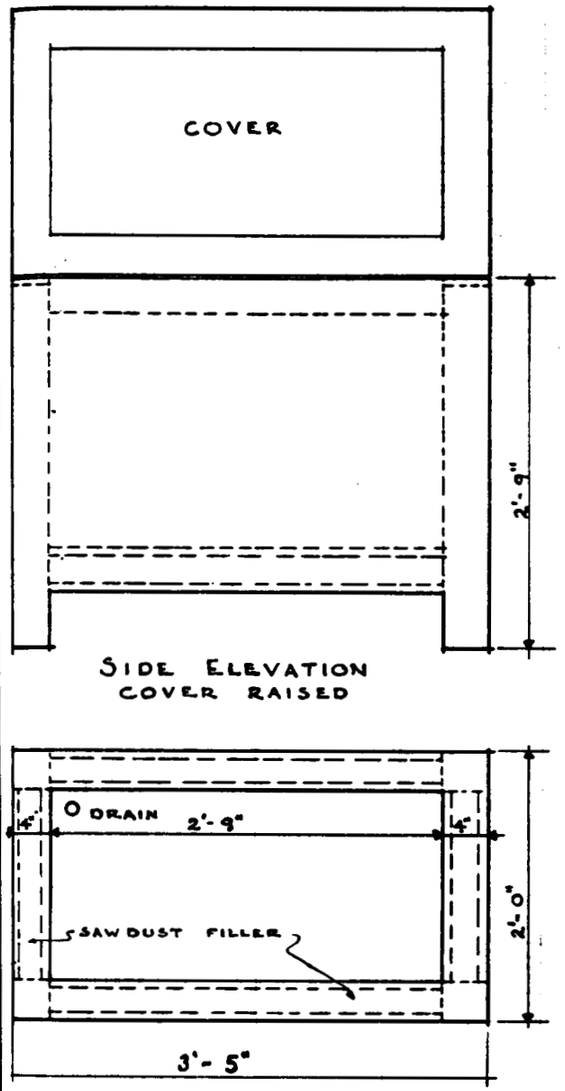
*Armored Force School.



Sketch 1

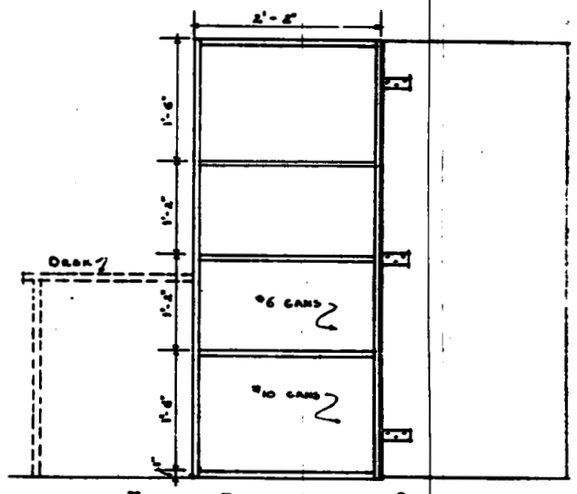


Sketch 2



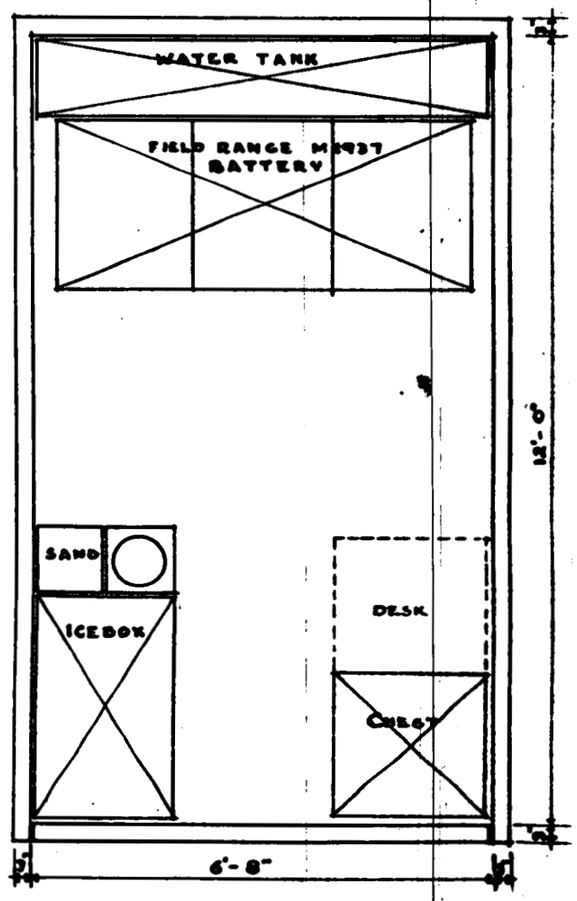
ICE BOX

Sketch 3



FRONT ELEVATION OF CHEST

Sketch 4



PLAN OF KITCHEN TRUCK

Sketch 5

requires that holes be drilled through the body bed and stove bolts placed therein in order to secure the battery.

Equipment issued for use in preparation of food may be stowed as experience directs. The five gallon reserve fuel can can be stowed snug in a partitioned box, with sand (for fire and stove grease) in the other half, as shown in Sketch 5.

Note from Sketch 5 that sufficient room is available for three soldiers of the kitchen crew to work comfortably.

The advantages of such an arrangement, as Lieutenant "A" suggests, are obvious.

1. Meals can be prepared *and served* while the kitchen crew is mounted. This is an advantage when the weather is wet or cold.

2. By preparing and serving food as a *mounted* crew, the kitchen section, if the tactical situation demands, can displace to another location without needless loss of time.

3. Meals can be prepared and served while on the move. Hot food can be placed in marmite cans and dispatched to elements of the column ahead of or behind the kitchen truck by means of a ¼-ton truck.

4. Rules of sanitation as set forth in FM 21-10 are invoked.

Practice in the field has proved this solution to the task of preparing the 2½-ton truck for kitchen service to be a successful one. In large measure it solves the problem of how to keep the kitchen up with forward elements by modernizing kitchen vehicle procedure.

Army Air Forces School of Applied Tactics

*by Colonel Frederick R. Pitts, Cavalry**

OUR entry into the present war found the Army Air Forces without a service school comparable to those operated by the Armored Force, Cavalry, Field Artillery, and Infantry. The Air Corps Tactical School at Maxwell Field, Montgomery, Alabama, had been disbanded in the latter part of 1940, its staff and instructors scattered far and wide, and its buildings and equipment employed for other purposes. The need for a tactical school, therefore, was immediately felt and plans were made to provide a new school. The result of this planning was the Army Air Forces School of Applied Tactics established November 12, 1942.

Orlando, a city of some 31 lakes, located in north central Florida was selected as the site for the school. The Fighter School already in operation at Fort Meyers, Florida, was transferred to Orlando and was the first department to offer instruction. Since then the school has developed along the lines shown on Chart No. 1. It now includes the academic departments of air defense, bombardment, air support and air service with a demonstration air force, paralleling the commands of a typical air force. The latter has its headquarters at Orlando with tactical units operating from ten airfields throughout the State of Florida.

AAFSAT, as it is familiarly known, officially opened April 5, 1943. Although a number of special courses are offered, the principal course is given to key officers and enlisted men of newly activated groups and squadrons. This course, lasting for a period of four weeks, is given by all four departments to selected air defense, bombardment, air support and air service personnel.

Recently another course has been added to the curriculum of the School of Applied Tactics, with its selection as a component of the new Army and Navy Staff College, together with the Command and General Staff School at Fort Leavenworth, Kans., the Naval War College at Newport, R. I. and Georgetown University in Washington, D. C. Operations of this college began in June as an agency of the joint chiefs of staff to train senior officers of the Army, Navy and Marine Corps in all phases of joint or coördinated operations involving land, sea and air. Approximately one month out of a total of four will be spent by these officers at Orlando undergoing instruction in air subjects.

In addition to the Army-Navy course and the courses offered by the Air Defense Department to antiaircraft artillery officers, the Air Support Department is considered of special interest to ground force officers.

*On duty with Air Support Branch, Office Assistant Chief of Air Staff, Operations, Commitments & Requirements, Headquarters Army Air Forces.

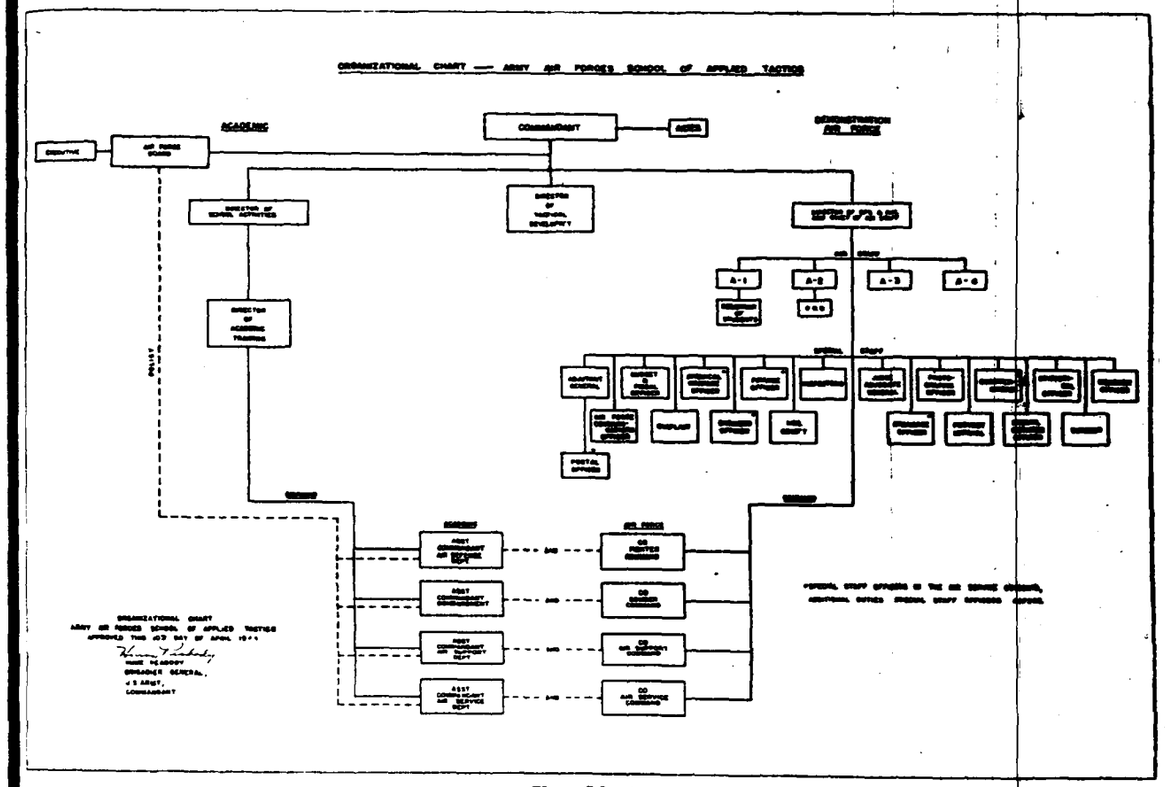


Chart No. 1

The Air Support Department is headed by an Assistant Commandant, Colonel Morton H. McKinnon. It consists of two sub-departments, namely Academic and Tactical, organized as shown on Chart No. 2. The present course is divided into two, two-week periods. The first two weeks are spent at Orlando undergoing instruction given by the school and the department. The last two weeks are spent at the three satellite fields, i.e. Gainesville, Keystone Heights and Dunnellon, Florida, undergoing instruction in the field with the tactical units under the control of the Air Support Department.

At Orlando, students of all departments are given a series of Air Force orientation lectures. Air support students then receive a brief orientation on air support subjects after which they are divided into four main groups, according to the type unit to which they are assigned. Instruction is given by means of conferences, lectures, plays, demonstrations, map exercises and synthetic training devices.

At the satellite fields, students, still divided into four groups, receive instruction during the third week under direct control of their respective type units. This allows squadrons and groups to develop as a team and progress to the final week of tactical instruction under the direct supervision of the Tactical Sub-department, or Headquarters. During this final week, the Tactical Headquarters at Gainesville constitutes an Air Support Command and conducts air support operations employing the tactical units in attacks against an airdrome and supply installations and in close support of ground units. The latter operation, carried on in coöperation with ground units in training at Camp Blanding, Florida, is expected to develop into a proving ground to test the efficacy of latest air support methods of employment on close support missions.

Throughout the course emphasis is placed on tactics as applied to the individual and units, since students have completed their flying and technical training prior to coming to the school. All instruction, both at Orlando and in the field, is designed to teach the current methods of employing air support units in indirect and direct support of ground units. Because of the difficulty of coöperation between air and ground units in direct, or close support, considerable stress is placed on this phase of operation. In addition, new air support doctrine, gained as a result of lessons from the combat theaters, is interjected into the course as rapidly as possible. The soundness of the present doctrine was proven in the later stages of the recently concluded successful operations in Tunisia. This doctrine consists of three phases of tactical operations as follows:

Phase 1: Counterair force operations, or neutralization of enemy aircraft and airdrome installations, to eliminate the enemy air force and to gain air superiority.

Phase 2: Isolation of the battlefield.

Phase 3: Direct or close support of ground forces to assist their advance.

Although still in the planning stage, of interest to future students is a projected synthetic training device. This device will consist of a large scale relief map of northern Florida designed to show visually, by means of models, the organization, composition and employment of major ground forces and air support units. Movement of these models, both individually and collectively, will be possible through an elaborate electrical control system; colored lights will show the channels of communication used. Norman Bel Geddes has been engaged to plan and construct this device which will be 50 feet by 50 feet and is to be housed in a large room surrounded by a balcony from which student personnel may observe. The chief advantage from an instructional point of view is that students can obtain an overall picture of air support operations, whereas in actual operations they are limited to what they can obtain, generally, in the air or at one locality.

The Air Support Department is at present preparing a course for senior air and ground commanders and staff officers. This course, to be known as the Senior Officers' Coöperation Course, is scheduled for the near future and will last six days. It is designed as an indoctrination course for those officers of higher headquarters who are chiefly concerned with air-ground coöperation, but who cannot be spared to take the longer college course.

Except for the courses cited, no other provisions have, as yet, been made for ground force officers to take the course given by the Air Support Department. It is expected, however, that an appropriate course will soon be established for such personnel. Whether it will be a modification of the present course for key personnel or an expansion of the course for senior officers has not yet been decided. That effective air-ground coöperation depends a great deal on the mutual understanding of each other's capabilities and limitations by both air and ground officers has long been recognized. The establishment of a joint Army and Navy Staff College is a significant move toward closer coördination of Army, Air and Navy high commands. The Senior Officers' Coöperation Course will be a further step in closer air-ground coöperation. It is hoped that the next step will extend this education or indoctrination over a wider field.

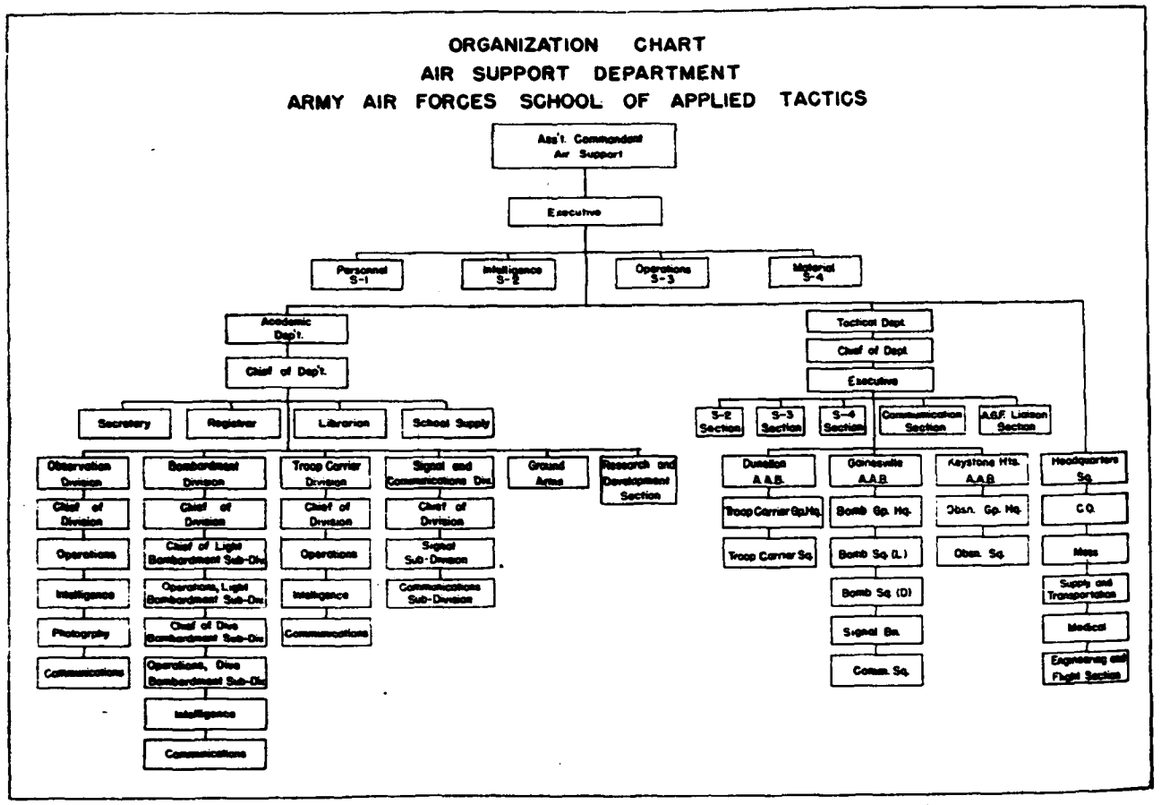


Chart No. 2

How Britain is Choosing New Leaders

by John Cashel

IN rating basic intelligence, irrespective of social standards, as the first quality in finding the right or better job for man or woman, the British Army is making a truly democratic effort that offers equal opportunity to all. This experiment could be called *Scientific* Selection of Personnel, but it is modestly designated simply as Selection of Personnel. Adaptable to many walks of life, its development will help in the stern days to come in making the most of the native ability of Britain's forty-five million population.

Not long ago, men seeking a commission would appear for a brief ten minutes before an old-style board, which on that short acquaintance would judge them fit or unfit for Officers' Cadet Training Unit.

Now three eleven-hour days, crowded with searching subjective and objective tests of men living in closest contact with their examiners, determine the ability of sixty men (the twice-weekly intake) to command.

As the candidates gather in the mess, the board's president, a progressive-minded Staff College "sapper" colonel still in his mid-forties, at once puts everyone at ease. "We'll know you here by numbers, not names," he says. "There'll be no ranks among you. You'll all be treated as officers. We'll all take meals together. We've no Gestapo here; no microphones in your rooms! So just be yourselves.

"We've no 'old school tie' bias. Every man has the same chance. Public and elementary schoolboys each have something the other doesn't have. We want to find out what it is so that we can help you."

The board consists of the president, his deputy (a colonel who devised some of this board's tests), three military testing officers, the medical psychiatrists, a psychologist, and a visiting member (a commander from a field unit). The final pass or fail, and grading, is based on their several opinions, all independently formed.

The president and deputy each take thirty candidates under their wing. Each military testing officer takes twenty, split into groups of ten. Where the psychiatrist's view is considered helpful, candidates are referred to him.

The Situations Test

The first series of tests are the outdoor military problems, which put *basic intelligence* as the first of the essential qualities of leadership—a capacity to think and observe quickly.

At a typical candidates' class the M.T.O. began by saying, "*Spontaneous situations* first. I want any one of you to imagine a military situation you ten men can tackle, make a plan, put it into action."

In forty-one seconds the first leader had out of the blue invented an enemy attack, devised his plan to meet it, and was shouting his orders. Taking command, he put his plan into operation as if doing the real thing on the battlefield. Seven men in turn devised situations and plans and enacted them. Sometimes, varying or changing a plan, someone else took over from the original leader.

Three men hung back. One was so strung-up that his face twitched nervously. An incident was devised to help them. Five men were designated "looters," and the other five told to arrest them. A bit of rough-and-tumble horseplay resulted, with everyone tussling and rolling in the mud, laughing and relaxing. The effect was magical. The nervous man immediately led with the next situation, as then did another laggard.

Imagined by the men themselves, these unset situations are of endless variety. Constantly some plan is unsound, something goes wrong, something is forgotten. Whose quick intelligence spots it?

This method, by which England has found new officers to re-build her army since Dunkirk, can be a formula, not only for the selection of commissioned officers, but for the selection and promotion of non-commissioned personnel.

One by one are revealed flashes of leadership and command, imagination, common sense, planning ability, strength of personality, enthusiasm, alertness. If a future candidate does not have these qualities, it will not help him if he learns of the tests in detail from his pals. He will get his mind made up and fumble on finding that things are not working out the way he planned. Fluidity is the essence of these tests. Basic tests are much the same; but others develop individually as a man's abilities and weaknesses show themselves.

Next, each group is confronted with *practical situations*. With the aid of a few "props" such as might be found on the battlefield, such obstacles as a barbed electric fence and a twelve-feet-wide minefield are crossed without being touched.

Although some physical fitness is demanded, every-

where the probe is for the sharp eye of native intelligence. The probe demands speed, but not the perilous haste of impetuosity. Seconds matter, but the extra one well spent in thought or observation is not lost in the end. "Leap fast, but look before you leap!" is the best motto.

In one such probe in the semi-controlled *narrative situation*—a Commando raid on a radio station in search of a box containing a secret radio device—it was the *thinkers* who got the marks.

The same was true in an *individual situation*, where a man suddenly faced simultaneously with an enemy patrol and a burning house had to act swiftly before the enemy was on top of him.

Going over an ingenuity course (crossing a broken bridge, scenting a track, negotiating another minefield) calls for several qualities other than "from-the-book" knowledge. The same is true with an original tug-of-war, where a rope is a "front line," with two ten-men teams facing each other from either side of it. Each team concocts a plan, and by frontal and flank attacks or encirclement, push or pull the rope forward to force it over an object representing a town in the other's rear.

The Army's new examiners (who themselves are appointed on similar principles) are down to bedrock intelligence in these basic tests. The incapacity of many men to grasp their novelty is itself self-revealing.

The tests end with a scene probably unique till recently in military annals. The ten men, who are all able to observe everyone else's performance, sit down in their sleeping hut and secretly ballot for the candidate they would most willingly follow if they were in a tight corner surrounded by the enemy, and had to fight their way out or had a chance of getting away by skill and cunning. This double test of judgment—the highest aggregate vote giving the leader—is significant in showing what the men themselves think of each other; but it does not affect a candidate's chances.

The Psychologist's Job

The second day the candidates are given the psychologist's reasoning and basic intelligence tests, and personality pointers. Singly these pointers seem meaningless, but they add up to a composite picture of certain qualities, good or bad, in a leader.

Similar self-revelation is sought when lantern slides, each of a "problem picture," are flashed on a screen. Candidates have to imagine and write down what led up to the picture, what the characters thought and felt, what was the sequel.

Next they write a brief appreciation and depreciation of themselves—what their best friend and worst critic might say of them. All are high-speed tests—their value lying in a quick, unstudied response.

The psychologist also has candidates fill the usual forms that carried such weight at the old-style board's ten-minute interview, but are now a fractional part of the exhaustive three-day trial.

In one questionnaire, a candidate sets down his name, regiment, age, what unit he wants a commission in, education. In another he answers confidential medical questions about his health, parents' ages or cause of death, occupations of father, brothers and sisters. By the time candidates come to be interviewed, the board has before them a detailed dossier on each man's performance.

President or deputy now adds to the general picture his own report on the man's personality and background, experience, military interests, knowledge of current affairs, officer-quality.

One-third of the men interviewed are bright to brilliant. A third average. A third so deficient that they might be considered as getting more than a square deal in being tested for officer training.

From one class there was a man who could not point on a map to the Mediterranean. Another located an enemy country in the heart of an Allied one. Another located a big British army on the Rock of Gibraltar, and said the Allies were advancing on a battle front where fighting ceased a year ago. Significantly, all three were the lowest-rated of their group in the psychologist's tests that aimed at discovering basic intelligence and not knowledge.

Discussion

The president's "lecturettes," held in a room representing a company commander's office, bring out still another officer-quality angle. A candidate is seated at the commander's desk, and handed a slip of paper setting down a problem. Asked how he would deal with it and the man concerned, he is allowed to demonstrate his answer when another candidate enters and stands before him. Each man in turn takes the commander's place with a new problem; each has only seconds to think it out before addressing the entrant. This is "brains-trusting" to practical purpose!

There is more of this in the group discussions. During one distinctly novel discussion each candidate was asked to name any celebrity that he would like as companion on an imaginary train journey from London to Edinburgh in order to question him.

The first man said: "General Eisenhower. I want to ask him if he thinks America so far is pulling her weight in the war?"

"You be Eisenhower and answer his question," said the deputy president to another candidate.

Without warning, the candidate questioned had to project himself into Eisenhower's shoes and answer from his point of view. Easy? Well, try it in your own family circle!

It is just one of scores of devices Britain's army is employing to make sure that no half-wit, whatever his social standing, gets charge of the lives of his brothers on the battlefield.

The Medical Psychiatrist

About a third of the men are interviewed by the medical psychiatrist. One candidate had some excellent qualities but a puzzling lack of leadership and aggressive spirit. Might this cause him to crack up under stress on the battlefield and let his men down? Was the defect superficial, due perhaps to nervousness, and quickly remediable? Or was it long-standing, probably incurable? All tests so far, while revealing the weakness, had failed to give the answer. Could the psychiatrist find it?

The candidate at once saw that his questioner wanted to give him his vote if he could, and most readily answered the questions, which were quietly put in a friendly way. They began with, "Tell me about yourself from as far back as you remember."

Bit by bit was built up the history of a small boy so devoted to a brother two years older than himself that he went everywhere with him till far into his 'teens. Though now in his mid-twenties, he didn't bother much about girls. He had one he once thought was *the* girl, but found he forgot her within a week of joining the Army. Since then he had taken two or three others out on occasions. He was not worried by that sort of thing and much preferred his new army interest.

The psychiatrist had found a double answer to the question set him. How it might affect a leader in battle, he and the military president jointly decided.

The Army's psychiatrists are specialists above reproach. They are headed by Britain's most distinguished exponent of this mind-healing science. These fully trained doctors are not to be confused with the unqualified "psycho-analysts" who prospered after World War I.

Never before have the military expert and the psychologist worked so closely together and so successfully, since nearly one hundred per cent of those they jointly select for training are graduated as officers.

Final Judgment

The last hours of the three day tests are devoted to the final judgment. Before the president or his deputy is the complete data of every man's performance. Around him sit the military testing officers, psychiatrist, psychologist, and visiting military member. Each examiner has from his particular tests formed his independent opinion.

A candidate steps into the room, announces his name, rank and regiment. "You want a commission in light ack-ack, and your age is thirty-two?" asks the president. "Yes, sir," and number one goes out, is assessed and graded; then the next man comes in.

The judgment battle rages around the borderline cases (about a third of the total), for every examiner feels a grave responsibility in voting a "bad risk" for training to command men.

In one typical contest case, when the president asked for independent opinions, the fight went like this:

M.T.O.: "I pass him, despite his faults. There is something in him, and incidentally, that is supported by eight men in his group of ten balloting for him as leader."

Psychiatrist: "I'm for him, too. He's had strong feelings of inferiority all his life, but has struggled to overcome them. I think he has too much guts to crack up under battle stress."

Psychologist: "Moderate intelligence."

Visiting colonel: "I gave him a D (doubtful)."

President: "So did I, but the strong support he gets from both the M.T.O. and the psychiatrist tips the scales in his favor. I'll pass him. He has a dull, dreary voice, but the Officers' Cadet Training Unit can do something with that."

A failed borderline case was summarized as follows:

"M.T.O. passes him," said the president. "I found him full of leadership and self-confidence. But his basic intelligence is well below average, and this is confirmed by the psychologists' tests. Pity, but we dare not take the risk of putting him in charge of men's lives. He'd probably blunder badly in a crisis. We must fail him. U (unsuitable)."

Another man set a different problem.

"Intelligent. Good appearance. One is immediately prejudiced in his favor," said the president. "But he lacks physique and wants a commission in the infantry. Ask him if he will consider going into a static unit. If so, we'll see what we can do for him. Decision postponed."

The biggest thrill was not over a borderline fight, but at a unanimous pass. A diminutive, insignificant-looking fellow, well over average age, entered the room, smartly announced himself and departed. He was Britain's *Little Man* in khaki, overflowing with fighting spirit.

"That's the little pay corps clerk," said one member. "Helped far stronger fellows over the obstacles; heaven knows how he did it," said another.

"Intelligent. Full of guts, his personal appearance belies him. Poor physique, but he wants a commission in a static unit and shall have the chance of getting it," summed up the president. "We'll BB him (the high a grading as given to any man of that intake of sixty) to help him at the O.C.T.U."

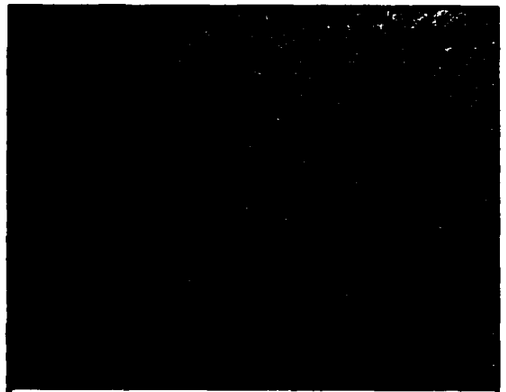
Most candidates feel that however they fare, the board does its utmost in the three days to find the best leaders among them. They are tested for basic intelligence and a combination of other qualities that make a good officer, but many good men have different qualities that fit them best for the jobs they are doing already. They feel that the Army has "got hold of something" unequalled for finding the right man for training for the right job.

Dunkirk re-started the British Army from scratch and left room for new ideas. To make the utmost of their man-power, the Army started scientific Selection of Personnel, offering, as never before, equality of opportunity. In this, the Army feels that it has evolved a distinctly British product.

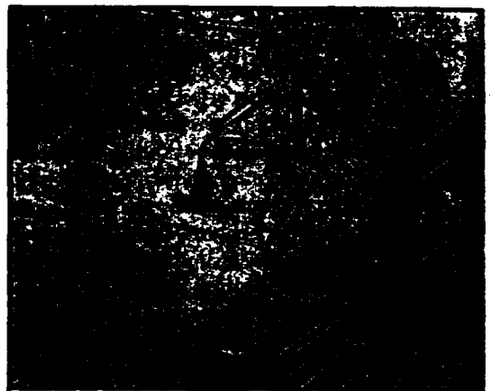
DO'S and DONT'S

In Tactical Training

The following illustrations are taken from *Tactical Training Aid*, issued by the Headquarters of The Armored Force. We commend it for its simplicity of detail and thoroughness of purpose and submit it for your careful study.



THIS WEAPON CANNOT BE PUT INTO ACTION QUICKLY.



THIS CREW IS READY FOR ACTION.

MAN THE WEAPONS. BE PREPARED AT ALL TIMES.

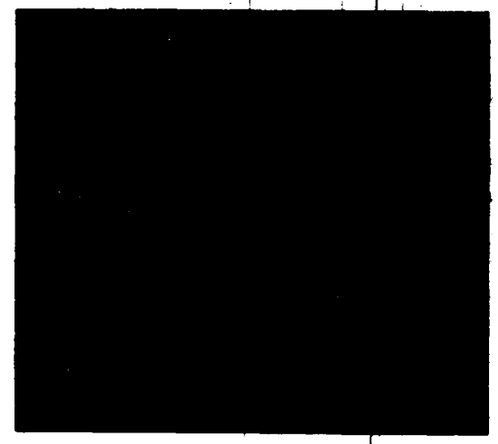
THIS INVITES DISASTER.

DISPERSE VEHICLES, DIG SLIT TRENCHES, AND MAN WEAPONS.

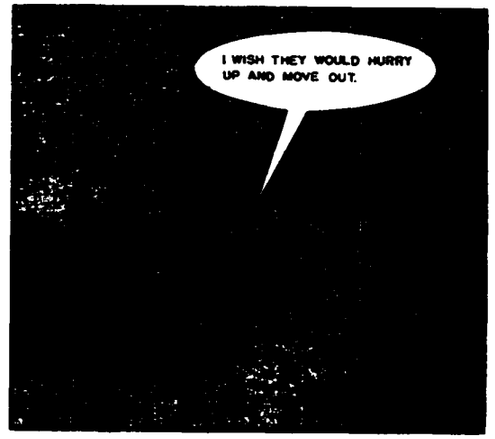
DO NOT CROWD VEHICLES AROUND THE CP, OR FAIL TO PROVIDE LOCAL SECURITY. DIG SLIT TRENCHES.

PROVIDE BRIDGE GUARDS, CONTAMINATED AREA GUARDS AND OTHER DETACHED MEN WITH FOOD AND WATER. IN SOME INSTANCES MEN WERE LEFT FOR 48 HOURS OR MORE WITHOUT FOOD AND DRINK.

DO NOT LOCATE TRUCKHEAD AT PROMINENT INTERSECTION. THIS TRUCKHEAD IS OPERATING AT A CROSSROAD. IT IS DAYLIGHT. NO COVER IS AVAILABLE.



KEEP MEN AND VEHICLES UNDER COVER. HERE A MESS LINE FORMED IN THE OPEN.



THIS UNIT WAS FORCED TO HALT BY VEHICLES IN FRONT. UNIT COMMANDER MADE NO ATTEMPT TO FIND OUT THE TROUBLE. MAINTENANCE CREW DID NOT SIGNAL VEHICLES TO PASS. NO COVER TAKEN. VEHICLES JAMMED ON ROAD.

IF UNITS IN FRONT, HALT SEND SOMEONE FORWARD TO DETERMINE THE TROUBLE. MOVE OFF THE ROAD TO COVER.

MAKE SURE ROADS WILL BE AVAILABLE WHEN MOVEMENT IS ORDERED. THIS COLUMN WAS BLOCKED BECAUSE SOMEONE FAILED TO CHECK ROAD

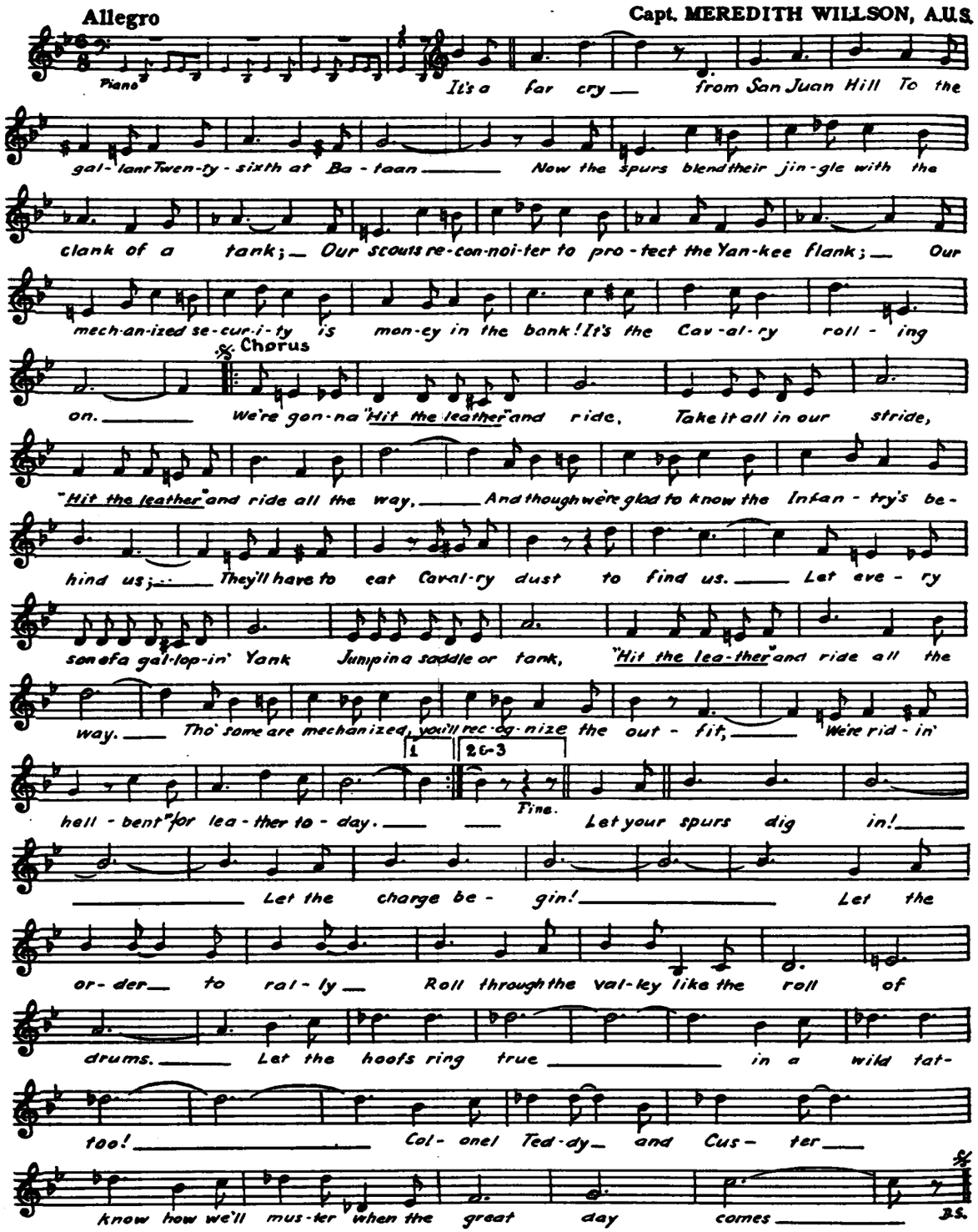
CHECK COORDINATES BEFORE SENDING CP LOCATION.

Dedicated to The Cavalry School at Fort Riley, Kansas

Hit the Leather

Cavalry Song

Words and Music by
Capt. MEREDITH WILLSON, A.U.S.



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Book Reviews

THE USE OF AIR POWER. By Flight-Lieutenant V. E. R. Blunt, R.A.F., with an introduction by Winston Churchill. Military Service Publishing Company. Appendages. $1.00.

After serving for two and one-half years with the R.A.F., Flight Lieutenant Blunt resigned his commission in order to publish this book, which in 1941 the Air Ministry termed, "too controversial, too critical of Air Ministry policy, strategy and tactics" for publication.

To counteract the attitude of those who think that air power alone is sufficient to win a war, Lt. Blunt first lists and analyses the limitations of air power, then discusses the uses to which it best can be put. To back his conclusions, he gives a brief résumé of the employment of air power by Germany in the Battles of Poland, Norway, Holland—Belgium—France, Britain, Greece, and Crete in contrast to its use by Great Britain in the first and second Libyan Campaigns, Abyssinia and Syria. "The Germans," he says, "seem to have thought out the use of air power and its *combined* employment with land forces and to have trained on lines which have been a model to the rest of the world."

Lieutenant Blunt then analyses the established principles of war and superimposes them upon the capabilities and limitations of the air arm. He objects to the theory, originally practiced by the R.A.F., that any one branch—air, land, or sea—is or can be independent of the others in the efficient performance of their combined mission—destruction of the *enemy*. He recommends a coördinated attack force with a unified command—*three services, one head.*

Because many of the recommendations of this book have been successfully applied during recent campaigns in Tunisia and Sicily, it becomes of even more value to those who would understand new tactics in warfare.

AMPHIBIOUS WARFARE AND COMBINED OPERATIONS. By Lord Keyes. Macmillan Co. $1.50.

To those who consider that Combined Operations originated with World War II, this little book will prove most enlightening.

Lord Keyes, then Sir Roger Keyes, conceived, planned and personally commanded the heroic commando raid on Zeebrugge in the last war. He traces the history of Combined Operations from Wolfe's capture of Quebec in 1759, through the China War in 1900, the Dardanelles Campaign in 1915, operations on the coast of Belgium in 1918, to their present use in this war.

This timely book has most fortunately been bound in a small compact volume, light, and easily carried.

ARMORED WARFARE. By Major General J. F. C. Fuller. Military Service Publishing Co. $1.00.

This book, fourth of the series of *Military Classics* being published by Military Service, is an annotated edition of FSR III. It was first published in English in 1932, at which time it received scant attention.

In Europe the book was highly acclaimed. According to a Czech officer the Germans regarded it as their bible. Timoshenko ordered that FSR III be made a "table book" to be kept at every officer's elbow for ready reference.

HOW THE ARMY FIGHTS. By Captain Lowell Limpus. D. Appleton-Century Co. $3.00.

This book should prove of considerable interest. It gives, in logical sequence and understandable language, an excellent coverage of the army of today, its weapons and training and the job it is being equipped to do. Captain Limpus points out the changes of technique necessitated not only by the last war, but even by the opening months of World War II.

His comments on cavalry are of particular interest: "*Cavalry* still isn't regarded as obsolete, despite a popular impression to the contrary—and we mean horse cavalry, not the mechanized variety. This is due to one inescapable fact: A horse can go a lot of places where a plane can't fly and a motor vehicle can't run. And he can go there faster than a man can walk—which gives the horseman a distinct advantage over infantry."

There are adequate maps for the important military areas mentioned and tactical diagrams for the problems discussed.

AIRBORNE INVASION. By John Hetherington. Duell, Sloan and Pearce. $2.50.

John Hetherington has seen longer service in the Middle East than any other war correspondent. He landed in the battle zone in February 1940, covered the Libyan Campaign under Wavell, the fighting in Greece, Crete, Syria, the Libyan Campaign of 1941-42, the retreat to Alamein in June 1942, the Alamein victory in November 1942, and then remained with the British Eighth Army until he returned to Australia in the spring of 1943.

Airborne Invasion is no observer's book. It is a participant's account of the defense employed in Crete against the only full scale airborne invasion carried through in this war. This book, written in a dignified form, will be read with more care and interest than is usually shown to correspondent's reports, because it has been written with the benefit of official records. The author has checked his facts with at least a hundred officers and men who fought in Crete. This small, compact volume should be of value to men interested in the problems of airborne invasion.

Officers' Guide

1943 Edition

Incorporates many of the developments and changes that have occurred during the past few months. . . . Contains advice on Uniforms, Equipment, Military Courtesy—much other inspiring counsel on the problems facing the officer on active duty today. 552 Pages; Index.

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Company Administration

Including Supply and Mess Management

and

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Including Personnel Office Organization and Procedure

By Lt. Col. C. M. Virtue

Long recognized as an authority on Army paper-work, this book's usefulness is now further increased by numerous revisions and added matter.

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By Henry C. Coleron and F. Allen Burt

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THE UNITED STATES AND ITS PLACE IN WORLD AFFAIRS, 1918-1943. Edited by Allan Nevins and Louis M. Hacker. D. C. Heath and Company, 1943. $3.25.

Since it is no longer possible for the United States to insulate itself from the rest of the world, and since what happens to other nations affects deeply our own lives, a book like this one is important for the contribution that it makes to better international understanding. It differs from other surveys of this period by interpreting world events solely from the American standpoint—as they affect American ideas, aspirations, and interests. This clearly defined point of view helps to give the book unusual unity and coherence, in spite of the fact that a tremendous variety of matters are treated—political, economic, social, and moral.

Over a dozen different authors, all specialists in their respective fields, have made sound and realistic contributions of material. Although designed for Army and Navy courses, this book presents new perspective that makes it of more than current importance to the general reader.

MEDITERRANEAN ASSIGNMENT. By Richard McMillan. Doubleday, Doran & Co. $3.00.

BACK DOOR TO BERLIN. By Wes Gallagher. Doubleday, Doran & Co. $2.75.

In *Mediterranean Assignment*, Mr. McMillan uses the first third of his book to describe the battles in defense of Greece and Crete. The rest of the volume is given over to the Eighth Army in the Middle East and North Africa, with particularly interesting chapters on Bir Hakeim and El Alamein.

The author's extreme admiration for General Montgomery has led him to give a detailed account of this undeniably great military leader. He also brings out the fact, frequently ignored, that the less colorful but astute General Sir Harold Alexander was the major strategist for the Eighth Army's successful third campaign in Libya.

Back Door to Berlin is the story of the American expedition to North Africa, its planning and accomplishments.

Much space is given to the story of American-French negotiations. Although descriptions of the planning and accounts of the fighting are interesting, it is still too soon after the *coup* to expect all of the facts to be aired, and Mr. Gallagher is not entirely convincing.

These two books, however, give a good picture of the battle for North Africa from both the British and American angles.

TWELVE MONTHS THAT CHANGED THE WORLD. By Larry Lesueur. Alfred A. Knopf Company. $3.00.

Mr. Lesueur's book is primarily a diary of personal experiences in Russia during 1942. The best writing in the whole volume is in the early chapters describing the convoy on its way from Scotland to Russia. It is interesting casual reading, but by no means an important addition to war literature. To those who have read *Journey Among Warriors* it will have nothing of fundamental value to offer.

250 TEACHING TECHNIQUES. By Lt. (jg) Edward C. Estabrooke, U.S.N.R. and Lt. R. Randolph Kardi, U.S.N.R. Bruce Publishing Co. $1.25.

This concentrated but comprehensive book covers the following subjects: Qualities of a Good Instructor; How to Conduct Shop Activities; How to Plan and Present a Lesson; How to Conduct Demonstrations; How to Use Oral Questioning and Discussion; How to Use Motion Pictures; How to Maintain Good Discipline; and many other subjects of interest to the man instructing men. Under these chapter headings will be found the solutions to most of an instructor's problems.

KILL OR GET KILLED. By Major Rex Applegate. Military Service Publishing Co. $2.00.

Much more than just another book on hand-to-hand fighting, this manual includes instruction in unarmed combat, disarming, knife fighting and methods of using inconvenient weapons.

A brief concluding chapter outlines the Japanese soldier's use of the bayonet and his close combat methods, based on reports of observers who have recently served in the Japanese army.

ADMINISTRATIVE & SUPPLY NOTEBOOK. Military Service Publishing Co. $.75. 3½ by 5½ inches.

Two-thirds of this convenient pocket sized notebook contains handy digest of regulations governing unit administration and supply. The latter third consists of lined pages for personal notes.

THE OFFICERS' GUIDE. Military Service Publishing Co. $2.50.

COMPANY ADMINISTRATION. By Lt. Col. C. M. Virtue. Military Service Publishing Co. Cloth $2.00; Paper $1.50.

About a quarter of the material in the new *Officers' Guide* has been rewritten to bring the book up-to-date.

Those officers who have used the *Guide* know how invaluable it is. New officers will find in it the answers to almost all of their military, social and personal problems.

Company Administration has stood for many years as a "bible" of its kind. This thirteenth edition has all of the latest information. It is the only adequate summary in print of the complicated maze of Army Regulations governing administrative detail.

These two new editions of old standbys warrant the welcome that they will receive.

A DEFENSE MANUAL OF COMMANDO JIU JITSU. By Irvin Cohn, B. M. Wilcox and Co. $1.00.

Prepared by a Marine Corps instructor, this manual relies almost entirely on pictures and sketches to teach the art of hand-to-hand combat. It is a handy, brief outline of the essentials for self defense, presented in a clear, easily understood form.

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THE TOUGHEST FIGHTING IN THE WORLD. By George H. Johnston. Duell, Sloan and Pearce. $3.00.

George Johnston has covered the New Guinea campaign and every battle front in the Pacific from Darwin to Buna. His account does not come under the heading of "pleasure reading." It claims to be an uncensored account, and as such, presents *war* as the Australian and American men have seen it in the Southwest Pacific. Victory and retreat are pictured vividly and with intimate detail.

We have had few books on the Pacific action since the fall of the Philippines, but this one is well worth waiting for.

BLOOD FOR THE EMPEROR. By Walter B. Clausen. D. Appleton-Century Co. $3.00.

Mr. Clausen has woven into a very interesting book, narratives of the war in the Pacific as told by men who participated in the various actions. The period covered is from December 7, 1941 to the present day. Chapters are given to the various phases of the war as fought by the land, sea and air forces.

The book does not pretend to be a military manual. It is intended to be a picture of the Pacific war as viewed by the men who are fighting it. Personal experiences make it a swift-moving and thoroughly readable volume.

THE SPANISH LABYRINTH. By Gerald Brenan. Macmillan Company. $3.75.

This book endeavors to explain the enigma of the Spanish civil war by a detailed account of the modern social and political history of the country. It is indeed a labyrinth, albeit an interesting one. The reader is left with the feeling that the only possible road to advancement is through complete rebuilding, from the ground up.

Mr. Brenan served through World War I in the British Army, and then settled in Spain to farm. He obviously knows his adopted country and its people. It is quite probable, however, that many readers will not agree with some of his deductions.

STALWART SWEDEN. By Joachim Joesten. Doubleday, Doran & Co. $2.50.

Joachim Joesten, with a background of six years as a foreign correspondent in Scandinavia, presents a timely and comprehensive study of Sweden's place in the war world of today.

Several years ago a number of books were written on Sweden's government, the ideal manner in which many of the social problems were handled, and the smoothness with which Swedish democracy functioned. Mr. Joesten outlines all of these political, intellectual, cultural and industrial phases of the national life, and the influence that they have had on Sweden's policies.

An excellent index enhances the value of this book as a source of information for readers interested in the Swedes and their potential war status.

Here Are This Month's New Books of Current Interest

V- 1 **Amphibious Warfare and Combined Operations.** *By Lord Keyes, Admiral of the Fleet.* The history and personal account of "Combined Operations" in past wars. $1.50

V- 2 **The Army Officer's Manual.** *By Lieutenant Colonel A. C. M. Azoy.* 3rd edition of this valuable and handy sized little book. $2.50

V- 3 **Back Door to Berlin.** *By Wes Gallagher.* The story of the American coup in North Africa. . . . $2.75

V- 4 **Blood for the Emperor.** *By Walter B. Clausen.* A narrative history of the human side of the war in the Pacific. $3.00

V- 5 **Clausewitz on War.** *Translated by O. J. Matthijs Jolles.* A complete translation of the classic work on the philosophy and strategy of war. . . . $1.45

V- 6 **German Military Science.** *Compiled by Ames Johnston.* Selections in German of readings from military books currently read by officers in the German Army. $2.00

V- 7 **God is My Co-pilot.** *By Colonel Robert L. Scott.* The author's experiences as a fighter pilot in China and as commander of the American fighters in China. $2.50

V- 8 **Greece Against the Axis.** *By Lieutenant Colonel Stanley Casson.* An account of the heroic Greek campaign against the Axis. Cloth $2.50, Paper $2.00

V- 9 **Handbook of Elementary Physics.** *By Robert Bruce. Lindsay.* A handbook to be used by students to supplement the regular text. $2.25

V-10 **Hand-to-Hand Combat.** *Prepared by the Training Division, Bureau of Aeronautics, United States Navy.* A manual of hand-to-hand combat.

V-11 **He's in the Signal Corps Now.** *By Carl Mann.* The story of the training of the "eyes and ears of the Army." $2.50

V-12 **How the Army Fights.** *By Lowell M. Limpus.* An interpretation of the American Army, the techniques of modern warfare and the weapons of today. $3.00

V-13 **Kill or Get Killed.** *By Major Rex Applegate.* A manual of hand-to-hand fighting for members of the armed forces. $2.00

V-14 **Machine Warfare.** *By Major General J. F. C. Fuller.* The influence of mechanics on the art of war. 25¢

V-15 **Manual for Instruction in Military and Aerial Photographs.** *By Norman F. Maclean and Everett C. Olson.* What every soldier should know about maps and aerial photographs . . . . . .

V-16 **Mediterranean Assignment.** *By Richard McMillan.* A journalist's account of the Eighth Army's defeat and its final victorious campaign. $3.00

V-17 **The Morale of the American Revolutionary Army.** *By Allen Bowman.* A study of the morale situation in the War for Independence. . . . . Cloth $2.50 Paper $2.00

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V-20 **Psychology for the Fighting Man.** *What You Should Know About Yourself and Others* . . . . . 25¢

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V-23 **Spin In, Dumbwhacks.** *By Richard N. Ryan.* The real life story of how two young Americans quit medical school and sprouted wings. $1.75

V-24 **Stalwart Sweden.** *By Joachim Joesten.* A discussion of Sweden's rôle in World War II. $2.50

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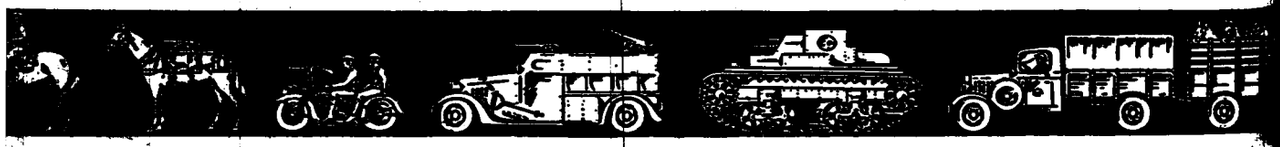

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Cavalry and Tanks Capture Taganrog*

by Guards Colonel G. Valyushkin

IN the course of this war Soviet cavalry units have frequently acted in conjunction with tank groups and, jointly with them, have achieved not only tactical but also strategical successes.

One of the most instructive instances of coördination between these two mobile arms was the operation that ended in the encirclement and annihilation of the German army group at Taganrog. In this operation, large Soviet cavalry and armored forces broke through to the enemy's rear and, advancing rapidly southward to the Azov coast, smashed German resistance and contributed materially to the success of the operation. Throughout this difficult raid, cavalry and armored groups acted in closest coöperation. The result was that the German army group at Taganrog lost all of their communications and, in spite of desperate attempts to break out of the encirclement, were unable to do so.

Forms of Combined Cavalry-Tank Employment

Coördination between cavalry formations and tanks may take diverse forms. Sometimes cavalry and tanks act independently while performing a common mission and merely maintain a general agreement. At other times, a tank group may be assigned to a cavalry formation and take its orders from the cavalry commander. Again, a situation may arise where it is found expedient to exercise both forms of coördination—strategical and tactical—with a part of the tanks acting independently and a part assigned to cavalry. Naturally, on each occasion, a careful study of conditions must be made to decide which forms and methods of coördination are likely to be most effective.

Tanks on the Cavalry's Flanks

How did cavalry and tanks coöperate in the Taganrog raid?

First, it was necessary to insure reliable protection for the flanks of the cavalry while it opened a breach in the enemy's defenses. Accordingly, armored formations were thrown out on both flanks.

The task of the right flank formation was to parry any blows that the enemy might deal from the west. It was highly likely that the Germans might try to stem the cavalry advance by attacking the right flank, or they might even attempt a breakthrough in the hope of rescuing their Taganrog army group. In fact, the Germans did make such an attempt. They brought up fresh reinforcements and attacked in force with up to two regiments of infantry and fifty tanks. This attack was made in coördination with an attack from the east by part of their Taganrog group, in the hope of closing the breach and enabling their surrounded forces to retire to the west. The presence of the Soviet armored detachments on the flanks of the cavalry frustrated the enemy's plans.

The armored formation on the cavalry's right flank then turned toward the enemy's Taganrog group, which possessed large numbers of tanks and self-propelled guns. Advancing somewhat ahead of the cavalry, this formation encountered the powerful German screening forces, intrenched in favorable positions, and helped smash the enemy's resistance.

Thus the cavalry was reliably protected on its right flank and, in case of need, could have called for support on its left flank. In both cases, coördination presented a particular difficulty, as the tasks had been laid down clearly in orders from the higher command.

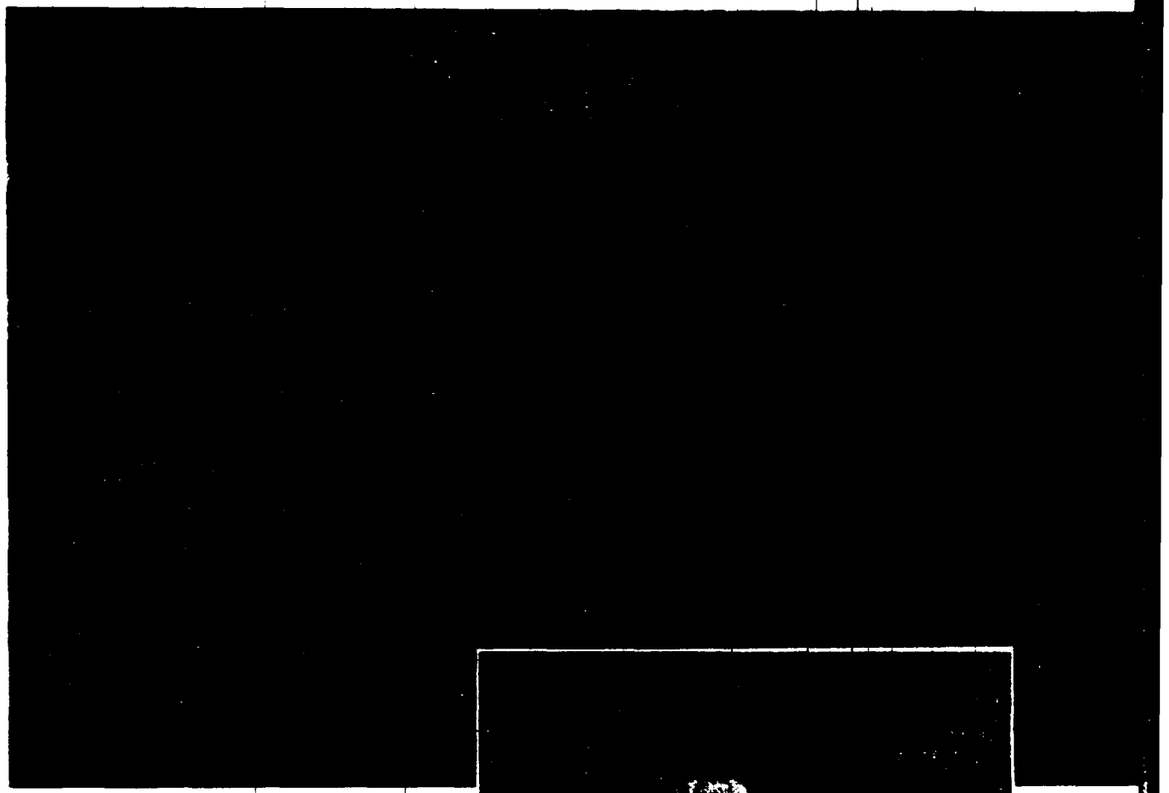
Mutual information and close coöperation were maintained by wireless and by liaison officers.

Tanks Spearhead Advance

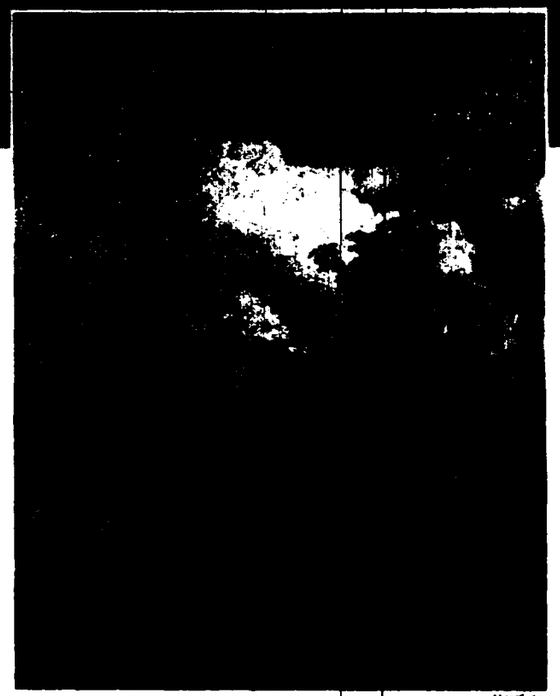
In addition to these two tank units on the flanks, this particular cavalry formation had its own tank groups assigned to it. In such a case, of course, coördination was even closer and was maintained by different methods. For instance, it was clear in advance that the raiding cavalry would encounter strong resistance. This had to be broken without delay in order to allow the Germans no time in which to re-form their defense. For this purpose, Major General Tutarinov's division of cavalry guards was assigned a tank group, which took its orders directly from the cavalry commander. The tanks advanced in the lead and, annihilating small scattered enemy detachments, blazed a trail for the cavalry. Here, coördination was constant and uninterrupted. It was further maintained by personal contact between the cavalry and tank commanders, by wireless, and by dispatch riders.

*By cable to THE CAVALRY JOURNAL from the War Department, U.S.S.R., Moscow. The units involved in the Taganrog operation were not listed in this article, but Stalin's Order of the Day for August 30, 1943 (printed, September-October issue) commended two cavalry divisions and two tank brigades for action in the victory at Taganrog.

The Nazi defeat at Taganrog is second only to that at Stalingrad. In both cases, the Red Army victories resulted from *the successful employment of combined cavalry-tank formations,* used as great, mobile pincers which surrounded the enemy and brought about his complete annihilation.



By secret paths, through fields and forests and across swollen streams, Cossacks make their way behind the German lines.



Sovfoto.

Tanks, advancing in coördination with cavalry, may cover the cavalry's flanks, spearhead the break-through for cavalry to exploit, or act independently under the cavalry command.

STALINGRAD, TAGANROG
— *and now* —
Soviet Tanks-Cossacks Seal Crimea

By Henry Shapiro (United Press Staff Correspondent) Moscow, Oct. 29—Cossacks, narrowing the Nazi escape corridor in the Dnieper-Nogaisk bulge to less than 80 miles, smashed the main enemy stronghold southwest of the Dnieper bend and advanced through weak resistance today in an attempt to trap hundreds of thousands of fleeing Germans. . . .

The Cossacks were pounding toward the lower reaches of the Dnieper and a junction with General Ivan Konev's armies battling in the streets of the mineral center of Krivoi Rog, halfway across the Dnieper bend, to close one of the biggest Russian traps since Stalingrad. . . .

Moscow, Oct. 30—Thousands of demoralized German troops cast aside their arms today in frantic flight from Soviet forces which had driven halfway across the Nogaisk Steppes to within 40 miles of the last land exit from the Crimea.

Cossack flying columns slashed into the enemy rear and rounded up prisoners by the hundreds.

The Russian spearheads also were only 15 miles east of Kakhova, where they were expected to force the Dnieper and drive almost due north in an attempt to link up with General Ivan Konev's forces at Krivoi Rog and encircle the largest German army since Stalingrad. . . .

London (Sunday), Oct. 31 (AP)—The second battle of the Crimea began today with General Feodor Tolbukhin's steppe legions hammering at its northeastern gate and plunging down the last 22-mile lap toward Perekop to slam shut that northwestern escape door on huge German forces in the peninsula. . . .

In the south, Tolbukhin's cavalry-paced columns spread over the great steppe like a flood, reaching the shores of the Sivash or "putrid" sea, formed by a thin bar of land between the eastern shore of the Crimea and the Sea of Azov.

One Cossack column swept into Dmitrievka, 16 miles from the Dnieper at Kakhovka. The Russians thus were swinging into position for at least two crossings of the river, at Kakhovka and near Nikopol where Russian forces were beyond Blagovyeschenskoe, only 5 miles from the river.

Such crossings would strike the rear of reinforced Germans defending Krivoi Rog and the last remnants of German-held territory in the Dnieper bend.

London, (Monday), Nov. 1 (AP)— . . . Sweeping up 200 more villages and reconquering nearly all the Nogaisk Steppe, a Moscow bulletin announced, General Feodor Tolbukhin's hard-riding fourth Ukraine army captured Chaplinka, flanking the Perekop door in the Crimea 15 miles to the southeast, and reaching a point only 8 miles from the railway itself, which leads to Kherson on the lower Dnieper River. . . .

On the opposite side of the big Black Sea peninsula other floundering German forces were declared cut to pieces by General Tolbukhin's tank crews and Cossack cavalry which hurled them into a death corridor at the northeastern door of the Crimea.

As the cavalry advanced farther southward, however, resistance grew more fierce. The Germans realized that the noose was being tightened around their necks. They threw out strong screening forces and launched increasingly ferocious counterattacks in an attempt to withdraw their Taganrog group westward. The counterattacks were particularly fierce in one area, where Germans had approximately 12 artillery batteries of self-propelled guns, many tanks, and a large force of infantry. These forces were supported by bombers, which launched frequent mass attacks (as many as 1,200 sorties in one day).

Naturally, these conditions called for different forms of coördination between tanks and cavalry. The cavalry dismounted and fought on foot. The tanks, acting as the cavalry's direct support, helped it in the attacks by demolishing the enemy's fire nests with their guns and by crushing the Germans beneath their tracks.

The Germans' frequent counterattacks were parried by fire from Soviet troops, or else by the stubborn defense on some one sector combined with a vigorous outflanking move on another. In former cases, tanks would fire from one position, while from another they would act as a main shock force in an outflanking maneuver.

In one area, German infantry columns, accompanied by about 100 guns, attempted to break through toward the west, but encountered one of the Soviet cavalry divisions. Roads along which the German forces were moving were clearly visible for a considerable distance. This made it possible to inflict heavy losses upon them by concentrated fire and cause them to recoil backward. The cavalry divisional commander had all of his available guns moved into open positions. It was expedient to launch tanks into the attack, as the enemy possessed formidable artillery, including self-propelled guns. The tanks, therefore, were ordered to fire from position. The enemy's losses in lives and matériel were heavy. After the action, the roads were littered with enemy corpses, shattered guns, and vehicles.

TANKS AS BATTERING RAM—CAVALRY EXPLOITS

At last the Germans' Taganrog group was annihilated and the Soviet troops, overwhelming and pursuing the enemy, began to advance westward. German tactics at this stage were subordinated to one aim—namely, to stem the advance at all costs. The natural terrain favored this, as the Red Army route of advance was intersected by a number of rivers, along which the retreating Germans erected strong intermediate defense lines. One such line was erected on the western bank of the River Gruzkov Elanchik.

A careful study showed that these defenses could best be breached by a strong armored shock force. On orders from the commander of the cavalry formation, all tanks assigned to him were united into one group and placed under the commander of one of the cavalry divisions. This powerful armored force broke through the enemy's defenses. The cavalry division, in mounted

order, immediately dashed into the breach and was soon followed by the remaining forces of the formation.

This action demonstrated another form of tactical coördination between cavalry and tanks, with the combined force used as a battering ram to force a breach in the enemy's defenses for cavalry to exploit.

COMPLETE COÖRDINATION

In subsequent fighting, forms of coördination were likewise modified to meet conditions. In a number of cases, groups of tanks were assigned to cavalry units for the performance of separate missions. If it was necessary, however, to form a powerful assault force, the tanks united into one group under the direct orders of the formation commander. This technique of coördination presented no particular difficulty, as Soviet cavalry had had considerable experience in coöperating with tanks under the most diverse circumstances; while tank crews, on their part, did their utmost to facilitate constant and efficient collaboration.

The most important conclusion to be drawn is that in each particular case, careful study must be made of the conditions and utmost effective methods of coördination chosen to correspond with them.

On the organizational side, there are no serious difficulties to be overcome so long as cavalry, fighting dismounted, maintains communication with tanks in the same way as infantry would.

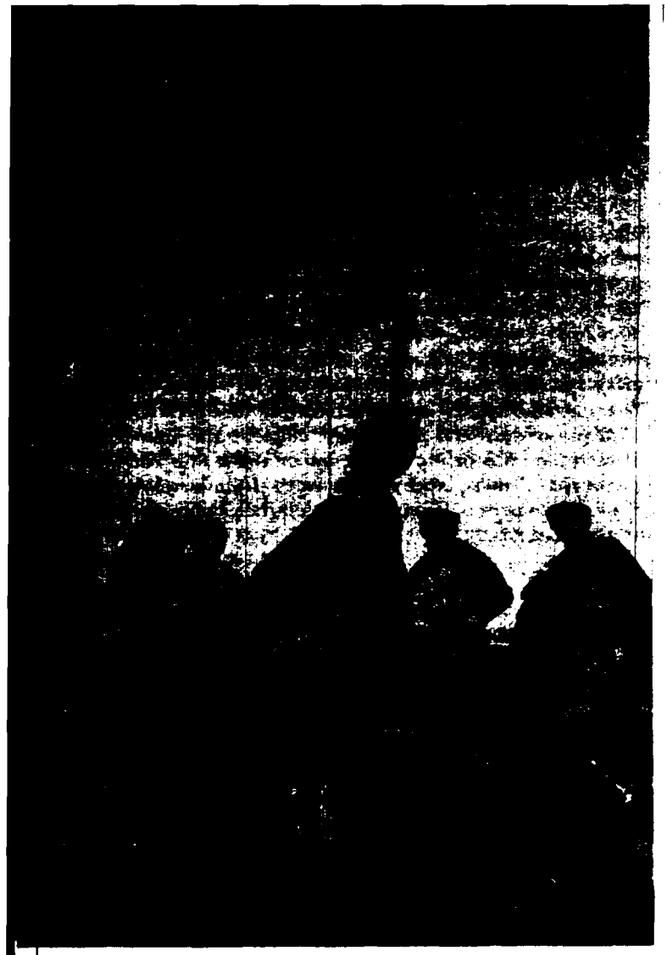
If tanks and cavalry are coöperating in an operation to outflank or surround the enemy, efficient and uninterrupted liaison is of the utmost importance. This can be achieved in many and various ways—from wireless and aircraft to personal contact between the cavalry and tank commanders.

Sovfoto Radiofoto.

Cossack guardsmen commanded by Lieutenant General N. Kirichenko made their way through rushes to the rear of the enemy for a surprise attack. General Kirichenko and his Kuban Cossacks were commended by Marshall Stalin in his Order of the Day, August 30th, for outstanding service in the capture of Taganrog.

Sovfoto Radiofoto.

Behind the German lines near Taganrog, General Kirichenko's Cossack Guardsmen played an important rôle in the encirclement of large German forces.



IN the early spring of 1942, there was a tremendous rallying to the Red Army of Kuban Cossacks of the older generation. Graybeards wearing the Cross of St. George, awarded for distinguished service in the Tsarist wars, gathered to volunteer. Many of their sons were already majors and colonels. They, the fathers, joined up as rank and file fighters.

Nikifor Natluck, a patriarchal old Cossack whose sons are prominent Red Army commanders, proposed that young Cossacks should be taught the immortal saber blow of the famous Zaporozhye Cossacks.

"The German must be slashed from the shoulder to the groin." he said. "Anyone can cut off a head or slice off an arm, but a Cossack must wield his saber as his great-grandfathers did."

Another of the instructors is Trofim Njegoduyko. At 54 years of age, he is a senior sergeant, a volunteer in the Red Army. He fought near Moscow with the immortal Dovator; and later, back home in the Kuban, in Tseplyayev's motor brigade.

Trofim's grandfather hewed through a Turkish horseman from shoulder to waist. All the papers were full of it at the time. In 1914, near Gumbinen, Trofim's

*Soviet Information Bulletin.

"If the Germans don't like it, they should have stayed at home in Germany."

father cut up a German in six parts with two blows of his sword. It was the famous "criss-cross" blow, and the fame of it drew young officers to study with Alexander Njegoduyko. He showed them how to cut a calf in two, or a piece of cloth thrown up into the air.

Trofim Alexandrovich has upheld the honor of his family. Back in the days of the Civil War his comrades presented him with an old, silver-hilted sword with an Arabian inscription on the blade: "I serve the eagle-hearted." The silver hilt is now covered with 131 copper dots like freckles. That is Trofim's score of killed Germans. Trofim Alexandrovich says that eight dots are missing; they dropped off by accident.

Not all of the 139 Germans were cut up. Many of them tasted lead bullets; others were destroyed with the rifle butt or crushed under Trofim's horse. With his sword he killed 43 Germans. One of his slashes he dedicated to his grandfather. "Even Grandfather Petro would have approved of it." It was near Rostov . . . With one blow he cut a German officer in three parts—head and shoulders, half the body and an arm, and the rest of the body.

Now he has been invited to show young Cossacks the art of sword play. Upright on his horse, he gallops spiritedly up to the clay figure of a German with outspread arms. The young men have been hacking away unsuccessfully at this "German" since the early morning. But their swords have got stuck in the moist clay at the level of the heart, or they have struck off only the head, which of course cannot be considered a decent stroke. Even a child can strike off a head.

So 54-year-old Trofim Njegoduyko, with set teeth, dashes up on his russet horse. The sword glitters brightly in his hand. He rises in his stirrups, raises the blade, and the clay German falls in two pieces.

Trofim, reining in his horse, explains: "The hardest thing, my lads, is to cut clay. I can feel no hatred for a clay figure, and therefore there is no heat in doing it. Why do I cut it? Only for the sake of your education. But my heart's not in it. I feel no anger. The conclusion to be drawn from this is that it is easier to strike at a German. In the first place, he usually turns tail. So if you stick a sword into him he'll run up it himself. He'll cut himself up. In the second place, you've got to apply pressure along the length of the blade, not downwards. It's not the same as chopping wood.

"Use your imagination. Pretend that the German is very broad and you're cutting him open like a cake. Don't hurry. Take it easy.

"Of course, psychology plays a part, too," adds Trofim mockingly. "But it's none of our business if a German yells.

"If the Germans don't like it, they should have stayed at home in Germany. But once they've come onto our territory, friend, crying won't help. Run, damn you, run up the blade!"

"Die Kossacken Kommen!"

*by Henry Shapiro**

SABER-SWINGING Cossack horsemen brought the Dnieper Estuary within their grasp and sent the greatest rout of a German army since 1916 into its final stages today with the slaughter of thousands of fleeing survivors of the Reich's once crack Grenadiers on the western Nogaisk Steppes.

Hordes of Germans plunged into the swift Dnieper in a frantic effort to escape the Cossacks, only to be cut down by Russian machine-gunners and low-flying Soviet aircraft. Front dispatches said the river was filled with German corpses.

The whole western tip of the Nogaisk Steppes, from the Black Sea to the great sand wastelands below the Dnieper had become a veritable graveyard of smashed and abandoned tanks, six-barreled mortars and armored cars.

Not since General Rusilov's destruction of an Austrian army in 1916 has there been a Russian victory to compare with the smashing of German Marshal Erich Van Manstein's army of the Nogaisk Steppes.

As in the First World War, the cry, "Die Kossacken Kommen"—The Cossacks are coming—spread through the enemy ranks, sowing the seeds of a terror such as even the 300,000 Germans killed or captured at Stalingrad never knew.

The Don and Kuban Cossacks, who dislike taking prisoners, literally slashed the fleeing enemy columns to pieces. While sabers were their main weapons, some carried tommy guns which they frequently fired from beneath their horses' bellies in Hollywood cowboy style.

A dispatch to the Communist newspaper Pravda said Russian infantry following the advance guards of Cossacks and tankmen were moving across the steppes in a solid wall along the 27 miles between the Black Sea and the Dnieper. Their escape cut off, thousands of Germans perished in the dunes and lagoons at the western end of the dyrpprd. Other thousands surrendered and trudged eastward in endless columns paralleling similar lines of civilians returning homeward after being freed from German guards who were herding them westward for slave labor.

Advance guards were within 12 miles of the Dnieper Estuary port of Kherson.

Only below Nikopol were the Germans making any organized resistance. There they were counterattacking in a desperate effort to permit a fraction of their forces to escape to the north bank of the Dnieper.

The army organ *Red Star* said the Germans threw a considerable air force into the battle of the river crossings.

The extent of the German rout was reflected by the Cossacks' 25-mile advance yesterday—the biggest Russian gain in a single day since the start of the war. More than 80 towns and villages were overrun.

More than 2,000 Germans were killed in one sector of the Nogaisk Steppes, while in another a German infantry regiment—normally 3,000 men—was dispersed and partly wiped out and its entire armament captured.

*United Press Staff Correspondent, Moscow—Reprinted from *Washington News*, Nov. 4, 1943.

"Die Kossacken Kommen"—The Cossacks Are Coming.

MORE POWER FOR BATTLE

by
*Brigadier General Rufus S. Ramey**

FROM the successive tragedies at Pearl Harbor, Bataan, and Corregidor, the United States has been able to recover and build its war machine to an unprecedented size that will continue to increase until every vestige of Axis resistance has been overrun and crushed. Every day adds new parts or means, found necessary during the participation of our forces in major operations under all the extremes of climate and terrain of this global war.

In the beginning, the urgency of the situation dictated that precedence be given to building up certain particular arms and services. To a degree, that condition will persist in order to meet unforeseen eventualities. To a large extent, however, the stage of preparation has been reached where attention should now be turned to balancing the machine. Other parts can now be developed that will increase the efficiency and, in turn, decrease the time that it will take to win the war.

One part of our war machine, which could not have precedence during the early phases of the war, was cavalry. The many immediate needs for other types of units justified a temporary deferment of the organization and training of cavalry units at that time. But that urgency is past. Now, the test of the need for any organization, item of equipment, or other means of warfare is the degree of its contribution to victory.

If our present war machine and our general situation are examined dispassionately and the lessons from our recent combat experiences are projected into the future, a scientific, practical analysis reveals, not only the urgent need for cavalry on the future battlefields of this war, but also the practicability of providing such units in sufficient strength to be a valuable asset to our combat forces.

U. S. Signal Corps Photo.

A unit of the 26th Cavalry moves into Pozzorubio, Dec. 20, 1941. The 26th Cavalry, the only U. S. cavalry regiment to participate actively in this war, covered General MacArthur's withdrawal into Bataan and made possible the valiant stand that enabled the United States to gain time to arm.

Combat Progress That of the Man on Foot

Two major changes have occurred since our entry into this war—changes in the whole concept of ground organization and tactics, which have been brought about by experience in the conflict.

The first of these factors is the recession from the extremes of motorization of our ground forces. Influenced by our own peacetime tendencies, by deductions from the Spanish Civil War, and the German speed of conquest in Czechoslovakia, Poland, France, and the Balkans, we came to the conclusion that anything less than the speed of a motor vehicle on the ground was archaic, and, therefore, had no place in our system of organization of ground units. Proceeding on that premise, we motorized everything—our infantry, cavalry, field artillery, and the units that supply and service them. At the time, this appeared to be sound and justifiable. With our entry into active combat, however, we found that we had been too optimistic regarding the manner in which operations would proceed.

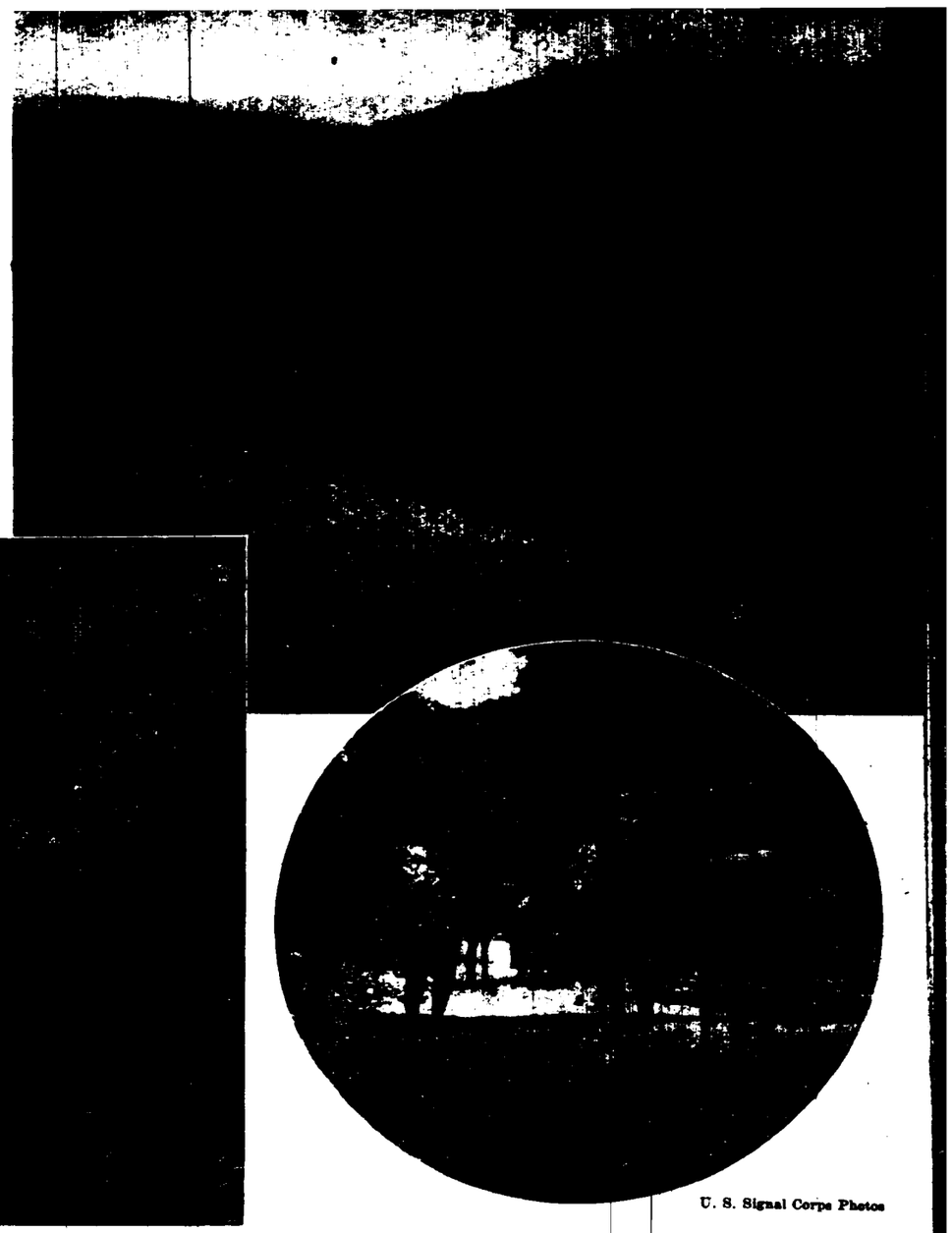
Our visualization of the speed with which units could move on the battlefield was rudely changed by the enemy. We found that once contact was made, progress normally was that of the man on the ground. The advance became a struggle for every foot gained. We found that the enemy stopped or slowed the operation of our motorized and mechanized units by the use of guns on the ground and aircraft above. In addition, that devilish development of this war, the land mine, has infested every area where a motor or mechanized vehicle could reasonably be expected to operate.

Foot elements were able to advance under such conditions, but this advance was usually laboriously slow, and often at the expense of units getting beyond their supporting weapons and supplies. Such weapons, ammunition, and subsistence that have gotten forward have often had to be moved by the hands and backs of men.

The picture is not complete with only a consideration of our experiences in the African and European theater of war. Our operations in the Pacific area have been on terrain where the motor and mechanized vehicles either cannot operate or are restricted to operation around the beaches and on trails hacked through the jungle. Here again, to an even greater degree, movement of weapons, ammunition, subsistence, and evacuation of casualties have had to be made by soldiers on foot.

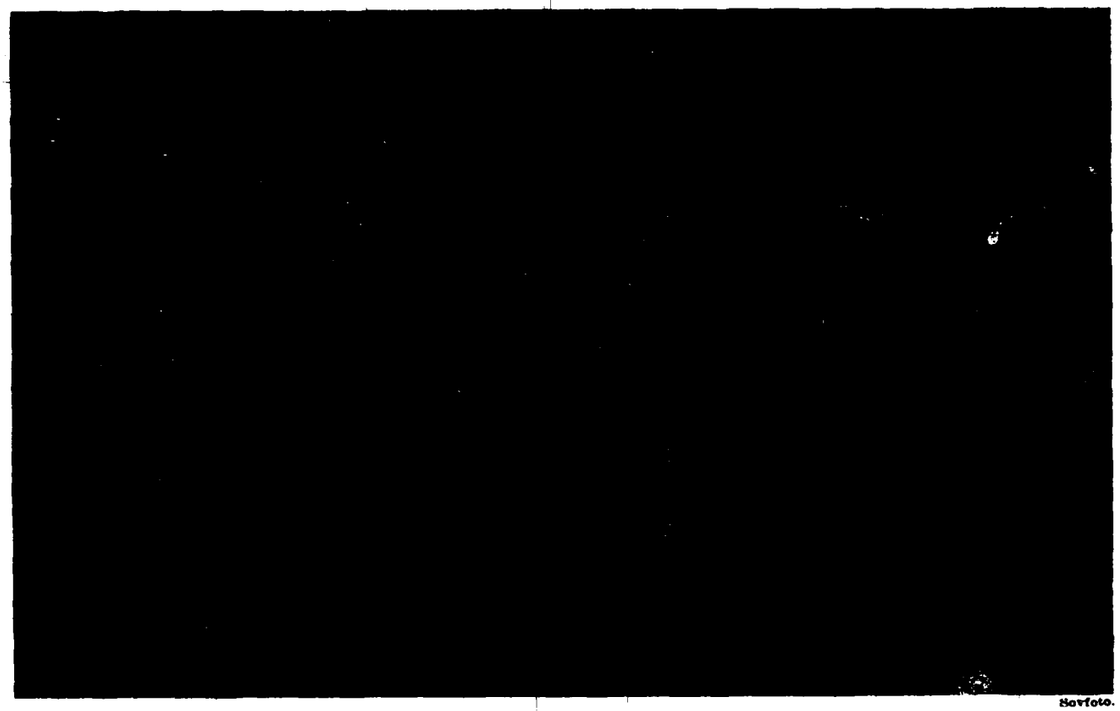
It may be claimed that this will continue to be true in the jungles of the Pacific islands. True, except that it has already been found that pack horses and mules have contributed immeasurably to lessening the burdens of fighting units and to increasing their effectiveness. It

*Commandant, The Cavalry School.



"Provisional Mounted Reconnaissance Troops," organized in Italy and mounted on captured German and Italian horses, have been aiding the Fifth Army's advance toward Rome. A United Press dispatch says that "most of the troopers were cow punchers or farm boys who have been riding from youth. One or two were star rodeo performers."

U. S. Signal Corps Photos



Sovfoto.

Red Army scouts in the Caucasus reconnoiter difficult terrain during the winter campaign of 1942-43 that climaxed in the fall of Stalingrad.

is imperative that we look to the future when we must operate on the mainland of Asia—in Burma, India, China, and elsewhere. Even there, the ability of motor and mechanized vehicles to operate will still be tremendously limited by terrain seriously lacking or completely devoid of roads.

Need for Cavalry

Wherein does cavalry enter into the picture; how can horse units influence present day operations or facilitate them? To answer that double-barreled question, it is necessary to examine critically our own and Allied experiences to date, along with the probable conditions that will confront us in future operations.

In line with our extensive motorization and mechanization, we have converted much of our cavalry to mechanized reconnaissance units. Some have already proved their value in Tunisia, Sicily, and Italy. They have sought out and furnished the vital information necessary to enable the higher commanders to maneuver and employ their units. Inevitably, however, in terrain that denied the use of vehicles, in areas where enemy mines and demolitions predominated, the mechanized reconnaissance units have had to leave their vehicles and proceed on foot while examining terrain and removing mines or bridging demolitions to pass their vehicles. In such a case, the mechanized reconnaissance unit was slowed to the speed of the units for which it was seeking information. These conditions adversely affect its value. Not only is the reconnaissance unit's progress slow, but so is that of the other combat elements. Under such circumstances, the enemy has the initiative.

Under these conditions, which such enemy action enforces, we have one degree of mobility—that of the dismounted man—against an adversary who retains several degrees of mobility. No matter what the nature of his intended operation—defense, delay, retreat, or attack—he forces our troops to conform to him. Eventually, we must reverse the picture. Tactically, as well as strategically, we must force the enemy to meet the situation that we dictate.

Wherein and how can horse cavalry *change* the picture, improve our situation, give us battlefield initiative over the enemy?

Two factors operate to deny us the initiative. First, wherever possible, the enemy takes advantage of the terrain which can neutralize our mobility—vehicles. Second, his use of mines, demolitions, and weapons force us to a time-consuming advance—the rate of men on foot. This applies both to reconnaissance units and the combat elements for which the information is sought. Cavalry can supplement or augment mechanized reconnaissance and dismounted combat units.

The horse-mounted rifleman, scout, gunner, radio operator, ammunition carrier can usually go wherever a man on foot can go, with the important difference of moving much faster. How radically this would change

many situations. What a difference a few cavalry units would have made in Tunisia, Sicily, and Italy! These thoughts projected into the future can be applied to the difficult terrain of the Balkans, Norway, other parts of Europe, India, Burma and China. The need for horse cavalry units, both as reconnaissance to supplement mechanized cavalry reconnaissance and as combat units, will become more pressing as our operations progress in almost every theater. In addition, we shall need pack units in many theaters to serve not only the cavalry units but all other ground units.

This reasoning is not purely speculative, or hypothetical. In the course of their operations, commanders in various theaters have felt the serious need for cavalry units—reconnaissance, combat, and pack.

MacArthur, Eisenhower and Patton are all reported to have recognized many uses for cavalry, but this recognition was qualified by the critical need for shipping space, which at the time outweighed the advantage that would have accrued. Many subordinate commanders in the African Campaign improvised horse units both for supply and other tactical uses. Many others are reported to have felt the serious need and lack of such units. During the campaign in Sicily, cavalry would have been most valuable for maintaining contact with the enemy and exploiting successes. In many cases, it would have denied the enemy the time to install weapons, demolitions, and mines.

British and French Experience

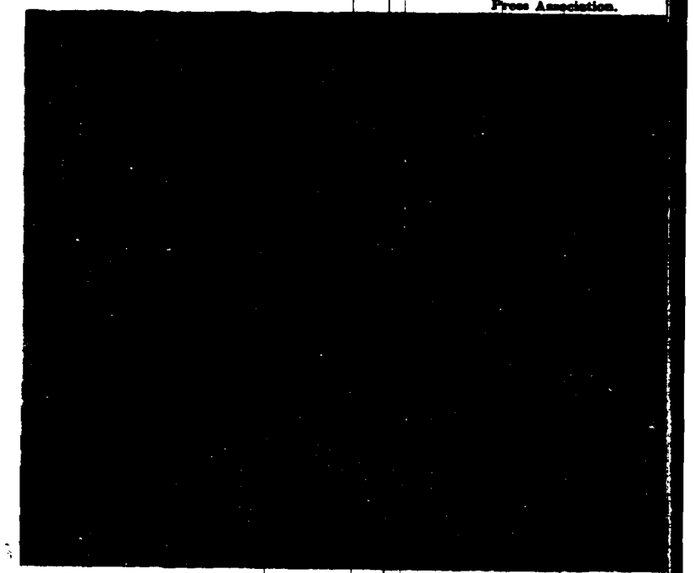
From reliable reports it appears that the British in

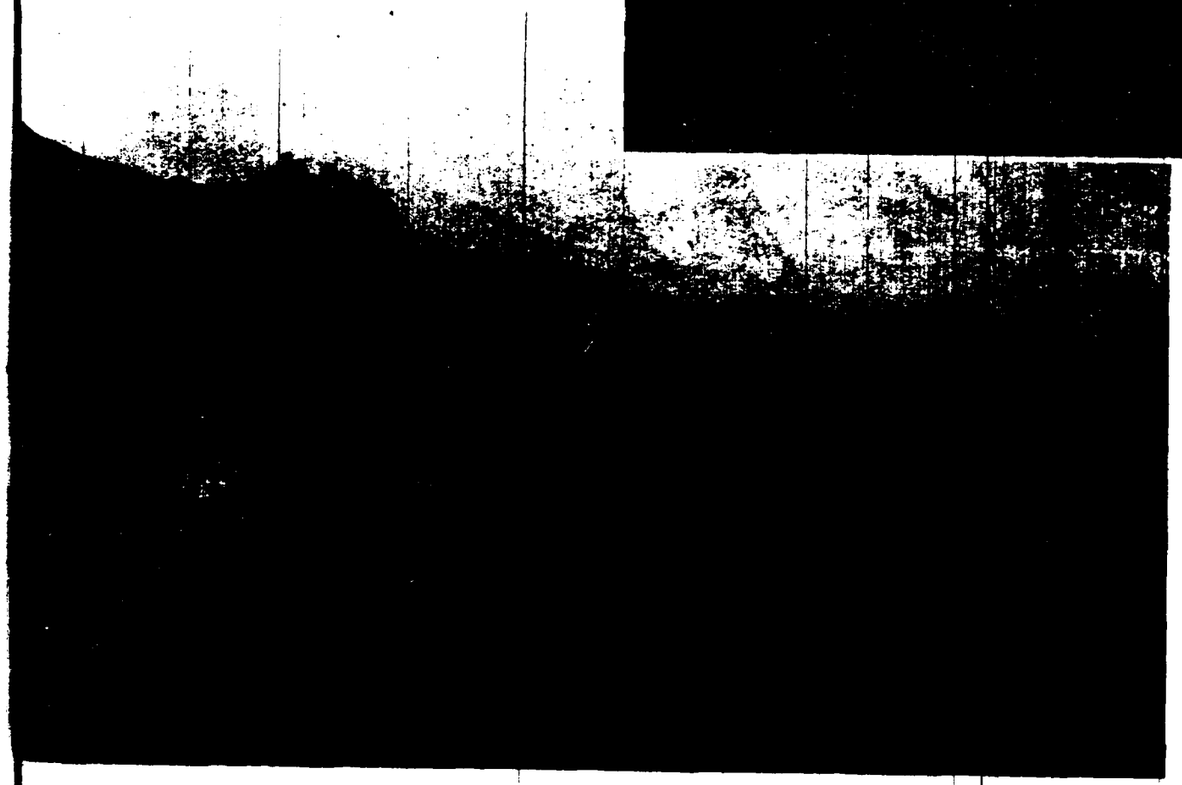
Right: **Canadian soldiers in Sicily use mules purchased from Italian farmers.**

Below: **A pack transport unit in New Caledonia is trained by U. S. cavalrymen for operations in the South Pacific.**

U. S. Signal Corps Photo.

Press Association.

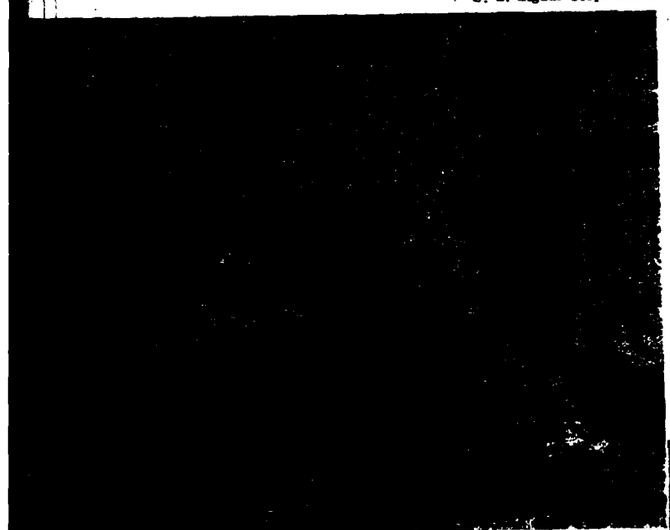




Tunisia made frequent use of horse reconnaissance and supply units. These units had to be improvised on the spot out of requisitioned animals mounted by men without special training. How much more effective would they have been had trained units been available! Yet it appears that these hastily improvised units rendered invaluable service.

A portion of the Free French forces, in both North Africa and Sicily, were native French Moroccan troops, mounted on native horses and commanded by French officers. These Goumiers assisted both U. S. and British units in Tunisia. From there they entered the campaign in Sicily, where one of their outstanding contributions was the capture of Capizzi. This action contributed materially to the fall of Troina, which broke the German resistance and opened the way to Messina. In typical American cavalry fashion, Goumiers use their animals for transport to the point of combat, then dismount to fight on foot.

U. S. Signal Corps Photo.



Lessons from Russia

Experience on the Russian front has added even more impressive and convincing testimony of the part that cavalry is playing in this war.

Although a large part of Russia's most productive area was overrun and ravished, and her armies pushed back to the Volga, she has not only reconstituted her fighting forces and factories, but has trained and equipped new armies to the point where, from a precarious defense, she has turned and launched the most powerful, successful sustained offensive of any of the Allies against the major weight of German might.

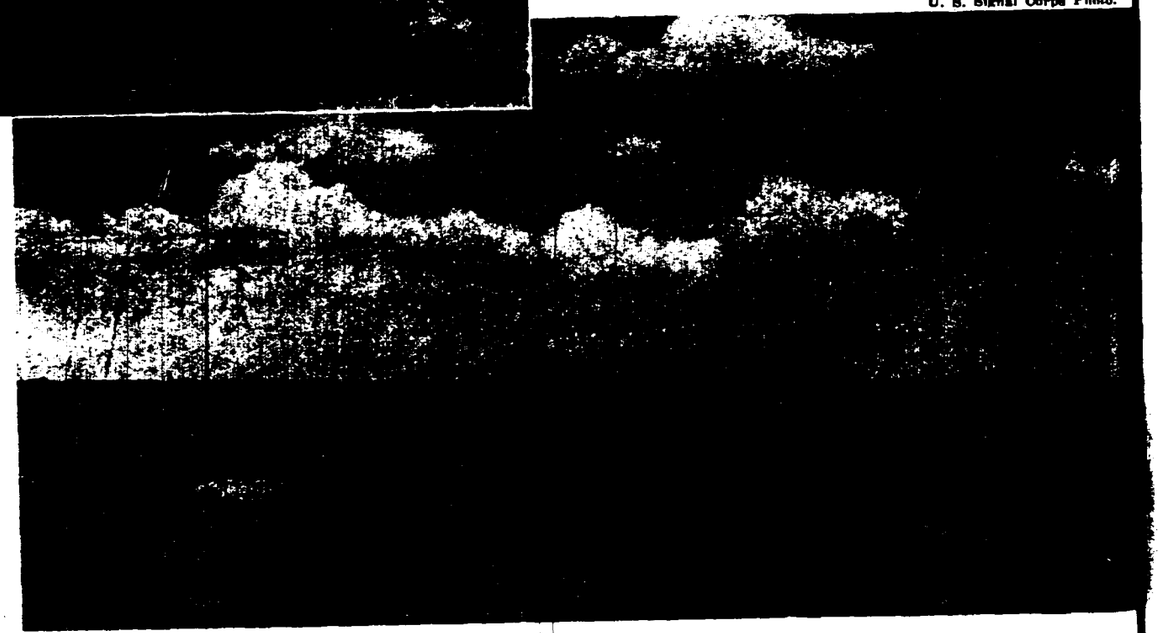
At the outbreak of the war with Germany, information credits the Russians as having from 30 to 40 cavalry divisions. During the dark days of 1941 and 1942, the Russians might have dismounted those cavalry divisions to reconstitute other critically needed units. But they did not. Rather, they used the mobility of their horse cavalry to prevent the disaster that threatened.

While their depleted and disorganized forces were being reconstituted and reëquipped, Soviet cavalry played havoc with the German lines of communications and rear installations. With the launching of the great Soviet counteroffensive, which has driven the German armies implacably back toward the German frontiers, the Russian cavalry has vindicated the wisdom of the leaders who retained it during the dark days when there must have been strong temptation to dissipate the horse units by dismounting them.

Left: A U. S. Cavalry patrol on a reconnaissance mission training at Fort Riley, Kansas.

Below: A unit of the 56th Cavalry Brigade participates in maneuvers near Fort Bliss, Texas.

U. S. Signal Corps Photo.



The value of the work of the cavalry may be judged, to cite only one major instance, on the occasion of the clearing of the Rostov area and the recapture of Taganrog. In an Order of the Day on August 30, 1943, Stalin cited two cavalry divisions—the 9th Kuban Cavalry Division of Guards and the 30th Cavalry Division. In other Orders of the Day Stalin has frequently cited cavalry units as a part of what appears to be a strictly Russian team combination—"the Soviet cavalry-tank-mechanized-infantry team." The coördinated efforts of this combination have brought brilliant victories for the various Red armies and disaster to the Germans.

Natural Deductions

In addition to appreciating these historical facts about the Russian cavalry operations, one other fact must be underlined. The Russian operations in 1942 and 1943 were carried out under circumstances and conditions very similar to those that will confront United States, British, and French armies in Italy and elsewhere in Europe when other fronts are established.

Already there is confirmation of this. A United Press dispatch from Italy on September 25, 1943 reported: "A new type of American cavalry, known as the Provisional Mounted Reconnaissance Troop and composed of volunteers who are experienced horsemen, has gone into action on the Salerno front." The superficial part of the dispatch—"new type of cavalry"—can be overlooked. The pertinent fact is that a horse cavalry unit was improvised to meet the demonstrated urgent need for the special capabilities of horse cavalry.

The time has come when we should provide any available means that will speed or increase the effectiveness of our existing forces in current or future operations. Although there was a shortage of shipping space in the beginning that prohibited the use of cavalry overseas, that situation is rapidly changing. Under date of October 6, 1943, we are informed that the United States alone has exceeded our most optimistic expectations by some three million tons of shipping and that we now have reached the point where shipping will become increasingly more available. We should now be able to provide ships to move all the means that are required by our commanders in the various theaters of war.

Our Horse Supply

We have in our Remount Depots at various points in this country already trained animals sufficient to mount a reasonable force of cavalry. They were trained in horse units that have been changed to mechanized units or transferred to other activities. In addition to those trained animals, we could procure in this country, within a period of 60 to 90 days, as many more suitable mounts for the training of the troopers.

If it appeared advisable to train cavalry units in this country, then move them overseas without their animals, and there remount them with animals procured in the overseas theater, numerous sources exist where the requisite animals can be procured. Australia alone has available sufficient highly suitable horses to mount several cavalry divisions. India, Iran, Syria, and other countries of the Middle East, can provide animals for operations in the Balkans, Italy, Burma, India, or China.

There are several advantages to procuring animals in the general area of the world where the operations are to take place: the added burden of ships is avoided; the animals are already acclimated; and the forage to which they are accustomed can be furnished—all without necessity for transport from the U.S.A.

Conclusion

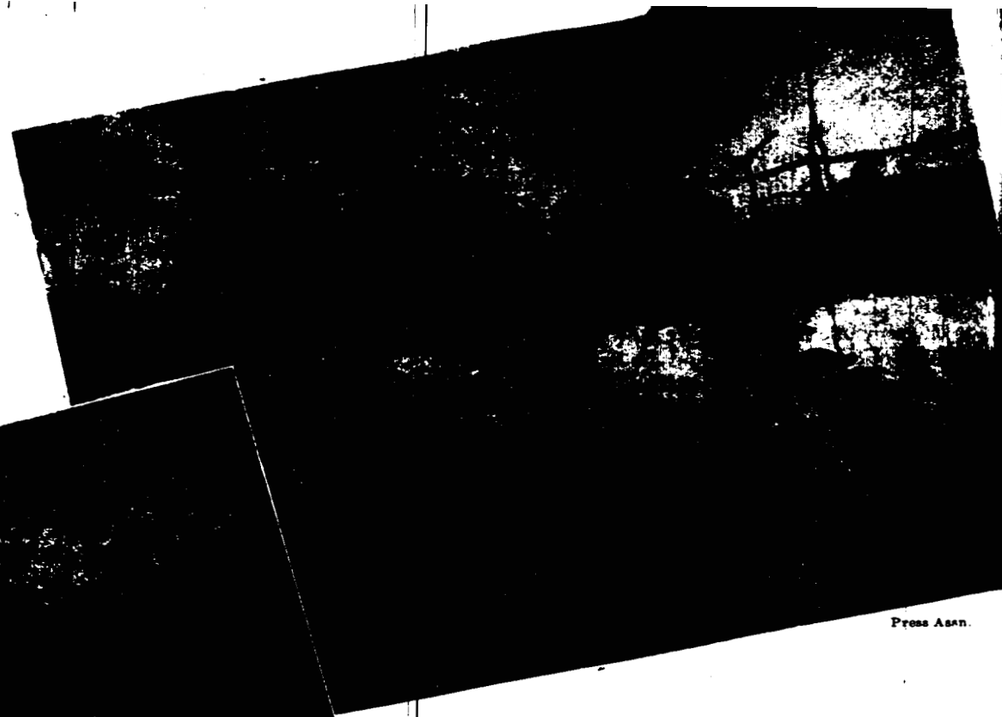
There is a demonstrated need for cavalry in this war. The need will undoubtedly increase. Its effectiveness has long since been established. However, we do not have a sufficient amount of cavalry at the present time. Organization of new cavalry units presents a double training problem—both horse and man must be trained, and this requires time.

If cavalry will add to the effectiveness of current or projected operations, if it will hasten our ability to destroy the enemy in any theater, then we should no longer defer the formation and training of new units. Individual commanders should not have to improvise such units—as has happened in Tunisia, Sicily, and Italy.

CAIAZZO, Oct. 21— . . . The general, a doughty former cavalryman, had had his camps shellacked by German artillery some time before we saw him, but he was as dapper, businesslike and pleasant as ever. Most of his outfit has been in steady action since the Volturno crossing—fighting in perpendicular country and winning all the way. He was somewhat relaxed at the moment because he had gone just as far as he could without capturing the town assigned to his colleague on the right.

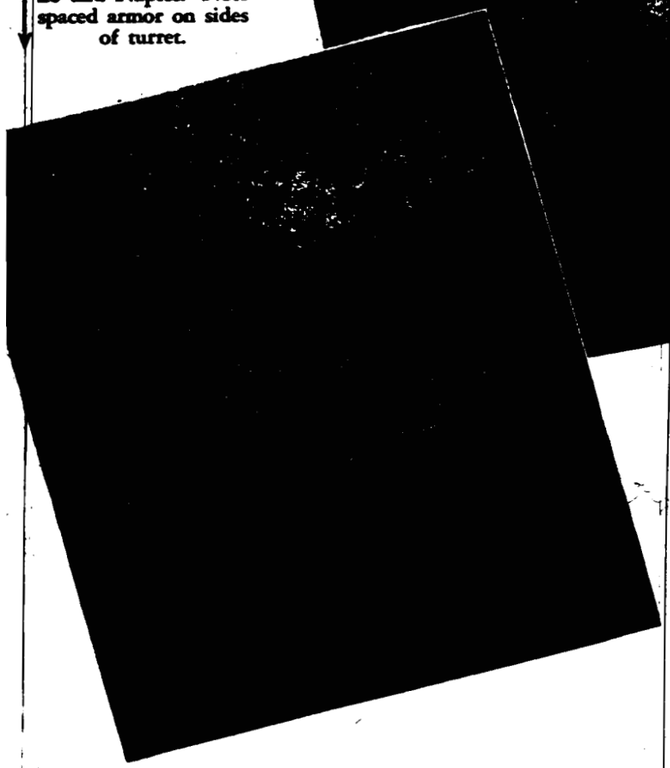
He indulged, as is his wont, in bemoaning the absence of a cavalry division in Italy. The great disappointment of this man is that he hasn't been able to coop up and capture a large number of Germans and he blames it all on the fact that his men have had to move on foot through the wild mountain country in which they have been fighting.

He has managed to piece together a pint-size pack-mule and mounted infantry outfit, but it only whets his appetite for some first-class horse stuff.—William H. Stoneman, *The Louisville Times*.



Two soldiers of the U. S. Fifth Army crouch in undergrowth in the Salerno area of Italy. Scene is from a newsreel film.

German Mark IV tanks, destroyed by Allied mortar fire, line the roadside near Cava—between Salerno and Naples. Note spaced armor on sides of turret.

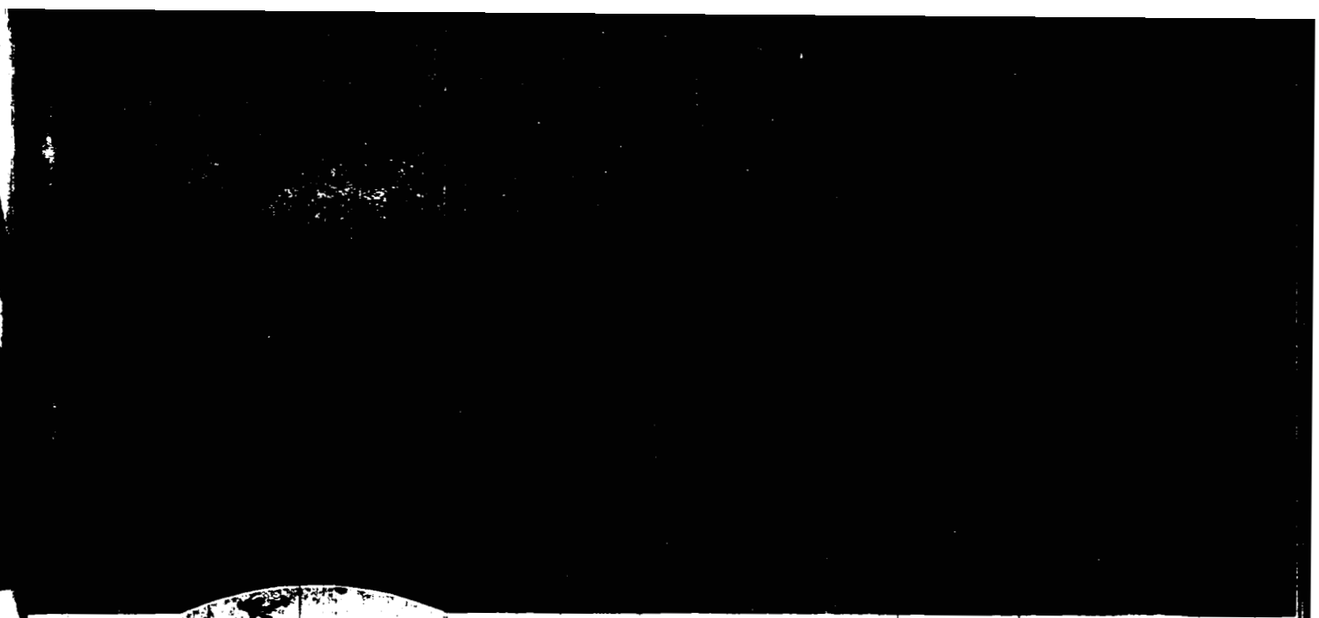


Press Assn.

U. S. Fifth Army On Italian Front

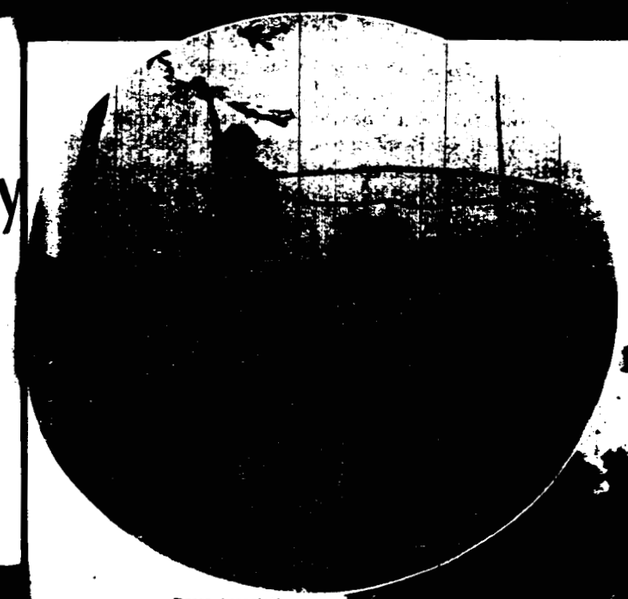
This German 210mm field gun barrel on limber drawn by half track vehicle was intercepted by Commandos while on the road to Vietri, northwest of Salerno, and the crew were killed.

Wide World



Press Association.

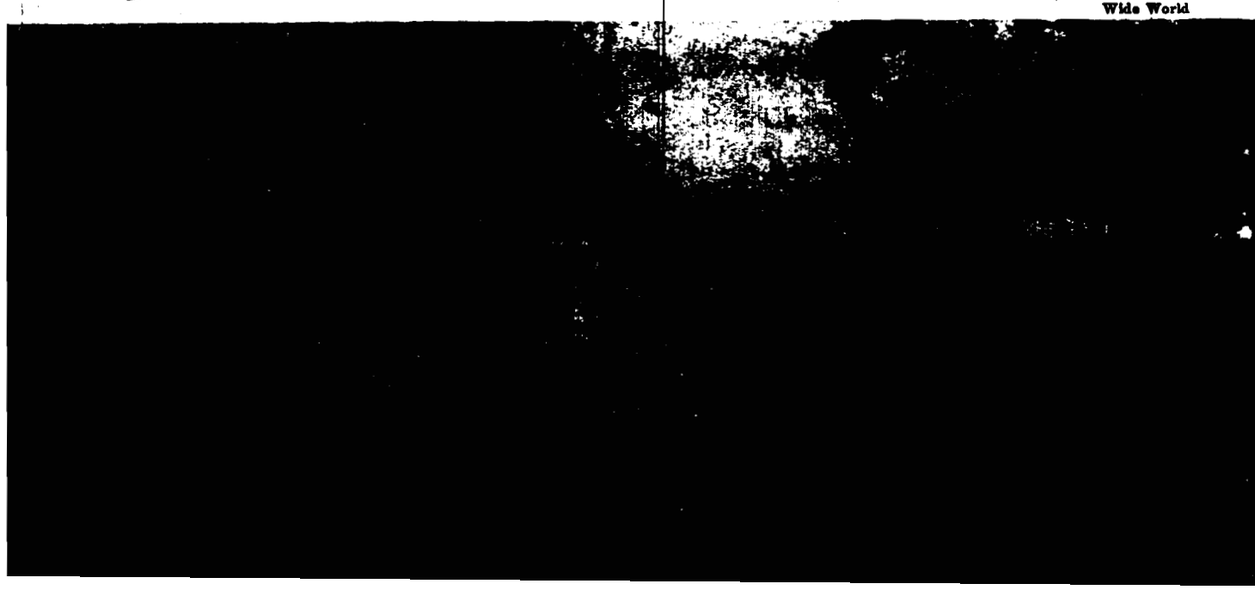
American infantrymen advance on a German observation post within sight of Mt. Vesuvius. The OP was established in a castle near the mountain.



An armored reconnaissance car captured from the Nazis by U. S. troops in Italy is being driven back to the rear. Soldiers tie white cloths to their rifles to avoid being fired upon by their comrades.

Press Association.

Press Association.



Engineers begin construction of the main ponton bridge which spanned the Volturno River in the central sector of the front in Italy. The bridge was used for heavy equipment such as trucks and tanks.

RECONNAISSANCE LESSONS FROM TUNISIA

*by Lieutenant Colonel Charles J. Hoy**

The cavalry has been given the job of training and providing troops for all reconnaissance units. This is a traditional cavalry rôle that is a part of cavalry heritage.

Cavalry has always been trained in the art of reconnaissance—"to look far afield, to be inquisitive, and to take nothing for granted."

THE 81st Reconnaissance Battalion of the 1st Armored Division had more battlefield experience in Tunisia than any other American reconnaissance battalion or squadron. It first went into action against the enemy on January 15, 1943, and did continuous battle reconnaissance duty until the end of the campaign May 9.

The information contained in this article is based upon more than four months' combat experience, during which time the battalion was called upon to do all types of reconnaissance—over terrain that varied from the desert in the south to the green rolling hills of the north; under tactical operations that varied from withdrawal and defeat to pursuit and victory; and against an enemy that changed from a determined foe to a beaten one.

The battalion made its share of mistakes, but learned to benefit by them. Training was continuous, even under combat conditions. The training received in the United States, Ireland, and England was sound, but constant training during battle was imperative.

Information

Information is the most powerful and most important weapon a reconnaissance unit can furnish the higher commander. To have its full effect, it must be accurate, complete, and quickly passed.

Inaccuracy. It is the duty of every reconnaissance leader to fight rumors, lies, and exaggerations with the same enthusiasm that he fights the enemy. A good rule to follow is, "Never believe a straggler, and rarely believe a casualty." The former generally lies or embellishes to explain his absence from the battlefield; the latter is seldom rational. Inaccurate information is dangerous. Men should be impressed with the necessity for guarding the integrity of their reconnaissance.

Accuracy. To be accurate in his information, a man on reconnaissance must always know his own location. He cannot pinpoint the enemy correctly unless he knows this. If he is mounted, a constant check on his vehicular odometer, maps, and air photos is necessary; but once he halts and moves dismounted to an observation post, he must pinpoint himself by the use of the alidade method or by resection.

All reconnaissance personnel must be able to identify quickly and *accurately* both friendly and enemy vehicles, weapons, personnel and aircraft. This is most difficult to do at long range or when visibility is poor; therefore, if there is any doubt of the correct identity of either personnel or matériel, they should be reported as *unidentified*. A "guess" is hazardous.

All enemy guns are not 88mms, nor are all enemy tanks Mark VI's. Almost everyone at first is prone to report all enemy large caliber weapons that they hear or whose projectile they see strike, as an 88mm. In fact, they will sometimes report a large mortar shell that explodes near them as an 88, too. Everyone should be able to tell the difference between a high velocity, flat trajectory weapon and a low velocity, high angle artillery piece. For example, the muzzle blast of the antitank gun has a distinct, sharp crack and a never-to-be-forgotten whistle as it zips past. The artillery piece has a comparatively dull boom and a droning sound as it sails over.

Some information will be secondhand. When it is, its source must be reported in order properly to evaluate it. Unfortunately, much of the information gotten from civilians is embellished, either by their political feelings or by their excitement or fear. Some of it, however, is extremely valuable.

Native Guides. For six weeks during the Tunisian campaign, the 81st Reconnaissance Battalion had about 30 native French troops (Goumiers) attached to it. Each platoon had three or four of these soldiers and used them as guides and interpreters. They were of great value and assistance to the reconnaissance platoons. They knew the country and the people. They functioned just as old American Indian scouts did for troops in the West. On one occasion, they saved a platoon of Company B, which had been cut off by the Germans during the Kasserine phase of the campaign. Goumiers with that platoon guided them over an unguarded pass that the Germans had considered impassable. An effort should be made to get native troops or guides with all reconnaissance platoons.

Completeness. For information to be complete, everything, however small, must be reported. What seems insignificant up front may mean much more farther back. The complete picture is made up from the supposedly unimportant small details. This must be done without becoming verbose or jamming the radio with a lot of unnecessary babble.

Here is an example of what is meant by completeness of enemy information.

One reconnaissance platoon took an enemy 88mm gun that had been abandoned. Upon examination, it was found that the gun had been prepared for destruction, with a pull-type igniter. The enemy had left in such haste that he had failed to pull the igniter. If the reconnaissance platoon had reported "enemy 88mm gun captured," this would not have been complete information. Instead, the report correctly said that the gun was abandoned, prepared for destruction, but not destroyed.

Evaluation. Further consideration of this situation brings out another point—the platoon leader's reaction when he found the gun. He had been working forward with difficulty that morning, against a determined enemy. This abandoned undestroyed gun, unless it had been planted as a ruse, was one of the first indications that the enemy was beginning to crack. The lieutenant had to evaluate this information for his own use, and decide whether he should continue to reconnoiter cautiously or rush boldly. The more battlewise a reconnaissance soldier becomes, the quicker and easier it will be for him to make this decision. He should be trained to recognize signs that indicate an enemy changing from an orderly withdrawal to a rout.

Code. For information to be passed back quickly, a permanent sequence or form should be used. This enables the same message to be passed from platoon to corps without the asking of endless questions, and also insures speed and accuracy. Complete familiarity with proper voice procedure on the radio is mandatory. Each squadron should have a simple code that is clear, brief and somewhat secret.

Observation. In Tunisia, it was found that most of the collecting of information was done dismounted. Observation posts were used extensively. These posts were gained for the most part by stealth. It must be understood that in a war of movement there is no front line, and it is quite possible for a small crew to go dismounted deep into enemy territory and establish an observation post. This was generally accomplished as follows:

The reconnaissance platoon, moving by bounds, comes under accurate enemy fire; it has gained contact. Long range antitank and artillery fire cannot be considered contact with the enemy. The platoon must get in under this fire. Usually it can be done mounted, but once under accurate short range fire, the men will generally have to dismount. The platoon takes cover from the enemy fire, and the leader, after a short terrain study, will pick the best place to establish an observation post.

The observation team is picked, with the minimum number of men selected to establish and maintain it. A radio is dismounted. (The 510 was found to be fairly reliable, but it is believed that the 511, if available, would be much more satisfactory.) The leader normally will accompany the observation team, as the person most qualified in reconnaissance should be where he can see best. While using all cover, concealment, and camouflage possible, the men move stealthily to the observation post. Because of the situation, they may sometimes have to wait until darkness to get there.

Once established on the observation post, the leader pinpoints his position and notes his range of vision in all directions. He reports this information and the situation back to his commanding officer.

The good reconnaissance leader must possess, in addition to many other military attributes, an insatiable curiosity. He should always try to improve his position so that he can see more—a sort of a "yonder-pastures-are-greener" attitude. Several times in Tunisia it was possible to maintain observation posts behind the enemy position, or even on top of hills held by the enemy. Tall buildings were sometimes used as observation posts.

Reports. In addition to regular and emergency reports, the observation post commander must make a "last light" and "first light" report. Just before darkness he searches his area with his field glasses, notes any enemy information, negative or positive, and transmits it back to higher headquarters. This is called the "last light" report. Its value and necessity can readily be seen, and it should be SOP for all reconnaissance units. The "first light" report is similar, but is accomplished at dawn.

Listening Post. The observation post is of little or no value at night, so a listening post is the night substitute. The listening post is established so as to cover the probable avenues of approach open to the enemy, such

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as a main road, a pass, or important road junction.

Assume that a reconnaissance platoon is organized into three teams, each team having an armored car and two bantams. The first team establishes the observation post, while one of the other two prepares to establish the listening post. Routes to and from the listening post are reconnoitered in daylight if possible. Movement to the listening post is generally made during darkness.

In Tunisia a team of three men was found to be sufficient to man the listening post. The vehicles of the team were brought up as close as possible and bivouacked there for the night. When necessary, the 510 radio was dismounted and carried forward to the listening post team. Reports were made at least once an hour.

Once informative contact is gained, it must never be lost.

Communication

If information is the most powerful weapon of the reconnaissance unit, then certainly communication is information's vehicle. The 81st Reconnaissance Battalion had SCR-193's and SCR-510 radios. Later on, it was issued the SCR-536 radio. During the first half of the campaign, when the battalion was covering a very wide front, the 193's never failed; voice communication was possible over long ranges. The 510 was used quite frequently as the dismounted set at an observation post or a listening post. It is believed that the 511, which is much lighter, will be more reliable.

Nets. The assigned nets used in the beginning (one for each company in addition to a battalion net), did not prove satisfactory. First, the platoon leader, reporting the information, called his company commander; then the company commander went to the other set and sent the message to the battalion commander. Quite frequently, the battalion commander would find it necessary to ask the lieutenant a question—not always because his message was incomplete, but rather because of new developments arising during battle. Much time would then elapse before the answer was received. Not only was this delay objectionable, but these radio nets tied the company commander down to his CP. Instead of using his ability as a battlefield commander, he became a glorified message center clerk. He could not leave his CP in order to visit his advanced platoons. After a few weeks of this, all the platoon and company commanders' sets came in on the battalion net.

There were two possible disadvantages to using a single battalion net. First, there was the danger of having too many sets on the net. (Sometimes there would be more than 18 sets on a net.) The other objection was that by having the battalion commander deal directly with the platoon leaders, the company commanders' prerogatives were usurped.

Discipline. It was found that the first problem could be solved by rigidly disciplining the net. The men quickly realized that there could be no extraneous "bull" or chatter; the radio was to be used only for business. It was further found that, although there might be 18 sets on the net, seldom if ever, were there more than two or three platoons in actual contact with the enemy at any given time.

Orders. The other disadvantage can be solved by the battalion commander following the chain of command, in issuing orders. This does not mean that he should not be able to deal directly with the platoon leader in asking questions or advising him. For example, in Tunisia the 18th Army Group usually kept a "phantom group" at battalion headquarters. This "phantom group" was commanded by an officer who had a radio in direct contact with General Alexander's headquarters. Given a copy of each message sent back to divisional headquarters, this "phantom set" would then send it back to 18th Army Group headquarters at the same time that it was sent to division. Group headquarters never issued an order to the battalion commander, but it did ask questions and gave information and advice that was of great help.

Check. In addition to the many sets on the battalion net, a set from the division artillery would sometimes come in. If men are trained in radio discipline, however, an additional set is not too much to handle.

Another advantage in the use of a battalion net is that it gives the battalion commander a closer check on the proficiency of platoons. A single net also enables all the platoon leaders to know the battalion situation at all times. This is essential. It is strongly recommended that the squadrons train to operate, if necessary, with all platoon and troop sets on one net. Once they become proficient with this net, all other nets are easy. The 506 radio set with its push buttons should make the squadron nets very flexible.

Commanders should visit their advanced elements, but they should not leave their CP unless they have communication with it. The driver can operate the radio (a 193 set in a bantam), so that there need never be a time that the commander is out of communication with his headquarters.

Administration

In Tunisia, it was found that administrative functions could be carried on even under the most difficult conditions, such as existed during the early days of the campaign when it was impossible, because of tactical conditions, for the reconnaissance battalion to be pulled back to a rear area to rest and refit.

Reserves. Each company tried to keep a platoon in reserve at all times. During the time that a platoon was in reserve, the company maintenance section worked on its vehicles; the communication sergeant checked the radios; and the platoon as a whole worked on the vehicles and weapons. The mess truck usually stayed with the company headquarters so that it was possible to feed the reserve platoon hot meals. After the platoon was refitted and resupplied, it would go out and relieve one of the other platoons. Then that platoon would come back, refit, and resupply, and go out to relieve the third platoon. In this way, it was possible to relieve a platoon at least every five days. Whenever it was possible to bring a company back in reserve, the battalion maintenance section would come up from the trains and work on the company vehicles, and the communication officer and noncommissioned officer would supervise the radio repair.

It was during these times that the men washed their clothes, got haircuts, took baths, wrote letters, and were visited by the chaplain. The company commander, first sergeant, and the supply sergeant caught up with their paper work. This paper work would include special requisitions for clothes, reports necessary for citations, and entries in the morning report with respect to killed, wounded, missing and captured.

Quite frequently the company in reserve was busier than the other two companies, for in addition to administrative and maintenance duties, training had to be conducted during this period. One of the hardest jobs that a company commander has during this time is to keep from letting up. It is granted that the men are tired and weary, but it is criminal to let them loaf during this period in reserve. By that, it is not meant that they should not be allowed to rest, but it should be made certain that they are ready to go back into action better trained than when they came out.

The Wounded. Of course, some administrative functions continue right up on the battlefield. Medical evacuation is one. The T/O for the battalion called for three medical officers and one dentist. Permanent medical teams were made up for each company. The battalion surgeon stayed with battalion headquarters. One doctor with a half-track ambulance and bantam and medical crew went with A company; one with B company. The dentist with a similar team went with C.

Evacuation of the wounded generally was accomplished as follows: The wounded man was immediately treated by his comrades. First aid kits in each vehicle contained bandage, sulfa, and morphine. The platoon leader would notify company headquarters and tell them whether he could send the wounded man back, or if he wanted the ambulance sent forward. If the ambulance was sent forward, the medical officer would accompany the ambulance. He had to know how to read a map and know the situation on his front because since there was no front line, he had to be sure of his location. The medical officer would treat the patient. Many times a plasma transfusion was necessary, and it would be done on the spot. The wounded man would then be taken back and, depending on the situation and the condition of the patient, the battalion surgeon would determine whether the man was to be taken to the company command post, to the battalion CP, or back to the division collecting station.

Usually, the battalion surgeon would pick up the patient at the company CP and take him back to the division collecting station. Sometimes the company medical officer, because of the patient's condition, would take the patient to the division collecting station himself. The medical battalion of the division kept their stations pushed well forward.

If the man was wounded at an OP, dismounted litter bearers would bring him back where he could be picked up by the medical bantam, or by the ambulance.

The Dead. Another administrative function that must continue on the battlefield is the evacuation of the dead. This is a very important command function. The morale of an outfit is greatly affected by this. Bodies of former comrades should not be allowed to lie for any length of time where they will have to be seen. They should be gotten back at once. There are many solutions to this problem.

In Tunisia the company commander generally would get some kind of transportation out to pick up the body. Quite often this would be the ambulance. This vehicle was used only when it would not interfere with the evacuation of the wounded. Usually, battalion headquarters would learn about this death at the same time that the company commander did. The chaplain would be notified. If he were at the trains, he would report out to the battalion CP and find out what transportation was available to bring the body back to the graves registration unit. The supply truck that took supplies out to that company would most likely be available; and further, it was empty and had to go back to the dumps for refilling.

Casualties. All units are prone to exaggerate their casualties at first, but this is a dangerous practice that too often spreads rumors on the battlefield. Nine out of ten times, a reported "50% casualties" will turn out to be not over 5%. Casualties should not be reported by percentage anyway; they should be verified and then reported exactly. When the battle casualty report is exaggerated, it causes the same effect as if those men were actually incapacitated, because the commander believes the report received, and his immediate battle decision is often influenced by it.

Supplies. The resupplying of a reconnaissance battalion, especially when it is in operation over a very wide front, is most difficult, but the 81st Reconnaissance Battalion never failed to accomplish its missions because of inadequate supply. Corps and division dumps were pushed well forward. The battalion S-4 always knew where these dumps were, and worked very closely with the headquarters company commander who commanded the trains. The battalion trains were kept about two hours distance behind us—between the dumps and the battalion CP. A small truck train of about five trucks with gas, oil, ammunition, and rations under the command of the S-4 stayed up front close to the battalion CP.

On receipt of the daily report, necessary supplies would be sent to the companies, usually at night. If the S-4 used a truck of gas and a truck of ammunition one night, the train commander would send another truck of gas and another one of ammunition on up to the S-4.

The empty trucks would continue on back to the train commander, and then on to the dumps for replenishment.

The companies must make accurate reports for replacements and replenishment.

Morale

The *esprit* of an outfit is one of the greatest contributing factors to its success in battle. A soldier fights primarily for his unit. He knows that he is in any particular battle because his unit is; therefore, he will be influenced by what his buddies think of his actions on the battlefield. If his unit has a good *esprit*, he will give a good account of himself on the battlefield. If the men in an outfit are proud of their unit, the unit can be said to have good *esprit*. The pride should not be false—it should be warranted. The soldier is proud of his outfit if he knows that his outfit has a reputation among the battlewise troops as being battleworthy; that is, obedient and determined under fire. He will never want to disgrace his outfit by his actions, attitude, or appearance. There are some few who seem to believe that undisciplined and unmilitary troops are the best for battle. The men who fought in Tunisia know that they would rather have fought that kind of an enemy.

Tactics

Fluidity. Tactics must be fluid, so that the unit is capable of operating successfully against a determined enemy as well as against a cracking or cracked one. Platoons must be trained to react immediately to any signal or order from the platoon commander, or to any normal set of circumstances.

Mines. These are usually the worst obstacle with which reconnaissance units have to deal. Each platoon of the 81st Battalion had a mine detector. The primary purpose of mine-laying is to delay. To effect casualties is secondary. Unfortunately, when a reconnaissance unit is pursuing, it must take chances. It cannot creep along behind the mine detector. Speed is essential. The 81st, therefore, led with its heavier vehicles and generally discovered mines by the explosion, cleared a small path through the field, marked it, reported it and went on. Reconnaissance leaders must develop a sixth sense in locating mine fields. The enemy cannot lay them everywhere, so he generally lays them in bottlenecks, by-passes around a blown bridge, or on the shoulders of a road. His tactics of mine-laying must be studied constantly. Here again is an example of why training on the battlefield is absolutely necessary.

Purpose. Ordinarily, a reconnaissance unit will not fight for its information. This does not mean that it need not be aggressive. It takes "guts" and drive to slip past the enemy, get behind him, and stay there transmitting information. But reconnaissance by fire should not be used promiscuously. If the enemy's morale is high, firing is likely to be nothing but a waste of ammunition; however, if it is low, a shot into the bushes may flush him.

One thing that reconnaissance personnel must remember at all times is that no matter how much is seen, it may not be the whole picture. They cannot expect, for instance, to have artillery always sent up to shell any target designated.

A reconnaissance unit is out there to furnish information—not to make plans.

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Personal Notes from Battle Experiences

*As Told by Captain Maurice H. Harris**

To Lieutenant L. R. Barnhill

OFFICERS entering combat zones must make drastic revisions in what they consider personal necessities if they are not to be loaded down with useless equipage that will hamper their efficiency on the battlefield.

In most instances officers' needs at the front can be met by government issue items. Because many officers in Africa were not cognizant of this fact, by the time that they went into action they had personal clothing and equipment scattered all the way from North Ireland to their base at Constantine. Even bedrolls were either stowed or lost during the early stages of action.

Officers in Africa learned to get along with the same items as their men. This entailed leaving bulky bedrolls behind and using GI blankets.

"When you leave for a combat zone, leave your personal sidearms at home along with your other trinkets. They will be next to useless to you in battle where you cannot get ammunition to fit them.

"Leave rings and jewelry at home, and toss the fancy dog tag strings into the ocean. A shoestring or piece of cloth tape is suitable for the front lines. Get a GI watch if possible. There's no watch repair shop at the front to pamper your favorite timepiece.

"Allot all your pay except a minimum of perhaps $50.00 a month to your nearest of kin, and do this well in advance of the time you leave this country. Money is a nuisance at the front and there is neither time nor opportunity to sign pay vouchers once you are in action. Money is received only at such times as the unit returns to divisional headquarters.

"Have a shoulder holster made for your .45 caliber automatic. The regulation hip holster is in the way and is easily snagged when working around tank destroyer vehicles.

"Learn to shave with toilet soap to eliminate another item from your personal gear. Get a small metal case for your toilet articles. The usual leather cases used by officers in the area of the interior are too bulky for battlefield use and are easily lost."

Organizational equipment, even the company CP tents, were stored at the Constantine base along with the officers' uniforms. Wool underwear, fatigue suits, Red Cross knitted sweaters, when available, and combat suits were worn in battle. After the early stages of the fighting, three-quarter length leather boots were provided to replace leggings and regulation shoes.

Officers using field glasses fitted small leather caps over the eye pieces to keep out water and dirt and prevent reflections that might give away their positions. The caps are so made that they slide back on the carrying straps when the glasses are in use. They are easily slipped back in place when the glasses are not in use.

Every officer must know the characteristics of every weapon within his unit.

In some cases, French-type sets on radio equipment were replaced with headsets after it was found that calls were frequently missed when the would-be receiver had the French set lying on the seat, out of hearing distance. By wearing headsets the men were always ready to hear call signals. This proved efficacious in battle.

It is suggested that noncommissioned officers' schools might be set up on the order of the officer candidate schools, except that the graduates would be considered prospective NCO's. In battle each vehicle becomes a combat unit within itself, and the NCO must take charge. Weak NCO's can be the biggest failing in battle.

A unit frequently employed on night security missions is hindered in its ability to conduct daytime reconnaissance. Such crippling can be minimized by using the pioneer platoon for night security missions.

Protection of march units against aircraft fire was gained by some outfits through the use of a warning screen and employment of a cone of fire. Warning of approaching aircraft was sounded by jeeps running from two to three miles on the flanks and to the front of the column. (This distance varied with the terrain situation.) Through prearranged signals, these outguards warned the main body of approaching aircraft. The column units immediately fanned out in a rough oval—even numbers to the left and odds to the right—and threw up a cone of fire with every available weapon. In most instances this beat off attacking aircraft.

Reconnaissance vehicles were used only to transport observers from one observation point to another. Actual observation was done from the ground. Orders to reconnaissance units from higher headquarters should indicate how it wants negative, as well as positive, information reported. In Africa, men at the front were prone to ignore transmittal of negative information to their commanding officers unless ordered to report in a specific manner. Positive information, as a general rule, was transmitted upon receipt, and negative information at predesignated intervals.

Through two field expedients, improvement was made in the effectiveness against aircraft of the .50 caliber machine gun mounted on the M2 half-track skate mount. In one case, a lateral extension, built inward from the skate mount, allowed a greater field of vertical fire. In another case, the regulation ammunition box, which holds only 50 shells and is fastened to the feed pawl pin, broke off during cross country travel and was replaced by a strap-iron basket holding 100 rounds. The original issue box on the gun had been the cause of many failures to feed.

A few minor adjustments greatly increased the stowage capacity of jeeps. If the entire rear seat, including the frame is removed, the metal liner of a .50 caliber ammunition box can be stowed in this space to increase the ammunition carrying capacity of the vehicle. Men's packs, placed on top of the box provide an expedient seat. Bolts and straps can be fastened to the front fenders so as to hold additional packs on the fenders.

In Africa it was learned early in battle that the Germans seldom fire at jeeps. The enemy has a high regard for the tough little vehicles and prefers to capture them undamaged, if possible.

As for half-tracks, those jack-of-all-trades vehicles, the Germans always fire upon them, for as a Nazi prisoner put it, "We never know what to expect on a half-track—a .30 caliber machine gun or a 105mm. howitzer—so we take no chances and fire on all of 'em."

A final warning to young officers subject to call for overseas duty might be summed up as follows: "Get all you possibly can out of your training in the United States. See that your noncoms give you more than lip service. Demand that they know their jobs and determine as nearly as possible if they will be capable of handling men while under fire.

"Fighting today breaks down into small groups, and only the thoroughly trained soldiers led by quick-thinking NCO's come through front-line action in physical and mental condition to assume their rightful place in civilian life once the fighting is finished."

*Captain Harris commanded the Reconnaissance Company of the 701st TD Battalion in Tunisia.

Russian Summer Offensive*

THE whole of the Russian front remained completely quiet throughout the spring and the early part of the summer. The delay in the opening of the German attack was accounted for in part by: the uncertainty of the direction and weight of the next Allied blow after the unexpectedly rapid Axis collapse in Tunisia, the necessity for a period of rearming and retraining after the late winter operations, and the need for organizing and incorporating the new manpower collected in the recent comb-out of industry.

The German attack was finally launched in the first week of July, against the Russian salient west of Kursk. Thirty-eight divisions, including a high proportion (nearly half) of armored divisions, took part in it, and it took the usual form of a converging double drive against the northwestern and southwestern forces of the salient.

The northern drive against the forces between Orel and Kursk made no headway at all, and was broken off as soon as its complete failure was recognized.

The southern drive, aimed between Kursk and Belgorod, at first fared better, and a wedge about 25 miles deep was driven into the Russian lines, which for a time gave the Russian High Command cause for serious anxiety. However, the advancing enemy troops eventually came to a standstill in the heart of the Russian defenses, which were very deep and closely knit. Repeated counterstrokes at the flank and rear of the intruders finally forced them to relinquish most of their gains.

By July 17th, the Russians had regained all their lost positions, and it was clear that the long-expected German summer offensive in Russia had been everywhere completely repulsed.

The Germans, perhaps because of the general decline in the fighting efficiency of their infantry, perhaps because of the great confidence placed by them in their new heavy "Tiger" tanks and self-propelled guns (nicknamed by the Russians "Ferdinand"), reverted during this offensive to the old tactics which had served them so well in Poland and France, but which they had been compelled to abandon early in the first Russian campaign. In this Kursk battle a wedge of the new heavy tanks, followed by self-propelled guns, usually led the way. The second line was formed by motorized troops supported by infantry of the normal slower moving type. The former close coöperation of arms, of which every campaign of the present war has emphasized the paramount importance, was far less constant and effective than it had been in previous German offensives. This was one of the principal causes of the costly failure of the Kursk operations.

The new tanks and self-propelled guns did not come up to the high expectations placed on them and by no means proved invulnerable to the Russian antitank gun weapons. The whole affair showed that though there might be little noticeable deterioration in the fighting spirit of the German army, its efficiency and technical skill had definitely declined from its former high standard.

While the German attack at Kursk was still in progress, the Russians in their turn passed to the offensive farther north, and launched a three-fold blow against the salient in the enemy line covering the approaches to Orel. The axes of these three drives were the railways leading to the city from northeast, east and southeast, and the task before the Russians was formidable.

The defenses had been progressively built up during the twenty months that Orel had been in German hands, and comprised belt after belt of works, interconnected by numerous switch lines of defense to curtain off and contain any flank attacks. The Germans conducted, as is their custom, an active and resilient defense. They launched frequent counterblows to regain any lost ground, and their garrisons fought with stubborn and bitter persistence.

Nevertheless the Russians pressed steadily forward day by day. Their method was to nip off segments of the defenses one by one by means of encircling movements cutting deep into the German front. The separate garrisons in the area thus isolated were then reduced by attacks from all sides.

Mobile forces, including tanks, motorized infantry and mobile artillery, working in close conjunction as a team, carried out the preliminary encirclement, and left the task of clearance to the troops of the normal type formations following closely behind them.

The most important of these local yet inter-dependent victories was the storming of the Bolkhov defended area, 35 miles north of Orel, which was the prelude to a menacing thrust southwestwards aimed at the Briansk-Orel railway, on which all the hostile troops in the salient depended as a line of supply and route of escape. From that moment, the Russian advances along the railways to the east and south of the city began to accelerate and close in, and though the bulk of the garrison of Orel probably made its escape before the net closed about it, the rearguards left to cover the withdrawal suffered severely, and the captures of arms and matériel, vehicles and stores by the victors attained large proportions.

The rapid and complete success of the Russian Orel operations received a fitting but somewhat unexpected supplement on August 5th by the capture of Belgorod, on the southwest of the Kursk salient. This was the result of a sudden coup de main, which took the Germans completely by surprise and overran their defenses before their reserves could arrive to meet the assault.

The Russian figures of German losses during this eventful month from July 5th to August 5th included 112,000 men killed or captured, 5,000 tanks, 2,300 guns, 11,000 motor vehicles, and 2,500 aircraft destroyed or taken.

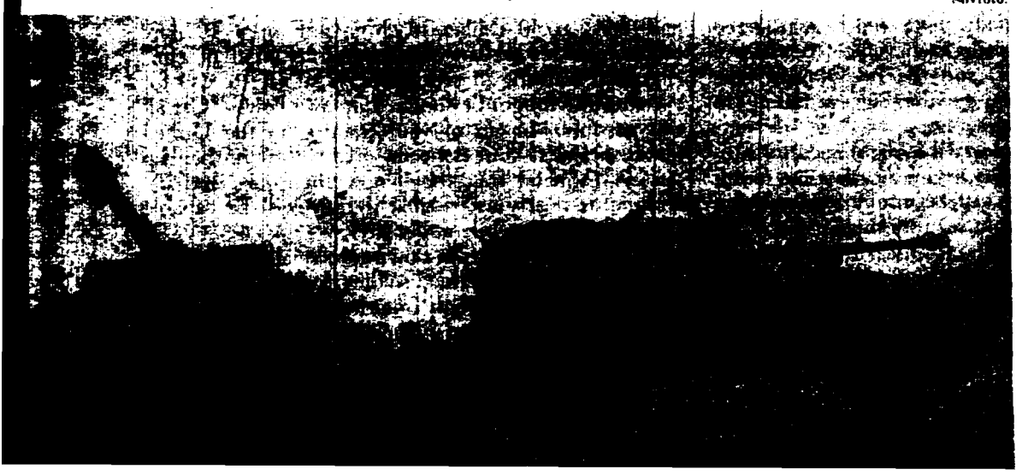
The strategic gains were also of considerable importance. By the capture of Orel and Belgorod, the Russians came into possession of the great trunk line from Moscow to the Donetz basin along the whole length of 600 miles, and thereby gained much improved facilities of supply, and lateral transfer of troops and matériel for purposes of maneuver. The possibility of economizing forces—theoretically open to the enemy by the elimination of the Orel salient and the reduction of the length of this front by 100 miles—was probably more than counterbalanced by his heavy battle casualties, which on the basis of the Russian figures can hardly be put below 250,000 men—the equivalent of some 20 divisions at their present strength.

More important than these tangible results may prove to be the fact, made clear by these operations, *that the Russian army as a fighting machine is now superior to that of Germany*, even in the summer fighting in which hitherto the enemy has always been at his best. Russian aircraft are capable of wresting from the *Luftwaffe* local command on any selected battle zone. Russian artillery, which has always been better than its German counterpart, has still further improved its armament, its methods, and has now attained undisputed supremacy on the battlefield. The new medium-heavy Russian tanks are heavier and more formidable than the ponderous and clumsy "Tigers," which have failed to come up to the high hopes placed in them. Soviet antitank weapons, which include a number of the American-made Bazookas, have been considerably stiffened and are now highly effective. Russian generalship's staff work, too, is now fully up to, if not above, the best German standards, and quite equal to making the best use of the Red Army's superiority in numbers and armaments.

The victory of Stalingrad, great and epoch-making as it was, was primarily due to German over-confidence and errors which the Russians were able skilfully to exploit, and to the weakness of the Axis satelite formations left to hold vital areas on the flank of the German spearhead.

The victories of Kursk, Orel and Belgorod were gained in a stand-up fight between the two armies, able to employ all their available forces and resources on a fair field with no favor to either side. The triple Russian victory, clear-cut and complete, affords not only a criterion of the respective military efficiency of the two armies, but a happy augury for the future course and final result of the duel between them.

**The Tank* (London).

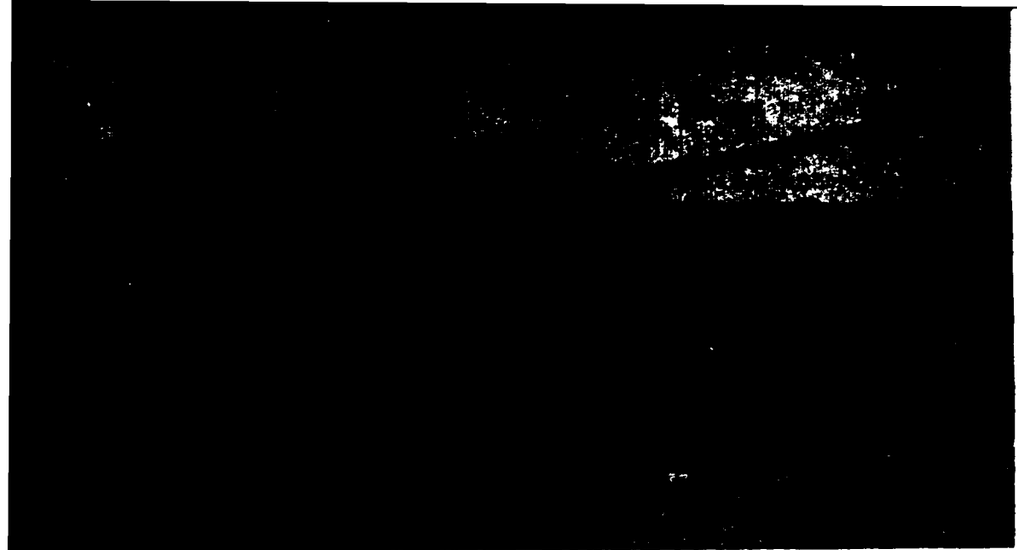


Sovfoto.

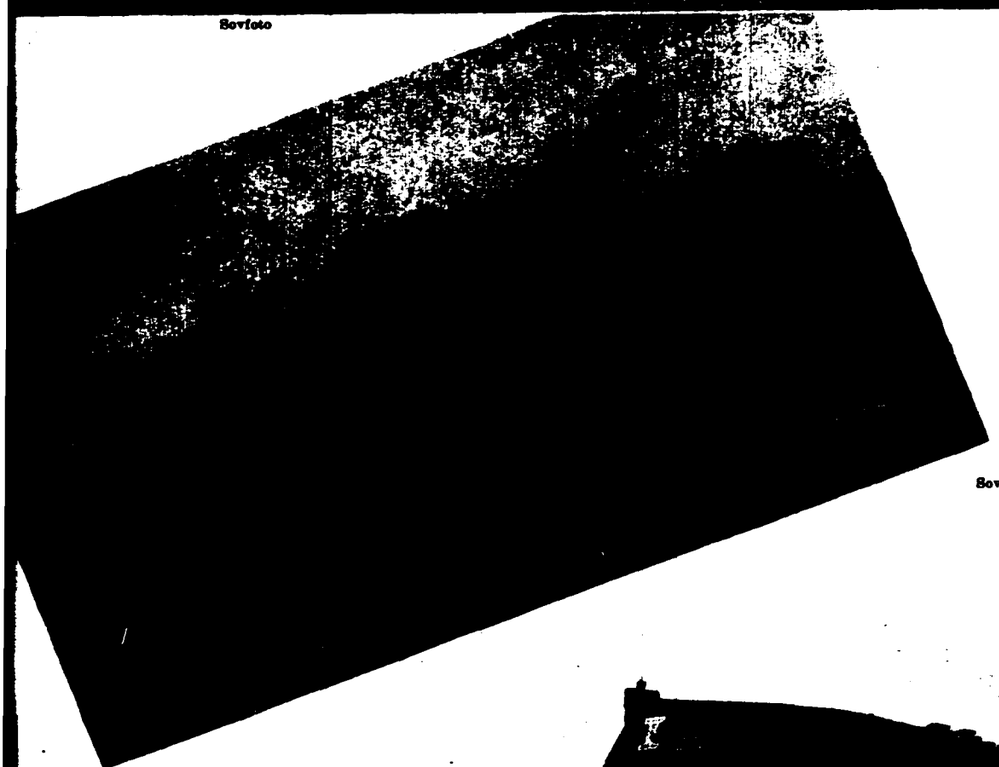
These 70-ton "Ferdinand" tank destroyers (mounting 88mm gun) were captured on the Orel front. Armor runs from about 8 inches in front to 3 inches in rear. The "Ferdinand" has two 300 h.p. motors, makes about 12 m.p.h. on a highway, and carries a crew of six. It is steered by periscope; must stop to fire. Hole in side of right vehicle is observation post; plug sealing it is missing. Poor visibility for crew makes this new German weapon particularly vulnerable to attack by infantry.

Sovfoto.

The newest type Russian KV tanks maneuver into position on the Orel-Belgorod front.



This Mark IV Special, captured on the Orel front in July, has the new "spaced armor" plates around sides of turret and sides so as to burst shell between outer layer and main armor. 75mm gun. Note attempt to dig tank in.

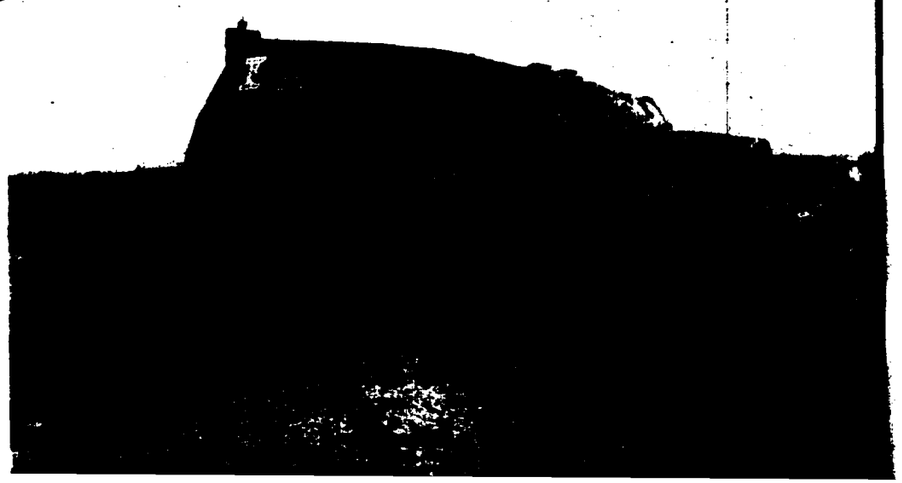


Sovfoto

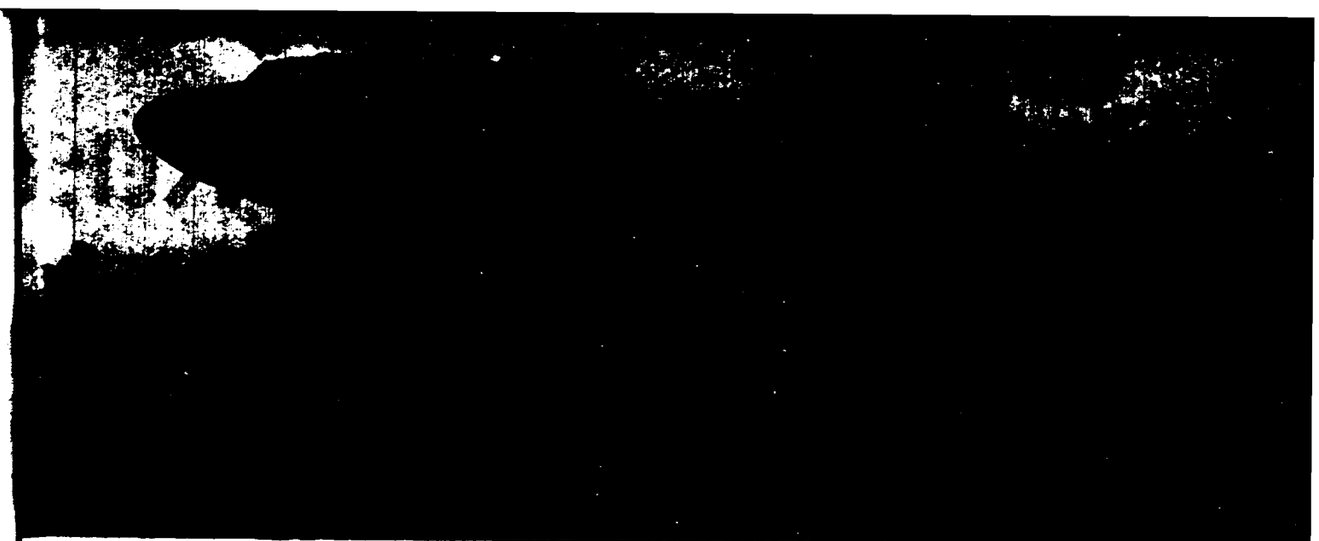
German Armor from the Russian Front

This late type assault weapon has long high velocity 75mm gun with muzzle brake. Pictured here in recoil, the gun is longer than it appears. Slabs of armor have been fastened over sides of suspension as protection against AT rifles and grenades and to detonate shell.

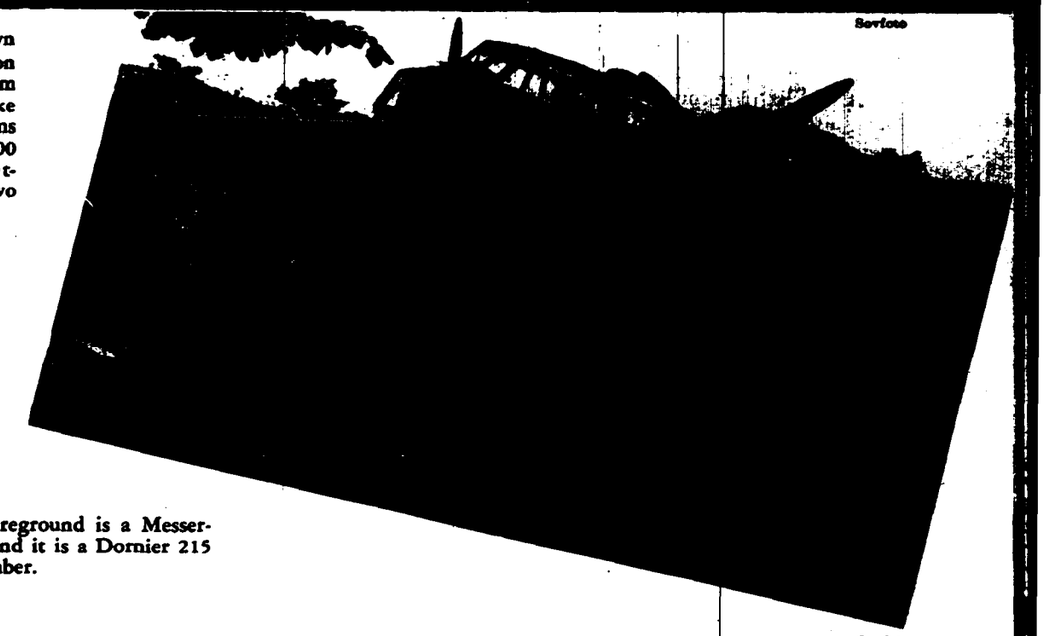
Sovfoto



Mounted on a Mark IV chassis, this new assault gun is about 150mm. The tube is missing—only the outer jacket is left. Note remnants of side spaced armor and the ground hole in front where the crew apparently tried to dig in.



This heavy bomber shown at the Moscow exhibition of trophies captured from the Germans, is a "Focke Wulf–200." Russia claims that the Axis lost 43,000 aircraft on the Soviet-German front during two years of war.

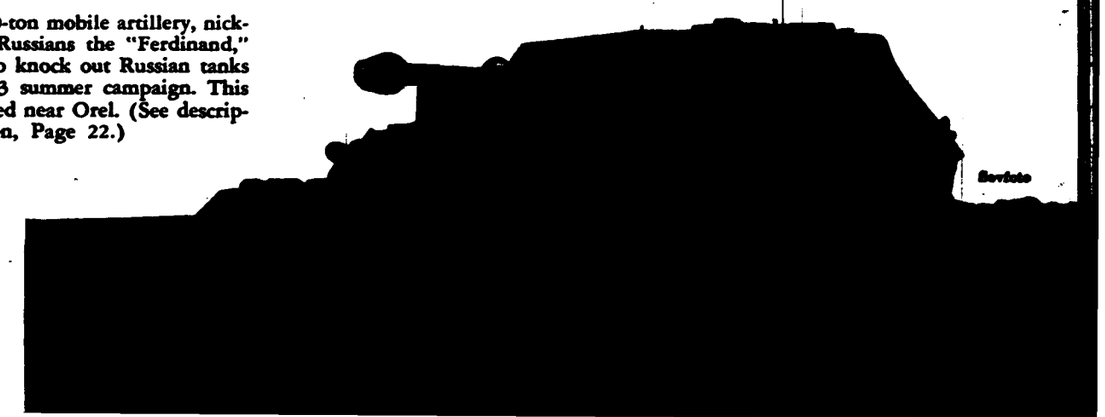


Sovfoto

The fighter in the foreground is a Messerschmitt. Directly behind it is a Dornier 215 bomber.

Sovfoto

The German 70-ton mobile artillery, nicknamed by the Russians the "Ferdinand," was designed to knock out Russian tanks during the 1943 summer campaign. This one was captured near Orel. (See description, Page 22.)



Sovfoto

Second Life of Rusan Tanks

by Nicholas Corotneff

The author, a former captain in the Russian Imperial Army, is an expert military analyst of Red Army tactics and matériel.

IT is a universally accepted idea in tactics that every tactical action, every combat, if analysed, is found to consist of three elements and three only: *fire, movement, and security.*

Mechanized warfare, however, with its tremendous use of matériel, on a scale ever increasing in volume and complexity, tends to create a fourth tactical element, the importance of which is becoming more and more obvious: *recovery*. The best tank commander can gain only an illusory, Pyrrhic victory if he confines his actions in battle only to hitting, moving and guarding. He has also to salvage. True, this problem always existed in warfare; but never had it such importance as it has acquired in mechanized warfare, which practically raises the act of recovery and salvage to the point of being a separate tactical function—although inextricably interwound with the other three elements.

One of the keenest Russian tacticians of the younger generation, Colonel P. Kolomitzev, expressed it well, when enumerating the main tactical principles in tank battles:

"In battles in which much matériel is used, the problem of evacuating and repairing is of primary importance. If evacuation is accomplished speedily, a large percentage of damaged machines can be repaired quickly and returned to active duty. In order to insure success in this field, in the final analysis, you, and not the enemy, must remain master of the battlefield on which the tanks have fought. Even when compelled to withdraw you should hold the field long enough to allow removal of all damaged tanks. Otherwise, the fighting strength of your tank units becomes rapidly exhausted."[1]

Early German Superiority of Tank Salvage In Africa

Numerous cases on record demonstrate the truth of this principle. In the practice of it, the German Army, apparently, had a lead on its opponents, which is only recently being overcome. The excellence and thoroughness of German methods of salvage and repair has been noted by many observers on Allied fronts. In his well informed and convincingly told accounts, Allan Moorehead, war correspondent of the London *Daily Express* who spent a year with the British Eighth Army, emphasized the important rôle played by German initial superiority in salvage and repair methods during the early setbacks of the British tank units in Libya.[2]

Describing the battle of November 18-19, 1941, at which he was present, Moorehead writes: ". . . By six o'clock it was too dark to see any more, and one after another the guns hiccoughed into silence. Both sides drew off. Through the sharp cold of the night, the Nazi recovery units crept forward onto the battlefield. . . . Working at speed, they hitched up the partly damaged vehicles, both British and German, and dragged them off to repair shops. . . . The German losses were unknown because so many of their tanks had been salvaged in the night.

"This first day of battle then had revealed the two great disadvantages which were to handicap the British for the whole of this campaign and for many months to come. It was known on this first morning that all our tanks were outgunned and that regardless of how many vehicles the Germans had lost, they were going to get a far greater number back into action than we could because of their efficient recovery system. Their huge tracked and wheeled tank transporters were actually going into battle with the tanks themselves. Even while the fighting was still on, the men in the transporters were prepared to dash into the battle, hook into damaged vehicles and drag them out to a point where they could start repairs right away."

When the tide changed and the British swept forward, they were much impressed by the lavish equipment and the repair shops captured from the Germans at Gambut, within comparatively few miles behind the front line. "The tank workshops eclipsed anything we had in the forward area. Bedded in concrete and under canvas were big lathes and a heavy smithy. Cases of tank precision instruments worth many thousands of pounds lay about. One was full of periscopes. Several huge boxes contained new 50mm guns which apparently could be fitted to damaged tanks in this place. There were sheets of armor, new tracks and tires, a mass of woodwork and steel parts. It almost seemed that they could have built a tank here in the desert by the sea."

When the full story of the African campaign is written, it will be interesting to follow the gradual improvement and development of British methods of saving wounded tanks and returning them to the battlefield, and the influence it had on the performance of their mechanized units. Parallel to that we probably will be able to trace the gradual deterioration and collapse of German recovery. Here, as in many other instances, we shall probably find an additional proof of this strange aspect of the German tactics, which some observers fail to perceive. Their brilliant flexibility and versatility blossom out in "fair weather"—and shrink and stiffen under the chilly breath of defeat. British and Russian tactics showed the opposite tendency; adversity spurred them to development.

Early German Salvage in Russia

In the beginning of the war, the German superiority in retrieving damaged vehicles, and thus maintaining the fighting strength of their tank units, was naturally due to actual war experience, accumulated in their 1939-1940 campaigns. It was heavily enhanced by the fact that throughout the summer and fall of 1941, the constantly advancing German Armies usually had the possession of the battlefield after the engagement. The Russian losses in tanks, therefore, were exceedingly heavy—almost crippling.

The first reversal of form came with the German defeat at Moscow. Nothing better disproves the theory of the "strategical retreat according to plan" than the indisputable evidence of hundreds of tanks that littered the roads of German retreat. Under this first blow of adversity German salvage technique underwent an almost instantaneous collapse.

On the other hand, the bitter experience of these first months of reverses and retreats, showed the Russians the decisive importance of recovery and quick repair in mechanized warfare. Immediately, they set to work on improving their technique and devising new means and methods.

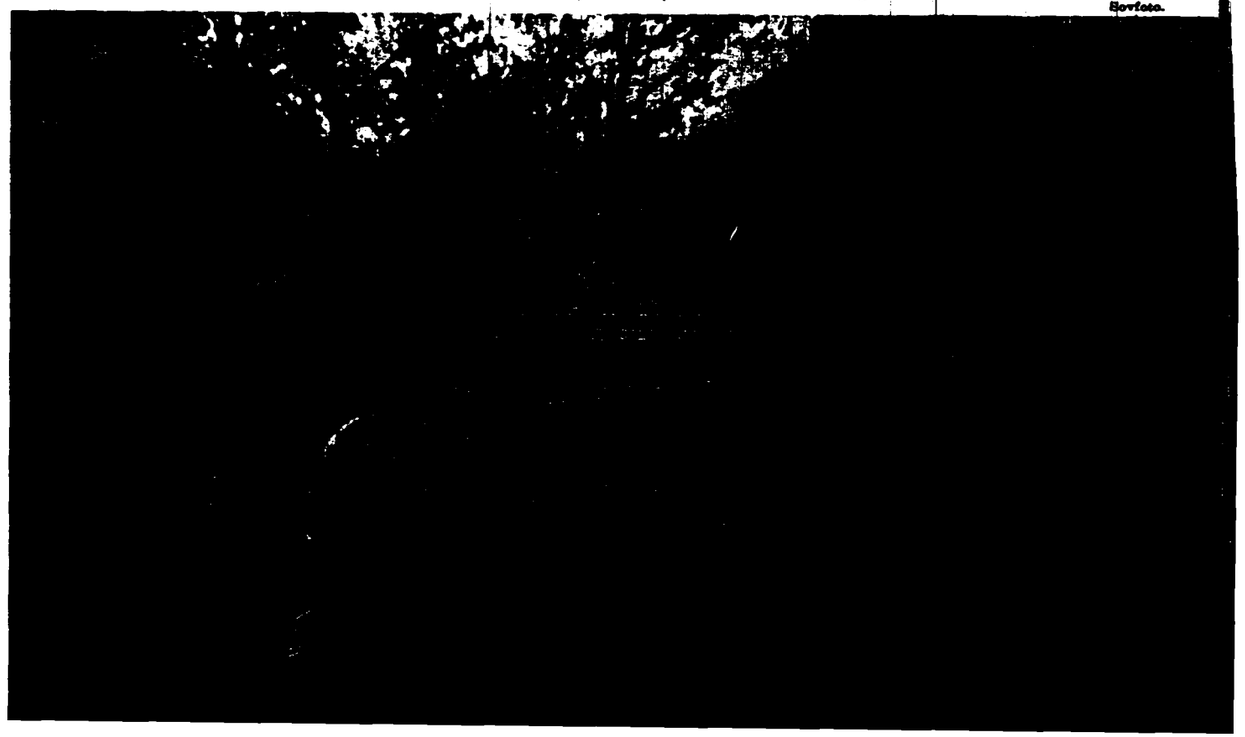
Combat Teamwork Needed in Salvage

As far as Russian mechanized forces are concerned, we have at least some material on hand, which enables us to form a general picture of the gradual development of Russian methods of tank salvage and repair. Although lacking details, it is still clear enough to show what far-reaching effects the improvement in these methods had on the operations of Russian mechanized formations in 1942, which culminated in the brilliant performance of I and II Guard Tank Corps during the Stalingrad encirclement and, later, of these and other units in the successful annihilation battles on the banks of the Don.

The general setup at the beginning of the war left the problems of salvage entirely to the tank units themselves. Then, the battlefield recovery, following the dominating tendency of modern tactics, gradually developed into a combat team operation, in which infantry, engineers, mortars and artillery assisted and

A Red Army maintenance crew at the battle front is working on the axle of a rear bogie on a 42-ton KV tank.

Sovfoto.



[1] The Cavalry Journal, page 58, November-December, 1942.

[2] Allan Moorehead, *Don't Blame the Generals*. Harper and Bros. New York and London, 1943.

protected tank and maintenance crews engaged in salvage.

Careless planning—or lack of planning—in carrying out recovery operations, often results in added tank casualties. Last winter, *Red Star* reported several examples, among them the following one:

"Several German tanks attacked a fortified position, held by the unit of Captain Soukhotin. The Soviet antitank riflemen opened fire and almost immediately disabled one of the attacking tanks. The rest turned back. In about fifteen minutes two tanks appeared, with the obvious intention of taking the disabled machine in tow. The antitank rifles again opened up. The German tanks, zigzagging all over the field, made several attempts with the result that one more tank was hit.

"Several hours later another attempt was made, this time in force. About ten tanks, with tommy gunners riding on top, led the attack. They were followed by infantry, strongly supported by mortar fire. The antitank riflemen, supported by machine guns and snipers went into action again. The engagement lasted about an hour, and the Germans succeeded in towing away one tank—but at the price of losing two more tanks and about 40 men killed and wounded.

"Another attack followed several hours later, in the last attempt to salvage the three machines. This time the Soviet unit, supported by reserves, counterattacked and finally captured the disabled tanks."

The mistake here was obvious. A strong artillery preparation directed against the antitank rifle nests would have greatly helped the recovery attempt.

Lack of teamwork—constant, closely knit coördination between all arms—nowadays always spells tactical failure. Even the most gallant and determined attempts by individual units fail in the long run, if they represent only disjointed and isolated attempts to reach a tactical solution which should be achieved by a concerted action of a combat team.

Development of Russian Salvage

In tracing the development of Russian methods of salvage and repair, no attempt is made herein to present a complete outline, as the information available at this time is insufficient. The general tendencies, however, and the new viewpoints developed in the last year or so are quite clear, and all Soviet reports put the emphasis on the same features.

The first clearly indicated trend is to place the advance units of maintenance battalions closer and closer to the battle line, whether in offense or defense. In the defensive battles of the summer and fall of 1942, just as in the following winter offensive, the supporting maintenance units, in the majority of cases, were located within approximately a mile from the combat units—sometimes within a thousand yards, and only in exceptional cases as far back as two to two-and-a-half miles.

The second important development is a greatly increased range of important repairs undertaken by the advance units—the tendency to transform them into real "field tank hospitals," able to perform complicated surgery on disabled machines in the immediate vicinity of the firing line. In the beginning of the war, the Russian viewpoint was identical to that expressed in Article 39 of *Armored Force Manual* FM 17-58, which states that "only the most minor repair operations will be undertaken in forward positions." In actual battle practice, the Russians have abandoned this idea. As a matter of fact, the trend now runs in the opposite direction. One of the most outstanding maintenance men in the Russian army, Colonel Bormotoff, who was in charge of field repairs in Stalingrad, summarized it as follows:

"The slogan of our maintenance units can be formulated thus: Only burned-out machines are to be sent to the rear shops. In all other cases, including the most seriously wounded tanks, repairs can and must be carried out on the spot."[8]

This statement is probably too far-reaching to be applied in an average case and rather reflects a successful experience of crack units, who proved to be pioneers in effecting complicated repairs in field conditions, but efforts are made to make this practice general.

New Techniques

Of the new techniques applied by forward maintenance units in repairing tanks, which in the early period of the war were invariably sent to the rear, the repair of wedged-in turrets seems to be one of the most frequently encountered. An actual description illustrates the procedure:

"A KV heavy tank, badly damaged by artillery fire, was towed to the collecting point. Two repair crews of the maintenance unit established the necessity of lifting up the wedged-in turret and repairing the transmission. For the latter job, it was necessary to take off the armor plates, get the gear shift out, and replace the clutch. The situation was such that evacuation to the rear was out of the question, and the order was given to start repairs right there, immediately after dark, and complete the job by dawn. One crew of three men worked on the turret; another one, simultaneously on the transmission. Using ordinary automobile jacks, the turret crew, after five hours of Herculean toil, succeeded in lifting the five-ton turret to the height of 250mm (10 inches). This clearance was large enough to take out the damaged separator-ring (on which the turret rotates) but was not sufficient to put in a new one. The repair crew decided to try a new expedient—to throw out the separator-ring altogether and add 50 ball bearings in its place. The scheme worked and the turret began to rotate easily.

"In the meantime, the second crew completed its work on the transmission and put the armor plates back. The whole job took eight hours. The tank was ready before dawn and took part in a combat attack early in the morning."

[8] *Pravda* December 17, 1942.

Another important improvement concerns motor repairs. In the beginning, all tanks with disabled motors or motors needing general overhauling, were evacuated to the rear. Now, as a rule, the motor is taken out, a spare one put in its place, and the tank returns to the battlefield immediately. In the beginning, difficulties were experienced by field maintenance units in taking out the motors, especially in the case of heavy KV tanks. Last year, a machinist of one of the large tank factories, Gvosdeff, invented a special crane, called the "arrow crane," which greatly facilitates this procedure. The crane, described as being exceedingly simple in construction and operation, is fitted on top of the turret. It easily lifts the motor right out, and after the repairs are completed, puts it back. Apparently, all maintenance units are now using the invention.

Mobile Repair Shops

Considerable development has also taken place in the range of activities of repair and maintenance. These included battalions attached to army commands and so-called mobile repair bases of army and frontal commands.

Some of these mobile bases are completely motorized, some only partially so. They usually operate within 20-25 miles of the front line. In stabilized warfare, the repair equipment is installed in suitable buildings and specially constructed dugouts.

Conspicuously successful seem to be the so-called "repair trains" or "mobile railroad shops," introduced since the beginning of the war. This train is a miniature tank arsenal, installed in ordinary box cars, with a full assortment of lathes, a heavy smithy, and a power station. The train carries a set of special tents. Whenever conditions at the front are stabilized, a part of the equipment is detrained and installed on the ground. These trains, attached to army commands, operating within a few miles of the front line, are frequently under enemy fire. "Being completely self-supporting," states a Soviet account, "they often carry on for weeks, far away from populated centers, in the deserted steppes, on snow-bound, blizzard-swept plains."

The most valuable contribution that the mobile shops have made to the maintenance problems of Soviet tank forces is the ever-growing number of spare parts that they manufacture. This saves immensely valuable time in reconditioning tanks. At the same time, it relieves the great tank factories in the rear of a great deal of stress and allows them to concentrate on the production of new tanks. According to reports, some of the mobile bases have completely mastered the manufacture of over 200 different parts and details—sometimes "achieving, in field conditions, a production of spare parts and details which exceeds the pre-war output of large tank arsenals."

The results of these improvements in recovery and repair methods proved to be far reaching and constituted a most important factor in the greatly increased strength and incomparably better performance of Russian tank forces in the winter of 1942-43. The Soviet tank experts estimate that the life span, or as they say "the battle life," of their tanks increased over 100%. In the beginning of the war, this battle life was considered to be between 120 and 150 hours. Now the average is between 240 and 280 hours. Some "Methuselahs" reach a life span of over 300 hours. As one of their maintenance experts said, "The Russian tanks got a new lease on life as a result of better recovery, exploitation, and repair methods. They have two lives now and are on the way to getting a third one."

Dissemination of Experience

Perhaps one of the most interesting developments in the field of exploitation and repair of tanks is the Russian method of generalizing and standardizing the immensely valuable front experience—pooling the innumerable improvements in technique, minor inventions, short cuts and new skills developed by maintenance units, repair shops, individual technicians and mechanics, and then disseminating it through the whole army.

There is a great deal of evidence on hand to lead to the conclusion that probably no other army has achieved such results in a systematic, intensive study of battle experience, and in creating means and methods of making this cumulative experience available to the whole army. There is no doubt that this is one of the main factors in the constant improvement of Russian tactics since the beginning of the war.

The military press, a real syndicate comprising several hundred divisional and army newspapers, topped with the now world-famous *Red Star*, is, of course, one of the most powerful mediums of dissemination. Service magazines, of which there are ten or twelve, are kept constantly informed by the army commands of all new developments (except, of course, those of secret nature).

Tank Designs and Construction

There is a well-established liaison between the frontal commands and the tank constructors. The design and construction of tanks, as well as planes, is organized in Russia along unusual lines. The ordnance department is operated rather like a federation of separate construction bureaus, each one headed by a constructor of established reputation. Closely supervised and coordinated by the Ministry of Defense, which gives each bureau its assignments, they still seem to have a certain leeway, and assignments are given according to the proved capacities and inclinations of the constructor heading the bureau. The most noted of these constructors at the present time is Josef Kotin, the designer of the KV tank—the pride of the Russian army. A constant stream of information is pouring from the front to the construction bureaus, and frequent

trips to the front units are made by the members of their staff.

Tank Salvage Exhibition

A new method of collecting, standardizing and disseminating the huge amount of technical experience accumulated by the maintenance units, repair shops, and bases in the front line was inaugurated in Moscow last December. Under the guidance of a well known tank technician, General Sosenkov, an exhibition was held in the Polytechnical Museum, where all the new inventions, short cuts in production methods, and repairs were fully represented and illustrated. The exhibition was made into a real clearing house for everything new in salvage, exploitation, repair and production.

The exhibitors included the frontal commands, which demonstrated the achievements of their units, as well as the tank factories and repair shops of the rear. Although at this time the winter offensive was at its height, maintenance men and technicians of the front units, who distinguished themselves by inventing or working out new technical processes and procedures, were sent to Moscow to give explanatory talks and conferences during the exhibition. Army commands were instructed to send their representatives to study the collected material. Several Soviet accounts give us interesting details and highlights of which we can note the following:

To make a stronger visual impression, huge panoplies displayed the wornout, broken and damaged parts; and immediately next to them, the same parts restored and reconditioned. One panoply illustrated the new way of saving metal by converting the badly worn-out spare parts of large models into spare parts for tanks of the same design but of smaller size.

Another highly praised expedient, born of front line experience, which was prominently featured, was the so-called "grafting." A drive sprocket, for instance, badly torn by a shell, is repaired by having the damaged part cut out and the corresponding part of another damaged sprocket "grafted in."

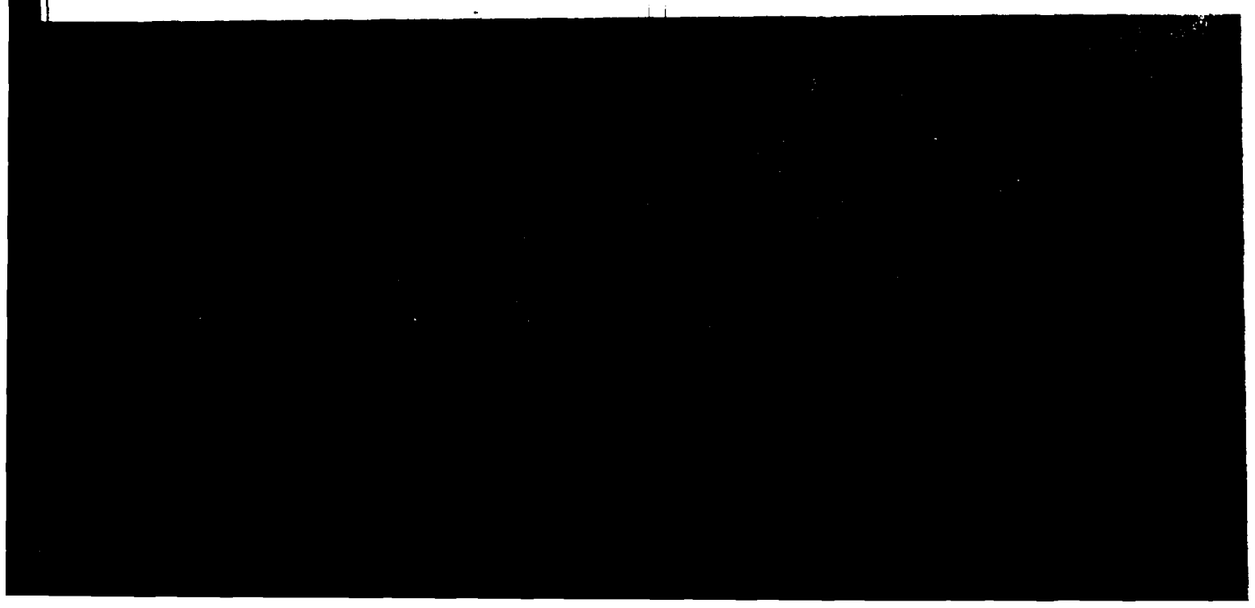
This way of effecting quick repairs in field conditions, on more complicated parts, which are manufactured only by fully equipped tank factories, proved to be a great time and material saver. Naturally, it necessitated carrying an assortment of damaged parts, so that the "field surgeon" could have a wide enough choice for grafting operations, but the results seem to have been well worth while, and the parts repaired in this way were found to be as good as new.

Another expedient of the same kind is the "gear dentistry," when crowns made of a special alloy (sormite) are applied on the broken gear teeth. It is claimed that teeth thus repaired have an even longer life than new ones.

Gvosdeff's "arrow crane" was also exhibited, as well as a machine for automatic valve-grinding, new improved stands for assembling motors, etc.

The exhibition created a great deal of interest and elicited enthusiastic comments from officers and technical personnel of armored forces, who acknowledged the valuable aid and information which they received. Apparently, it is now planned to create a permanent "clearing house" of technical information along the same lines, not only for the armored forces but also for motorized units, and perhaps eventually for the whole motor industry. The beneficial results of such practical demonstrations seem to have been proved beyond doubt.

American officers and Russian seamen at the Moscow exhibition of trophies inspect re-built German tanks. The Russians claim that 42,400 tanks were lost by the Germans and their allies on the Soviet-German front in the course of the first two years of war. Sovfoto.



Tank Battle at Prokhorovka*

by Major K. O. Subovsky, Red Army

THE battle fought at Prokhorovka in July, 1943, proved to be the turning point in the German offensive and Soviet counteroffensive in the Belgorod-Kursk direction. Just as in 1942 German shock troops that endeavored to break through to Stalingrad were routed on the Kotelnikovo battlefield, so at Prokhorovka, picked German panzer forces were stopped, then smashed and thrown back in their thrust toward Kursk.

This was not the first time that the area around the railway station of Prokhorovka had served as an arena for severe fighting and serious German defeat. There, during the first winter campaign in 1941, Russian tanks and artillery surrounded two German infantry regiments. Again last winter in the Prokhorovka-Byelenikhino triangle, as the result of a successful pincer movement, Soviet tank forces and motorized rifle troops annihilated a counterattacking group of German mobile troops. During the German counteroffensive this last spring, German tanks sent against Prokhorovka were pressed back to Belgorod Heights. Again in July, the Prokhorovka battlefield became the scene of important events but on an even larger scale. (See map, Page 32.)

During the early part of the fighting at Prokhorovka the situation was as follows: Having lost hope of a break-through along the Belgorod-Oboyan highway, the Germans began to regroup their tank forces and bring them up to the right side angle of the wedge. Their purpose was to launch a thrust northeastward in the direction of Prokhorovka. Then, extending this thrust further along the railroad, they hoped to pierce the entire depth of the Soviet defenses and accomplish what had failed on the highway—namely, make a break-through toward Kursk, or even east of Kursk.

Meanwhile, fighting was in progress southwest and southeast of Prokhorovka. In the southwest, Soviet tank forces, in flanking counterattacks, localized the German attempt to widen the wedge; whereas in the southeast, the Germans launched an auxiliary thrust in an effort to join with their main body. This presented a peculiar situation. On two sides of the Prokhorovka-Byelenikhino triangle active engagements were in progress, while a decisive state of the operation was coming to a head in the area of Prokhorovka itself. There, at the base of the triangle, German tanks were going to strike massed blows from two sides. A Soviet tank formation was sent to parry the enemy attack in this area. Its mission was to counterattack the German main group and paralyze its activity by determined action on the right flank.

A small stream separating the antagonists, at first glance did not appear to be an obstacle, but reconnaissance revealed that the rugged woodland terrain along its banks was extremely inconvenient for tank action and in places was entirely inaccessible to tanks. To attack the enemy from this side would jeopardize the advantage of surprise and swift action. Tanks impeded in maneuvering were liable to sustain losses without achieving success. Greater advantages were offered by the section between the railroad and the other stream flowing parallel to it. Wide fields with small gently sloping declivities, gullies and groves provided tanks the necessary space and freedom for maneuvering during the course of attack. Soviet tanks, therefore, took up initial positions in the area of Prokhorovka.

At the same time, events that were to determine the nature and progress of the impending battle were also taking place on the enemy's side. The German command, apparently guided by the same desire to avoid a position unfavorable for tanks, sent its panzer divisions to the same section near Prokhorovka. Coincidence occurred not only in the place selected but also in the time. These two avalanches of tanks simultaneously headed toward each other and met at close quarters only three kilometers from Prokhorovka, where near the state farm of "Komsomoletz" there followed one of the biggest tank battles of this year.

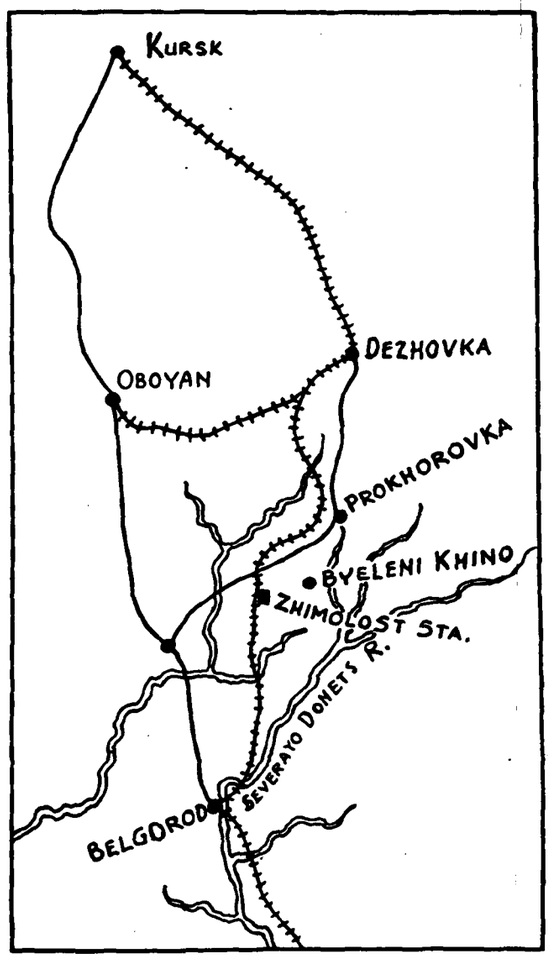
The appearance of Soviet tanks on the battlefield took the enemy by surprise. Their secret advance *during the night* and their skilful regrouping while taking up initial positions had escaped the enemy's notice. The enemy had been confident that he would have to deal only with Soviet infantry and artillery, and had not expected to encounter the large tank forces.

From the very beginning of the battle, the Germans betrayed indecision and yielded initiative to Soviet troops. The first echelon of attacking Soviet tanks crashed at full speed into the battle formations of the German tank column. Ranks became confused, and at close quarters the German heavy tanks, deprived of the advantage of their armament, were fired on at almost pointblank range by Soviet T-34 tanks. The attack was so swift that the first rows of Soviet tanks penetrated the entire enemy formation and reached the tail end of the enemy column.

The extensive field proved too small for such a vast mass of fighting tanks. The German force, consisting of shock troops—divisions belonging to the SS Panzer Corps—comprised about 400 heavy, medium and light tanks, accompanied by large numbers of self-propelled guns. During the battle, which continued until late evening, heavy turrets were shot off of many of the German tanks, and shells pierced holes in the armor of many others. More than a hundred enemy tanks and self-propelled guns burned on the battlefield.

In the counterthrust against the panzer divisions,

*By wireless from the Military Department Press, U.S.S.R., Moscow.



the Soviet tankmen gained a great victory. The spearhead of the enemy's tank wedge, which cracked in the area of the Oboyan highway, was definitely broken at Prokhorovka, whence the Germans had expected to make a leap toward Kursk. The battlefield remained a No Man's Land, and for several days afterward was littered with black scorched skeletons of tanks.

Meanwhile, on a neighboring sector somewhat to the right of the tank battle, during a similarly fierce battle fought by the infantry, a Soviet rifle formation counterattacked the enemy and stopped him on a river west of Prokhorovka.

The same day (July 12th) Soviet troops at the village of Rzhaveta, southeast of Prokhorovka, met another German tank column en route to join the main forces. The fighting which ensued at this point was characteristic of the successful countermaneuver effected by Soviet antitank, field artillery, and flanking counterattack accomplished by the tanks. The enemy attacked the center of the defense positions, where over ten batteries were concentrated. By a powerful fire barrage, the massed attack of enemy tanks was repulsed with heavy losses to them. The enemy then fell back to his initial positions and re-formed, but did not repeat the assault against the center. Instead, by massing in gullies, he tried the neighboring village.

All batteries then transferred their firing positions from the center to the flank. Such a countermaneuver, involving all available artillery, necessitated a considerable risk. Had the enemy detected it, he might have either anticipated it by an assault or else shifted his forces from the center. A further risk was involved in moving the guns under the observation and attack of enemy aviation, but the calculations of the Soviet command proved to be correct.

Skilfully accomplishing the maneuver, the batteries, which had taken up previously prepared positions by the time that the Germans launched a thrust against their flank, now again repelled the enemy. The German attempts to find the junction points between the units and break through simultaneously on both flanks were likewise thwarted by the countermaneuver of the artillery. The batteries maneuvered their fire and made dashes along the front to meet the German tanks:

A crucial moment of the battle occurred when the Germans, after their aviation had managed to silence one section of the Soviet artillery, drove a wedge into Soviet defenses with a large group of their tanks. The commander of the Soviet tank regiment was then ordered to assail the exposed enemy flank and restore the *status quo*. In this unequal engagement, the regiment sustained heavy losses but stopped the advance of the enemy column and filled the gap.

Fighting on Prokhorovka field and near the village of Rzhaveta represented the last stage of the German offensive in the Belgorod-Kursk direction. The worn down enemy was compelled to give up his concentric attacks towards Prokhorovka and go on the defensive. But fighting on the Prokhorovka battlefield did not end there. Several days later, fighting was resumed—this time on the initiative of the Soviet troops which launched a counteroffensive in the area of Prokhorovka and west.

The Germans entrenched themselves on a line formed by Prokhorovka Heights and in strong points on both sides of the railroad. At two points they were somewhat wedged into the front line. Soviet tank and rifle troops which attacked from the right cut off both salients, and by flanking counterattacks that captured key positions, broke down the resistance of the German troops.

Fighting for the heights southwest of Prokhorovka was most stubborn. The Germans had brought up a large number of artillery and trench mortar batteries and had managed to set up in this area a system of cooperating fire centers. Roads and gullies were mined. German infantry made use of old trenches as well as

new ones and reinforced them with a network of blindages equipped with machine gun nests. The Germans located their batteries on the back slopes and crests of hills, with a view for both frontal and flanking fire.

The main issue of this important counteroffensive was decided by Soviet tanks acting in coöperation with aviation in breaching the battle formations of the German infantry and reaching the area of the artillery positions. German antitank centers were crushed largely by Soviet artillery fire. At a section west of Prokhorovka a rifle formation broke through the German defenses on the river line and, by vigorously pressing their success, advanced southward. The enemy's strong points to the left of the railroad were attacked by other rifle troops. As a result, the German forces, hard pressed in the triangle, were compelled to fall back southward to Belgorod.

Picked German panzer troops and infantry suffered severe defeat in the fighting on the Prokhorovka battlefield, where the superiority of Soviet maneuver tactics was fully manifested. This battlefield will go down in history as the scene of large scale engagements that determined the failure of the entire German 1943 offensive.

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Artillery Support of Cavalry and Motorized Infantry at Stalingrad

IN surprise blows dealt the Germans in the Stalingrad area, an important part was played by the Soviet mobile troops—cavalry and motorized infantry. Some of these units made fighting raids of 200 and 300 kilometers in the enemy's rear and achieved important victories, in which they suffered quite inconsiderable losses.

Cavalry and motorized infantry, supported by artillery, went into action after the enemy's defenses had been pierced.

During the months preceding the Red Army offensive, the Germans at Stalingrad had succeeded in erecting very solid defenses. They had created a wide network of strongpoints, a large number of pillboxes, blockhouses, dugouts, deep intrenchments, and barbed-wire entanglements. All of these were shattered by the Soviet artillery at the very beginning of the offensive. After the enemy's defenses had been pierced, activity of the artillery increased and continued to operate as the infantry carried the fight into the enemy's positions.

The most responsible task of all was that of the guns escorting cavalry and motorized raiding parties. The movement of the Soviet mobile troops was swift and vigorous, but the artillery kept pace with them. The raid was begun by the artillery units commanded by Lieutenant Colonel Sergeyev. Their traction machines were thoroughly overhauled and brought into good shape, with the result that, as never before in all of these long marches, not a single machine was let out because of breakdowns. The artillery units did not lag behind the formation to which they were assigned. During the raids, they acted in close coördination with the cavalry and motorized troops. Because of good liaison work, the artillery commanders were kept well informed about all changes in the situation and were able at once to give artillery a good support when it was needed.

Near one of the villages the enemy rendered stubborn resistance to the Soviet cavalry formations. It was essential to neutralize enemy fire nests without delay. Major Kotelovsky advanced his regiment into an open space, deployed it in battle order, and commanded the guns' fire over open sights. This powerful artillery attack came as a surprise to the enemy. His fire nests were destroyed, and the Soviet cavalry was able to advance.

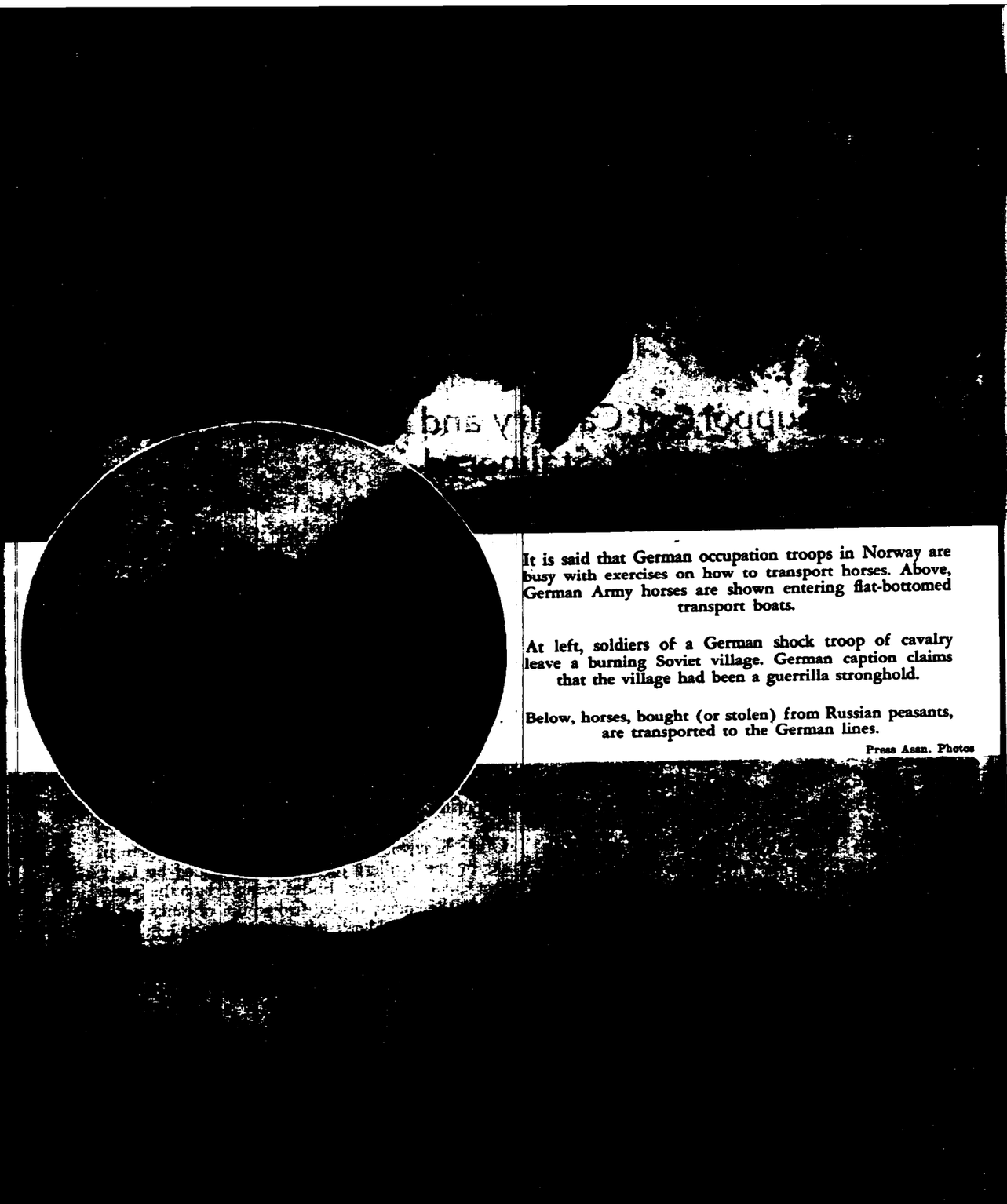
The Soviet troops launched a sudden attack on the enemy airdrome. Major Kotelovsky's guns opened fire at the enemy's fortified points, while the cavalry completed the rout, captured the airdrome and several dozens of planes.

During this raid Kotelovsky's regiment destroyed tanks, motor vehicles, fire nests, and forced about a regiment of the German infantry to flee. The regiment distinguished itself by a great mobility and vigor of action.

Other heavy losses were inflicted on the German tanks by the artillery regiment commanded by Lieutenant Colonel Zybkov. Endeavoring to stop the Soviet advance, the enemy hurled two groups of tanks into a counterattack. Zybkov's guns deployed straight from the marsh and opened fire. One enemy tank after another was put out of action, and the counterattack collapsed. Several dozens of damaged and shattered tanks were left on the battlefield.

The artillery coöperated with raiding units in a consolidating capture of inhabited places. Often enough the Soviet troops had organized an all-round defense task of the artillery and in such cases kept the enemy points of concentration and lines of approaches under fire. No less important was the part taken in the repulsing of the enemy's counterattacks and combating his antitank weapons. In a number of battles supporting guns followed in the wake of the Soviet tanks and opened fire as soon as the enemy's antitank guns betrayed themselves.

One regiment alone commanded by Lieutenant Colonel Sergeyev destroyed 16 German antitank guns.



It is said that German occupation troops in Norway are busy with exercises on how to transport horses. Above, German Army horses are shown entering flat-bottomed transport boats.

At left, soldiers of a German shock troop of cavalry leave a burning Soviet village. German caption claims that the village had been a guerrilla stronghold.

Below, horses, bought (or stolen) from Russian peasants, are transported to the German lines.

Press Assn. Photos

Horses in the German Army

Evaluation of Armor

MODERN mechanical equipment for the army is becoming an amazing, almost bewildering thing. American ingenuity, stimulated anew by U. S. entrance into this war, has caused the creation and production of astonishing mechanical devices.

Some of these devices are in the form of weapons such as the new cannon for field artillery, the antitank guns of various sizes and different principles for their application, and the antiaircraft guns. Other devices apply to transportation of all kinds—both for men and for supplies; others to communications.

It is difficult to say which of these new devices has had the greatest effect in the modification of tactics. For a time, the transportation of men and weapons in armored vehicles had the greatest effect, and this effect was increased by improved forms of radio communications. To a considerable extent, however, these devices have neutralized each other. For example, the new types of antitank guns and tank destroyer weapons have neutralized, partially at least, the great power developed in 1939 and 1940 by the armored combat vehicles.

There is a profound truth in all that. It is that new mechanical means of warfare seem overpowering and wonderful until other mechanical means are devised to oppose them. This does not mean that we can do without these new mechanical developments for either offensive or defensive operations. An army without them is seriously handicapped. It does mean, that since one device checks another, we must continue to study, develop, and use the tactical principles that have been proved throughout the history of warfare.

One of these principles is that *tactical success comes from the combined use of all arms and services under a unified command,* and not by too much reliance on any one branch or separate element, however new or old it may be.

To be useful, a weapon or a form of transportation or branch of the service must be such that it furnishes the best means of accomplishing certain necessary tasks. This does not exclude old weapons or any old means of defeating the enemy simply because they are old.

Another old and proved principle is that the *separate forces or units which have different tasks in a tactical operation must be kept within supporting distance of each other.*

There are, of course, other old and tried principles for tactical success, but particular reference is made here to the two just mentioned.

In the years 1939 and 1940, the Germans were able to violate these principles in their application of the *blitz.* Their armored divisions hurled themselves through the gaps created by other troops, or by themselves, and exploited the break-through by attacking hostile reserves or reaching vital strategic areas without waiting for the support of any other troops. Running wild through hostile communications and headquarters posts, they created terror, confusion and utter demoralization in the rear of the hostile front lines. Their mechanical devices for attack were, at that time, unopposed by any devices for defense. The necessity for careful combined action of all branches of an army, in accordance with the first principle, did not exist.

The armored forces were invincible. The Allies had not only failed to equip themselves with mechanized devices of defense against armored vehicles, but had suppressed the maintenance of the only old branch in their services able to cope with the enemy in cross-country mobility—the cavalry. The Allied ground forces had no coördinated support from their air forces until the evacuation at Dunkirk.

During the conquest of Poland, Norway, and the Low Countries, the German armored forces, supported closely by their air forces, had no need for cavalry and ran no danger from their failure to observe the second principle mentioned above—that of keeping task forces within supporting distance of each other.

When the Germans attacked Russia in 1941, however, they found it necessary to modify their tactics. They could no longer apply the *blitz* as they had done in France. The Russians were too numerous and fought too stubbornly. Furthermore, the Russians had learned the lessons of 1940. They had begun to equip themselves with antitank guns, although they had not had time to produce enough of them. They had trained their artillery to oppose tanks; they had increased their own armored forces; and they had maintained large forces of cavalry. The Germans, therefore, had to be more cautious and were quick to resume the application of the two principles we are discussing.

The blitz was modified into the famous "wedge and kessel." The *wedge,* formed of armored forces backed up by deep columns of infantry, broke through the

Russia proves that mechanical devices do not change the most important principles of war.

Russian's lines and then turned to the right or left on a wide arc, and, doubling back upon their own lines, encircled and enclosed great masses of Russian troops. But it was found necessary to support the armored forces very closely with infantry. The motorized infantry belonging to the panzer divisions was not enough. Marching infantry in great numbers was called upon to follow closely after the panzer divisions in the *wedge*. This made it necessary for foot troops to march 30 to 35 miles per day in order to keep up.

It was here that the Germans should have realized the great mistake they had made in suppressing most of their cavalry. Modern cavalry would have had no difficulty in keeping up with the panzer divisions and would have formed a vital link between the armored divisions and the slower moving infantry.

A recent proof of the ability of modern cavalry to operate with tanks was demonstrated by the Russians in their defeat of the Germans at Taganrog. There, tanks formed the spearhead of advance, and cavalry instead of infantry was rushed into the breach to exploit the success. See Page 2, this issue.)

Following brilliant successes made early in the campaign, the "wedge and kessel" plan of tactics began to break down. This was due largely to the fact that the Germans had no large forces of cavalry. Their cavalry had become *"the missing link."*

It became difficult to protect the flanks of German troops employed within these wedges. The Russians began using defensive formations of great depth. Thus, the deeper the wedges thrust themselves through the Russian lines, the more bitterly they were opposed. The bottom or base of a wedge would be attacked by Russian armored troops combined with cavalry and followed by infantry. The campaign slowed down, the winter of 1941-42 followed, and the Germans were stopped.

When the spring and summer campaign of 1942 opened up, the Russians were better equipped with antitank weapons organized into units, and with armored forces and increased numbers of cavalry. In a desperate mood, the Germans hurled themselves forward, without regard for losses or for protection of their lines of communication. The Russians backed away and the Germans reached Stalingrad and the Caucasus by concentrating their power on the southern areas of the far flung battlefield. By this time the German lines of communication, under harassing attacks by Russian guerrillas and cavalry, began to falter in their tasks of supply, which grew increasingly difficult as the tenacity of the Russian defense prevented the fall of Stalingrad. In the Caucasus, the German advances eventually came to a halt.

Finally, it became the Russians' turn to take the offensive. They attacked the German army in front of Stalingrad. Great flank attacks and encircling movements around both flanks (led by armored troops supported by cavalry and followed by infantry) trapped the Germans in a vise that resulted in their surrender.

The decision of the German army leaders to diminish their cavalry forces in this war, and to rely so much upon mechanical means of transportation and combat, has proved fatal; whereas, the part played by the Russian cavalry in all these operations, and particularly in the successful operations of 1943, has been of great importance. The Russians, while taking every advantage of mechanical combat vehicles and new devices in guns, transportation, and communication, have also retained and used the old and tried branches of the service, and in so doing have gained a decided and permanent ascendancy over the German armies in Russia. In other words, the Russians have adhered to the two principles selected for this discussion as the two most important tactical principles in war. It would be well for the British and Americans to do likewise.

Many persons have wondered about the success of the Russians in defeating and driving back the great invading German armies. This success cannot be ascribed to any one thing. It was due to a combination of several things, but the possession of large forces of cavalry and its proper use is one of the important reasons. The failure to establish, maintain, and use large cavalry forces has cost armies dearly in the past and up to the present war.

The reasons for the Russian success and the German defeat can be stated briefly as follows.

1st. *The stubborn fighting spirit of the Russian soldiers.* They preferred to die rather than surrender. This delayed the German advances and caused them great casualties even in victory. Many victories became Pyrrhic.

2d. *The Russian adherence to all tried tactical principles and their ability to apply them in a flexible manner.* When a tactical operation failed, they were not upset and demoralized, but relied upon the resource and initiative of the leaders on the spot to make the best of the situation.

The Germans, in contrast, had written some new and untried principles into their books to fit into their new ideas of mechanized warfare. They relied upon these to bring them a quick victory in a short war against unprepared and ill equipped enemies.

Premier Stalin has written, "The Germans apply their tactics in accordance with textbooks and endeavor to fit events at the front into paragraphs of their regulations. The Germans are accurate and exact in their operations when the situation allows the requirements of their regulations to be carried out. This is where their strength lies.

"The Germans become helpless when the situation gets complicated and does not correspond with this or that paragraph in their regulations but requires adoption of an independent decision not provided for in the regulations. It is here that their main weakness lies."

3rd. *With their new ideas of mechanized warfare, the Germans thought that they could do without large forces of cavalry.* They did very well in Poland and France when their enemies were unprepared to oppose mechanized force. As soon as they met enemies who had made some preparation to meet the armored divisions, the need for cavalry became very great.

In contrast to the mistake of the Germans in regard to cavalry, the Russians have maintained and used many divisions of cavalry throughout the war to date.

4th. *The strategic operations of the Russians in falling back into the depths of their vast country and gaining time to mobilize, equip and train their great manpower.* This operation was made possible by the tactical operations of their armies in fighting delaying actions over a period of nearly two years. This strategic plan also brought about the Pyrrhic victories gained by the Germans and the over-extension of their lines of supply.

5th. *The unpreparedness of the Germans for coping with the severe Russian winters and the ability of the Russians to use those winters to carry out harassing operations.*

6th. *Close coöperation between air and ground forces.* In accordance with the principle of employing all means of warfare in close coöperation with each other, the Russians have used their increasing airforce in close coöperation with their ground troops, and as one branch of their army organization rather than as an independent force.

As should be apparent without question, however ingenious, amazing and astonishing our modern mechanical devices may be, there are certain old principles of warfare and certain old branches of the army—cavalry, infantry, artillery, etc.—that must be maintained. They must be modern, but they must also retain their principal characteristics, if we wish to win in modern warfare.

Change in Breden March Formula

FOR those accustomed to using the Breden March Formula, the change from the 9 mile to the 8 mile trot, as prescribed in C2 to FM 2-15, merely simplifies its figures and its use. For those not previously accustomed to its use, it gives an accurate and easily determined way of figuring how to get somewhere on a horse on time, without memorizing a lot of march data.

The Formula:

15 times rate (or distance) less the marching time in minutes equals the minutes of trot, or simply $x = 15R - t$

Example 1. It is desired to cover 5 miles in the first hour of a march, marching 45 minutes and halting 15.

Solution: $15 \times 5 - 45 = 30$ minutes trot

Example 2. It is desired to reach an initial point 3 miles distant in 35 minutes.

Solution: $15 \times 3 - 35 = 10$ minutes trot.

Example 3. It is desired to march 24 miles in 4 hours, halting 15 minutes the first hour and 5 minutes thereafter.

Solution: $15 \times 24 - 210 = 150$ minutes trot

$210 - 150 = 60$ minutes.

Ratio $= \frac{150}{60}$ or 5 minutes trot to each 2 minutes of walk.

The original formula, based on the nine mile trot, was derived from an article in THE CAVALRY JOURNAL in 1936. General Wainwright directed that it be taught at The Cavalry School. It has also been included in the instructional data in FM 2-15 (par. 187, (7), dated April 8, 1941).

For those interested, its mathematical accuracy is demonstrated as follows:

The Derivation:

Let x = minutes of trotting time in march period.
y = minutes of walk.
R = rate of march in miles per hour.
t = march period in minutes.

The walk = 4 miles per hour $= \frac{4 \times 5280}{60} = 352$ feet/min.

The trot = 8 miles per hour = 704 feet per minute.

$$\left.\begin{aligned} 704x + 352y &= 5280\,R \\ x + y &= t \end{aligned}\right\} \text{Relationship Equations.}$$

Solving: $x = 15\,R - t$

For anyone desiring to substitute any other rate of march, for either the walk or the trot, it is simply necessary to change the figures in the Relationship Equations above and solve. The 2nd Cavalry Division has been using the 6½ mile trot, in which case the formula becomes $x = 24\,R - 8/5\,t$.

The Gallop Formula:

C2 of FM 2-15, referred to above, says "The gallop is used only under exceptional circumstances or when required by the tactical situation." Under those circumstances, it is a good thing to have something usable at your finger tips—one that resembles the trot formula.

Formula: $z = 10\,R - t$

Minutes of gallop = 10 times rate (or distance) less marching time. The remaining time to be equally divided between walk and trot.

Example: It is necessary that you march 5 miles in 30 minutes. How can you do it?

Solution: $z = 10 \times 5 - 30 = 20$ minutes gallop, 5 minutes trot, 5 minutes walk.

This formula is based on 12 mile gallop, 8 mile trot, and 4 mile walk.

HEADQUARTERS

ARMY GROUND FORCES

OFFICE OF THE COMMANDING GENERAL
ARMY WAR COLLEGE
WASHINGTON, D. C.

To the Officers and Enlisted Men
of the Army Ground Forces:

Our third War-Christmas is here. Our first one plunged us into a grim defensive battle on all fronts. With our meager shipping we rushed our partly trained troops here and there in a desperate effort to close the gaps as best we could. We hung on. German submarines were sinking our ships within sight of our Atlantic Coast.

Our second War-Christmas found us invading Africa and striking back in New Guinea and Guadalcanal. We had the measure of the Japanese Navy, but German submarines still were inflicting heavy losses on Allied shipping. The worm was beginning to turn, but not too fast nor too fully.

This Christmas we really have much to cheer us. We are conducting successful naval operations in both the Atlantic and the Pacific. We have the mightiest battle fleet ever known, and it is growing. Military operations are in progress in nine theaters all over the world. Africa is rid of the enemy. We can strike on land and sea wherever we elect. We have the initiative. The enemy is on the defensive everywhere. Our superiority is becoming more decisive month by month. One-third of our army is overseas, and shipments are being speeded. Victory may not be in sight, but it is certain.

The soldier's Christmas during war perhaps cannot be too merry in the usual sense, but everyone can be proud of America's war effort, and proud of being a fighter in the biggest and finest Army we have ever had.

I have watched our war Army in training for over three years. My admiration for the American soldier increases all the time. I believe in him, and am certain that, led properly, he is invincible in battle.

My best wishes to you all, and my gratitude for your devotion and fine accomplishments.

L. J. McNair

L. J. McNAIR,
Lieutenant General, U.S.A.
Commanding.

Faith In God—A Powerful Weapon

Once again time ticks its way through the Christmas season and into the dawn of a new year. Two years have now passed since the attack at Pearl Harbor—two years of valiant effort—two years of almost miraculous accomplishment by a nation banded together in a national faith in God to defend the liberties that are American tradition.

The work of these two years has been an uphill fight and the end is not yet in sight. Although the military situation is far different from that of two years ago and eventual victory now seems assured, a terrific struggle still lies ahead for the coming year. Our enemies are not yet beaten. To make certain that they will be, it is necessary that both the national effort and national faith constantly be renewed and ever strengthened.

There are many reasons that have brought this nation steadily out of the perilous odds of two years ago and to the cumulatively powerful position of the present. Not the least of those reasons is the national faith in God —faith in the destiny of America—faith in the principles of each man's right to "life, liberty and the pursuit of happiness." Faith is one of the nation's most powerful weapons—a weapon which cannot be captured by the enemy—and must never be lost even when everything else seems gone.

To those on the battle fronts—at home or overseas—The Cavalry Journal once more sends its Christmas and New Year's Greetings:

May we never lose faith in God or country. It is that faith which will speed us to a righteous victory so that once again a war-torn world can return to "Peace on earth, goodwill toward men."

* * *

Cavalry Journal Policy and Red Army Strategy

From the early fall and winter of 1941—while even military men contended that "Russia could not possibly hold out" against the German Army—The Cavalry Journal has consistently extolled the fighting power and sound strategy of the Red Army, which from the beginning employed large masses of cavalry in *coördination with other arms.*

In June, 1942, The Cavalry Journal cabled the War Department, U.S.S.R., Moscow, and requested an authoritative article on the Russian employment of cavalry and its value in modern war. The War Department responded promptly by cabling an article by Colonel General Gorodovikov, in charge of training cavalry reserves. This article, published in the July-August, 1942, issue was the first of many Russian articles on the employment, not only of cavalry, but of tanks, motorized infantry, artillery, maintenance crews, and other arms and services.

Cavalry Journal policy regarding the Red Army was not a mere happenstance. It was based on a careful analysis of early Russian victories. As pointed out by General Hawkins in his Notes in this issue, the leaders of Russia's armies, unlike many modern extremists, did not overlook certain fundamental principles of warfare, but ably coördinated and employed both *old and new arms* in the application of *sound well-tested principles.*

During the days of the Red Army's withdrawal, Russian cavalry frequently operated behind the enemy lines—interrupted supplies and communications, harassed reserves, and destroyed staff headquarters. The cavalry struck quick, sharp, devastating blows; then quickly withdrew and melted into the forests and countryside. It was in this manner that General Dovator's cavalry fought in the defense of Moscow in 1941. His surprise thrusts were so penetrating and disastrous that the German command credited him with having 300,000 men. The Red Army later announced his command as 3,000.

The first employment of cavalry in a strategic rôle in modern war occurred at the first battle of Rostov, which was won on November 28, 1941—nine days before Pearl Harbor. That was also the first defeat of a Nazi army in Russia. A cavalry force dispatched by Colonel General Cherevichenko to the flank of General von Kleyst's crack First Armored Tank Army caused a complete rout of the German force comprising three tank and one mechanized division.

A few days later, December 6th, the Third Guards Cavalry Corps under General Kryuchenkin, accomplished the first great double envelopment of Nazi forces on the Russian Front. By joining another cavalry pincer under Colonel Kuliev, they surrounded three German infantry divisions (the 45th, 95th, and 134th) which were striking toward Moscow from the Central Front.

The following day, between Stalingorsk and Venyev on the approach to Moscow, the First Guards Cavalry Corps under General Belov struck at the foundation of another German wedge aimed at the Soviet capital and reportedly "wiped out" three divisions of General Guderian's Second Armored Tank Army.

These successes, which followed quickly one upon the other, first turned the German tide of conquest and, as early as November and December of 1941, presented the pattern for victory recently employed in the great Soviet offensive of 1943.

The earlier Russian offensive suffered reverses in the spring and summer of 1942, but from a study of recent

Russian successes it appears logical that those reverses were due more to the difficulties of production and the consequent shortage of matériel than to faulty strategy or tactics.

Beginning with the Battle of Stalingrad, the Red Army has had an astounding series of victories that have pushed the Nazis back from the Volga to the borders of Poland. Of particular interest to The CAVALRY JOURNAL is the definite pattern that appears to run throughout—great double envelopments by large forces of cavalry and tanks in coördinated attack.

In the Battle of Stalingrad, where the German Sixth Army was completely encircled and annihilated, two pincers—one from the north, one from the south—met at Kolock on the bend of the Don. Early reports indicated that the southern pincer comprised a tank corps and a guards cavalry corps; and the northern pincer, a tank corps. Later reports confirm that both pincers were spearheaded by tanks, and the breakthroughs exploited by cavalry. This same strategic pattern was employed more recently at Taganrog and in the battles of the Nogaisk Steppes and the Dneiper Estuary. (See articles, this issue.)

Even as The CAVALRY JOURNAL goes to press, new victories, following the now familiar pattern, are reported:

"London, November 13 (AP). The Russians, throwing their cavalry into their semicircular offensive from Kiev yesterday, reached to within 15 miles of the rail junction of Zhitomir and captured 100 towns as they steadily pushed the Nazis nearer to the prewar Polish border. The early morning communiqué broadcast by Moscow said cavalry was used to by-pass and surprise the Germans as the Russians captured Korostyshev on the main road from captured Kiev to the rail junction objective of Zhitomir."

"London, November 15 (AP). The horse-plus-armor sweep of the Russians toward the Polish and Rumanian borders moved ahead with about the same speed that carried the Russians 85 miles from Kiev to Zhitomir in a week of steady fighting.

These successes of Red Army cavalry have proved that, far from having been displaced on the battlefield, the horse has risen to new and higher standards of value. Even the most skeptical military analyst must now admit that the employment of cavalry by the conquering armies has been fully justified.

The CAVALRY JOURNAL is proud of its unfaltering policy—proud of its steadfast and undiminishing faith in the ability of cavalry; its unbiased analysis of the means and methods of warfare, regardless of arm or army; and its early recognition of the strategic pattern of the Red Army, now culminating in the outstanding victories.

From the Text of the *Moscow Pact*

Statement signed by President Roosevelt, Prime Minister Churchill and Premier Stalin regarding atrocities.

"The United Kingdom, the United States and the Soviet Union have received from many quarters evidence of atrocities, massacres and coldblooded mass executions which are being perpetrated by Hitlerite forces in many of the countries they have overrun and from which they are now being steadily expelled. The brutalities of Nazi domination are no new thing. . . .

"What is new is that many of these territories are now being redeemed by the advancing armies of the liberating powers and that in their desperation, the recoiling Hitlerites and Huns are redoubling their ruthless cruelties. . . .

—Drawing by William Gropper from "*Your Brother's Blood Cries Out.*"

"Accordingly, the aforesaid three Allied powers, speaking in the interests of the 32 United Nations, hereby solemnly declare and give full warning of their declaration as follows: At the time of granting of any armistice to any government which may be set up in Germany, those German officers and men and members of the Nazi Party who have been responsible for or have taken a consenting part in the above atrocities, massacres and executions will be sent back to the countries in which their abominable deeds were done in order that they may be judged and punished according to the laws of these liberated countries and of the free governments which will be erected therein.

"Lists will be compiled in all possible detail from all these countries, having regard especially to invaded parts of the Soviet Union, to Poland and Czechoslovakia, to Yugoslavia and Greece, including Crete and other islands, to Norway, Denmark, Netherlands, Belgium, Luxembourg, France, and Italy.

"Thus, Germans who take part in wholesale shootings of Polish officers or in the execution of French, Dutch, Belgian or Norwegian hostages or of Cretan peasants, or have shared in slaughters inflicted on the people of Poland or in territories of the Soviet Union which are now being swept clear of the enemy, will know *they will be brought back to the scene of their crimes and judged on the spot by the peoples whom they have outraged. . . .*"

LETTER FROM ITALY

"X" Replacement Battalion, Fifth Army

Editor, The Cavalry Journal 4 November 1943
Washington, D. C.

Dear Sir:

In absence of a copy of The Cavalry Journal and having complete faith in your selection, I am inclosing a money order for ten dollars ($10) for which I would like as many books and pamphlets as possible on horsemanship and horsemastership.

We are training mounted units and are at a loss for material on riding and care of the horse. Tactical information is not necessary, because our horse units here in Italy are making their own tactics.

Ask General Hawkins to write some of his very helpful notes on horse reconnaissance in mountains for us. . . .

_____, 2nd Lt., Cavalry.

Annual Meeting

The annual meeting of the United States Cavalry Association will be held at the Army and Navy Club, Washington, D. C., at 8:00 P.M., Monday, January 24, 1944.

Formal notification, together with proxy cards, will be sent to all active members of the Association within the continental limits of the United States. All members are requested to execute and return proxy cards promptly to the Secretary, U. S. Cavalry Association, 1719 K Street, N.W., Washington, D. C.

Those officers stationed in the vicinity of Washington are urged to be present in person.

No Comment!

THE NEW YORK TIMES,

NEW TYPE U.S. CAVALRY IN ACTION AT SALERNO

Reconnaissance Troops Prove Valuable in Tough Terrain

SOMEWHERE IN ITALY, Sept. 25 (Delayed) (UP)—A new type of American cavalry, known as the Provisional Mounted Reconnaissance Troops and composed of American volunteers who are experienced horsemen, has gone into action on the Salerno front.

They came into being as the United States Fifth Army began meeting tremendously difficult terrain as it pushed forward steadily in Italy. The mounted troops have shown special ability in wiping out enemy machine-gun nests and hidden mortar and artillery groups. They have also attained grand results in knocking out German artillery posts in mountain positions inaccessible to almost anything but a horse.

Most of the troopers were cowpunchers or farm boys who have been riding from youth. One or two were star rodeo performers.

"Only a few of our horses have been brought from America," said Pfc. John F. Meglich of St. Louis, Mo. "Actually most of them are German and Italian cavalry horses that were captured in Sicily.

"We do almost everything, from delivering food, water and supplies to outlying posts where trucks and even tanks can't go sometimes to knocking out machine gun nests.

"We are pretty good with the use of these little yellow golf balls," he said. Then he held out some plump, yellow-painted hand grenades which the troopers carry attached to their saddles.

Meglich said he had been a cowpuncher before the war, mostly on ranches around Pierre, S. D. Pvt. John Backiel of Northampton, Mass., another trooper, said he learned to ride horses on his father's farm.

"We also use a large number of mules as well as horses," said Backiel. "Mules are used to carry packs like food and ammunition."

The Perak River Crossing

The Perak River runs south from Kuala Kangsar, the site of the first of the British positions, where the highway and railway cross the river, for nearly 62 miles as far as Telok, where it turns west and some 12½ miles farther on empties into the Malacca Straits. After crossing the river at Kuala Kangsar, the railway and highway climb the hills on the eastern bank, then turn south, and roughly parallel the river at a distance of one or two miles. They pass through Ipoh, the site of the second British position, and from there run west close to the river until it flows through Telok, whence the roads continue south towards Kuala Lumpur.

Air reconnaissance had informed the Japanese that the British were preparing to defend the river line at Kuala Kangsar, at Ipoh, and at Telok, and that the field fortifications at the last two places were so arranged that they were capable of defense against any force coming down the road from the north as well as against any attempts made to cross the river from the west.

All three of the British positions were strong and would be difficult to take. The line that they were trying to defend, however, was very extended, and, as it faced west and their line of retreat was to the south, it was extremely vulnerable to any attacks made at its southern extremity—namely, Telok.

General Yamashita had been unable to use more than about one division at a time in any engagement thus far, because of the narrow front on which his troops had been operating. Now, however, with a 62-mile front to attack, he was in a position to use the major portion of his force, and with plenty of room in which to maneuver he could use his troops to greater advantage than merely having them slug their way down a narrow road.

All of the artillery of the motorized division which had been leading the column was placed in position on the Larut Hills and brought to bear against the British forces at Kuala Kangsar. From the summit of the pass, however, the road wound down the mountain side to the river for about 3 miles in full view of the British batteries, and it was impossible to move any large bodies of troops down this road to positions where they could come into contact with the enemy on the far bank. All that the Japanese could do was to send down small detachments at night, when by moving rapidly and at irregular intervals they could traverse the road without suffering too heavy casualties from the interdictory fire of the British batteries, which kept pounding this road throughout the hours of darkness.

The British guns were well protected, and in spite of the fire of the motorized division's artillery and a number of dive bombing attacks, the Japanese were unable to silence them. It became clear that it would be impossible to cross the river at this point. The Japanese determined to attempt a crossing at a point near Ipoh, about 12 miles downstream from Kuala Kangsar. The British positions at this point were every bit as strong as those farther upstream, but the flat, thick jungle, which extended right up to the bank of the river, enabled the Japanese troops to approach much closer without being seen.

The "roads" through this area were scarcely more than native paths. The Japanese used three regiments of engineers over a period of four days in improving the road from Taiping to the point on the river bank opposite Ipoh that they had chosen for their attack. By the morning of the 26th, the artillery of the division selected for the task was in position in the jungle, and the infantry units and engineers, in assembly areas close to the river, were prepared to move forward when the time came, launch their rubber assault boats, and cross to the opposite bank.

All day long the artillery fired a heavy bombardment against the British lines. The actual crossing was set for the morning of the 27th, and in the early morning hours before daylight, three combat teams composed of engineers and infantry moved up to the river bank and waited for the signal to launch their boats. Just after daylight, bombers came over and rained high explosives on the British lines for nearly half an hour. As the last plane disappeared, the assault teams shoved off from the bank of the river and started paddling across.

Because of the heavy bombardment, the Japanese thought that they were going to be able to cross the river with very little opposition. But the British positions had been so well hidden in the jungle that neither the artillery nor the bombers had succeeded in accurately locating them. As a result, there were enough machine gun nests and batteries in action that morning to turn such a hail of fire on the Japanese as they paddled slowly across the river that the attack broke down almost before it started. Japanese losses must have been very heavy, for there were no further attempts that day to renew the advance.

Although this attack was itself a failure, it did succeed in ultimately getting the Japanese across the Perak River. The British apparently realized that if and when the Japanese ever did cross at Ipoh, the troops at Kuala Kangsar would be cut off from retreat, and therefore they withdrew the garrison from its defense of the bridges at that point and moved them south to join the troops at Ipoh. This evacuation, of course, enabled the Japanese to cross at Kuala Kangsar. By the afternoon of the 27th, General Yamashita had a division on the eastern bank of the Perak River ready to move on the British at Ipoh from the north, as well as a division which was ready to attempt a crossing from the west bank.

The attack was launched again on the morning of the 28th, and concentrated fire from the batteries of two divisions plus some additional heavy artillery was directed against the defenders. For the first time in the west coast campaign, two complete Japanese divisions were employed simultaneously. But in spite of all that they could do, they were unable to dislodge the Australians from any but the most advanced positions.

During the day three onslaughts were repulsed by the defending troops. Late in the evening, after having repulsed the third attack, the British command suddenly retired and, leaving only a small rear guard in the lines at Ipoh to cover their withdrawal, moved rapidly down the road in the direction of Telok. The cause of this retreat was the sudden appearance of a strong Japanese force at the mouth of the Perak River near Telok. This was a third division which the Japanese had moved south through the jungle until it reached the coast at a small town called Lumpat. There, after assembling a number of knocked-down motorboats which they had brought with them, they embarked two specially organized assault battalions, which moved down the coast some 19 miles to the mouth of the Perak River, where they headed upstream towards Telok.

The plan was to surprise the garrison at Telok before daylight, capture the town, straddle the road coming south from Ipoh, and so bottle up the retreating British

The Conquest of Malaya from the Japanese point of view.

Like the two installments of "Philippine Campaign," and the account of the Hong Kong Campaign written by Colonel Babcock, this account of operations in the Malaya Campaign is based on information drawn entirely from Japanese sources: official bulletins, news reports, speeches, radio commentaries, magazine articles, and personal experience accounts written by officers and men at the front. The only Allied bulletins used were those quoted in the Japanese press.

Colonel Babcock says: "While confined to the compound of the American Embassy in Tokyo from the outbreak of war until June 17, 1942, I was cut off from any outside news. Consequently, the preparation of this paper has not been influenced by information received through any but Japanese sources. It should also be remembered that all dates are one day advanced over those used in the United States."

troops. A small British river patrol, however, discovered them about 6 miles downstream from Telok and gave the warning in time to alert the garrison. The British were ready when the Japanese boats arrived, and as the attackers had no artillery or aviation support, the defenders had no difficulty in repulsing them. But the appearance of Japanese troops virtually in rear of their lines alarmed the British High Command to such an extent that it was apparently decided to abandon the defense of the Perak River and to withdraw to the vicinity of Kuala Lumpur where the next defensive line was being prepared.

Battle of Kuala Lumpur

The defense of Kuala Lumpur consisted of a series of gallant fights in which the British time and again repulsed the most desperate Japanese attacks, only to be forced ultimately to give up their positions because of Japanese landings behind their lines. By this time, the British had received both air and ground reinforcements from India, and the 11th Division, after withdrawing from Telok down the road toward Kuala Lumpur, passed through the lines of the recently arrived 45th Indian Brigade, which was building a defensive position in a defile just north of Trolak.

The terrain at this place is somewhat similar to that encountered by the Japanese in the pass through the Larut Hills. and they were forced to employ the same tactics in their attempts to overcome British resistance at this point. Now, however, the British forces consisted of a full brigade of fresh troops supported by a mountain artillery brigade, and the repeated frontal attacks which had overcome the lone Australian battalion in the previous fight were unable to wear them down. The British had enough troops available for the defense of this pass to enable them to rotate the battalions in the trenches, so that when the Japanese brought up fresh troops, the British also were able to bring reinforcements up into the line.

The Japanese unit involved in this action was an infantry division, which up until then had not seen any serious action. The motorized division, which had led the march ever since the landing at Singora, had been pulled out after the Larut Hills fight and had withdrawn to Taiping for rest and reorganization. For some reason or other, the Japanese did not press their pursuit after the British abandoned Ipoh and Telok, probably because the troops which had marched south through the jungle and attempted to land at Telok were scattered between that town and the mouth of the Perak River and Lumpat.

The logistics problem involved in supplying the Japanese division on the coast was a difficult one. Some time was required to work it out and to reassemble the division at the mouth of the Perak River preparatory to resuming operations along the coast. As the advance of the main column down the highway depended on the success of the landing operations to be carried out by this unit, the entire Japanese force was held up for several days, while the necessary supplies and boats were being assembled in the vicinity of Telok.

When all preparations had been made, the Japanese advance division moved out of its bivouac south of Ipoh and headed down the road towards Trolak, where an advance detachment had been in contact with the Indian Brigade ever since the 28th of December. The march of the division was timed so as to arrive at the defile early on the morning of January 4th. The division commander had preceded his troops and had his plans ready when the first of his units arrived at the scene of battle.

As in the Larut Hills fight, the only way for the Japanese to advance was for the troops to force their way through the pass by sheer superiority of fire power. All of the division's artillery was brought to bear on the narrow British front. While the bulk of the infantry remained well behind in assembly areas, one battalion at a time, aided by a few flame-throwing tanks and specially trained engineer teams, attacked the strong points in succession and fought desperately against the Indian counterattacks until the next assault battalion passed through it to assail the strong points in rear.

For three days the Japanese, using fresh troops every day, attacked unceasingly with all the modern weapons at their command. By the end of the third day they had succeeded in penetrating only the first line of the defensive position. Had the British been able to bring up fresh troops, it is very likely that they could have deprived the invaders of even these small gains. The Japanese say that their air reconnaissance on the afternoon of January 7th showed that a motorized column was in fact proceeding up the road from Kuala Lumpur towards Trolak, where they believed the British intended to use it in a counterattack to drive them out of their position.

That morning, however, the Japanese division, which had been assembling at the mouth of the Perak River, embarked a detachment of troops in its motor boats and in a number of native boats that had been commandeered up and down the coast, and effected a surprise landing just south of the mouth of the Bernam River where a road runs east through the jungle for about 37 miles and joins the west coast highway at a point between Trolak and Kuala Kubu. In spite of the fact that this was the second time the Japanese had made use of this maneuver, the British seem to have been caught completely unawares.

As the Japanese pushed along the jungle road which led eastward from their landing point on the coast, they encountered no resistance until a detachment of Australians, which had been rushed down the road, intercepted them less than 10 miles from the main highway. Unfortunately for the Japanese, their advance units were lacking in artillery and were unable to push through the Australians to secure a position across the highway south of Trolak. Had they been able to do so and to hold the position until the arrival of the remainder of their division, the Japanese would have been able to trap the 45th Indian Brigade as well as a brigade of Australians, which was still in the vicinity of Trolak. By the time that sufficient troops had come up to drive the Australians back towards the highway, the British troops from Trolak had succeeded in effecting their retreat and were well on the way to Kuala Kubu.

At Kuala Kubu a part of the Australian division was astride the road in a position of some natural strength, but as the country was more open than that farther north the defense of the area was going to be more difficult than that of the narrow defiles and jungle passes which the British had thus far been holding. The Japanese spent two days, the 9th and 10th, in launching fierce attacks against the Kuala Kubu defenses. All of these onslaughts were repulsed, and at no time did the Japanese succeed in penetrating even the outer lines. But they did succeed in pinning the British to their position and in making them use the bulk of their troops against the forces moving down the highway. By this time the British realized that the most serious threat to their defense of the Malay Peninsula lay in the Japanese units proceeding down the west coast and landing behind the defensive lines.

In an attempt to block this maneuver, the British had sent a force to Kuala Selangor, at the mouth of the Selangor River, where the next attempt at a landing logically could be expected. A railway runs southward from Kuala Selangor as far as Klang, where it joins the east-west line from Kuala Lumpur to Port Swettenham. It was therefore vital to the defense of Kuala Lumpur for the British to hold Kuala Selangor and Port Swettenham, and they garrisoned these coastal points with all the troops that could be spared from the defense of the main position.

The heavy attacks by the main Japanese forces engaged so many troops that the British were unable to send an adequate force to defend the coast. They did succeed, however, in repulsing two Japanese attempts to land in the vicinity of Kuala Selangor, but the credit for this set-back must go to the RAF. A number of new squadrons had been sent out from India and the Middle East about this time, and the British very wisely employed their bombers in breaking up attempts to land along the coast. The Japanese could not have known of the arrival of these new air reinforcements, for their first attempt to land at Kuala Selangor was not protected by fighter planes. When the British bombers came in to attack, the Japanese were caught about three-quarters of a mile offshore, crowded into open boats which were easy marks for bombs and machine guns. It seems certain that few if any of this force escaped, for in Japanese accounts of this fight there are many references to the gallant way in which men died without attempting to retreat.

Next day another landing was attempted at the same place, and that time the troops were protected by a squadron of fighter planes which inflicted heavy losses on the British bombers when they swooped in to attack. The second attempt also must have been a failure, for it was not until the third day that a successful landing was made. On this occasion, the Japanese filled the air not only with fighters but with dive bombers which battered the beach defense so badly that the troops encountered very little resistance as they came ashore. The Japanese lost no time in pushing south down the railway towards Klang, while the main body of their coastal division was brought down the coast in transports and landed at Kuala Selangor to reinforce the advance detachment. The successful landing of a large force south of the Selangor River sealed the fate of Kuala Lumpur, and on the 11th the Australians pulled out of their positions at Kuala Kubu and, moving south, abandoned the city and the entire district to the Japanese.

From that time until they reached the Muar River on January 18 there was no serious fighting; the British rear guards merely delayed the Japanese columns sufficiently to enable their own main forces to retreat without serious molestation.

The East Coast Column

In the meantime, the Japanese column on the east coast had been able to advance at about the same rate as the main Japanese forces in the west, without any particularly heavy fighting. After retreating from Kota Bharu the British had held the line of the Trengganu River, but after the piercing of the Perak River defenses these troops had withdrawn south and taken up new positions along the Pahang River in order to keep contact with their forces in the west. The fall of Kuala Lumpur and the retreat south to the Muar River on the

west coast again exposed their left flank and they were forced to retreat once more, in spite of the fact that they were perfectly capable of holding indefinitely the forces with which they themselves were engaged.

The Conquest of the Southern Plain

When the Japanese penetrated the southern part of the state of Negri Sembilan they came out of the mountains on to the flat plain of the southern tip of the Malay Peninsula, and for the first time in this campaign had sufficient room to employ all of their units at once. The lines that the British intended to hold paralleled the Muar River through Gemas and then ran roughly eastward to Endau on the east coast. Here for the first time, the two armies faced each other as units, for until this line had been reached the high mountain range which runs down the center of the peninsula had separated the armies into two independent columns.

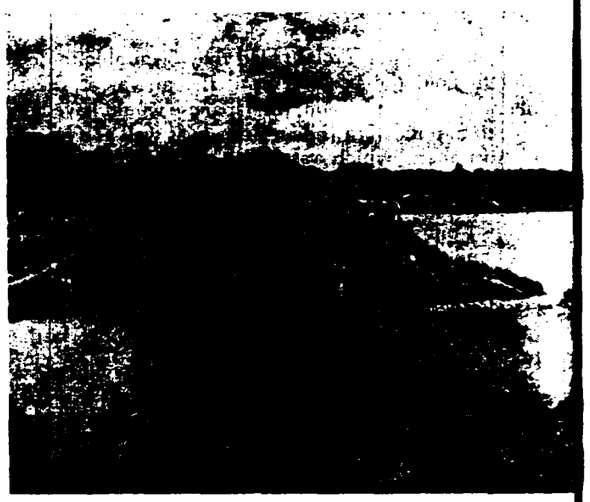
The Australian defense of Gemas was one of the bright spots of the campaign for the British. The Japanese say that it was the fiercest fighting they had on the entire peninsula, and that they suffered their heaviest losses in attempting to break down the stubborn defense of this town. But, gallant though the defense was, it was nullified by another landing south of the Muar, when a Japanese unit embarked in boats at Malacca town and after moving down along the coast, captured Batu Pahat south of the river. At the same time the main Japanese forces crossed the Muar at Bakri, a few miles downstream from Gemas.

This engagement was one of the most disastrous of the campaign for the British, for it caught them just as they were withdrawing from their positions as a result of the landing at Batu Pahat. Losses were heavy, and the troops were so badly disorganized that no further attempt was made to stop the Japanese until they reached Johore Bharu, across the straits from Singapore. The retreat of the troops defending the Muar River line forced the withdrawal of the east coast division, which had been successfully defending Endau for nearly a week. Although the British abandoned any attempt at general resistance after the Japanese had forced the Muar River, and simply marched their main columns south as fast as they could go, they left behind two strong rear guards that fought a number of fierce engagements during the retreat and held up the Japanese sufficiently to allow the demoralized army to get to Singapore in safety.

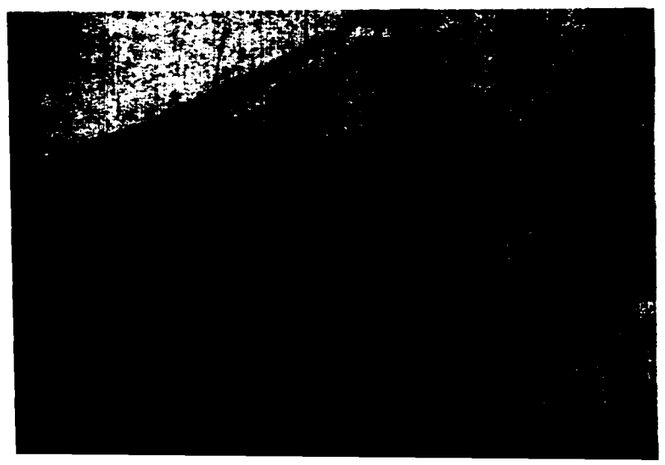
The Capture of Singapore

When the Japanese occupied Johore Bharu on January 31st, they secured complete possession of the Malay Peninsula mainland, and found themselves within less than a mile of the great British naval base at Seletar and within artillery range of the whole island of Singapore. They had entirely eliminated Singapore as a useful enemy base, and probably could have reduced it in a couple of months by means of a blockade and a continuous artillery bombardment. But a number of factors operated to influence their determination to adopt the more expensive and quicker method of direct assault. The moral effect of an early fall of this so-called impregnable fortress upon both their own people and their enemies was one important point, as was also the desire of the navy to secure possession of the naval base, and thus obtain free passage for their ships through the Straits of Singapore.

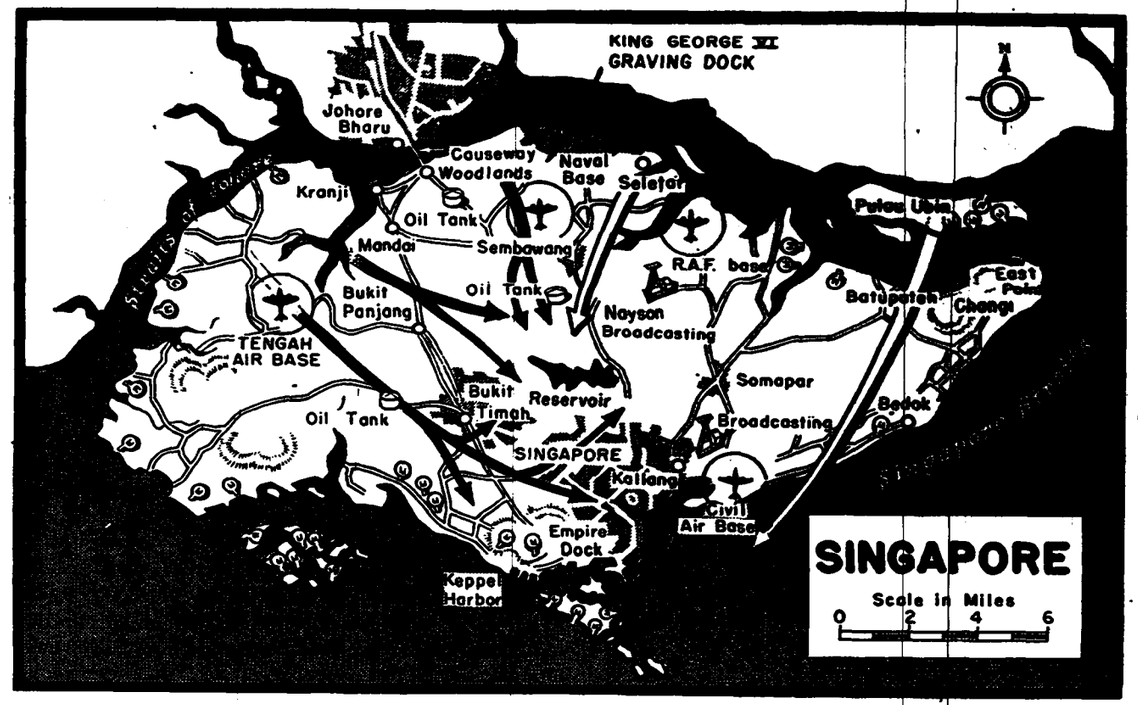
In order to stem the tide of Japanese aggression, the British dynamited the dam connecting the straits of Johur with Malaya. But this did not stop Jap progress, or the final conquest of Malaya. This photograph, received from neutral sources, shows the Japs using prisoners of war to reconstruct the dynamited dam.



Japanese infantry fire from behind a train during the attack on Johore Behru. Photograph from neutral source.



These straits, besides being heavily mined, were under the control of the guns of the British fortresses on Singapore and its neighboring islands. Moreover, the Japanese troops engaged in the siege of Singapore were



badly needed for the campaign against the Netherlands East Indies, which was now well under way, and for the campaign in the Philippines which was not progressing according to plan. The Japanese High Command, therefore, had determined to capture Singapore as quickly as possible, and for this purpose had sent down into the Malay Peninsula large quantities of heavy siege artillery. These guns, which were sent by rail from Thailand, began to arrive in the peninsula soon after the break-through of the Muar River defenses, when it had become evident that the next real fight would be the assault on Singapore itself.

From January 31st until February 5th there was very little activity on the front, as the Japanese spent those six days installing their big guns and disposing their troops for the final attack. Two fresh divisions, composed of veteran soldiers of the China campaign who had received special training in river crossings in preparation for this very task of storming the Straits of Johore, were now brought up to relieve those divisions that had fought their way down the peninsula. These troops were assembled in covered areas some 6 miles behind the Japanese artillery positions so that they would not be subjected to bombardment by the big guns in the British fortress during the artillery fight that necessarily would precede the actual assault. Special parties of officers and noncommissioned officers from all of the infantry and engineer units of these divisions made almost daily trips up to the very front lines on the banks of the Straits of Johore in order to become thoroughly familiar with the terrain over which they would later have to operate in the dark.

The bombardment, which began at 6:00 P.M. on February 5th, is said to have been the heaviest concentration of fire ever put on by the Japanese army. The guns used were of all calibers, but the main punch came from modern 240mm howitzers, which had been specially built for this very purpose.

The backbone of the British defense consisted of the great coast defense fortresses at Pulau Ubin, Changi, and the outlying islands. In addition there were a number of recently constructed field fortifications that extended around the northern and eastern shores of the island facing the Japanese across the Straits of Johore. These were not permanent fortifications and consisted almost entirely of trenches and earthworks, but they had been constructed to an average depth of some 6 miles and presented a formidable obstacle when manned by resolute troops. The shore of the island was a mass of wire entanglements and other obstructions, and a number of concrete pillboxes had been constructed for shore defense. The range to every point within the Japanese lines had of course been well plotted, and all Japanese accounts speak feelingly of the accuracy of the British artillery fire in the early stages of the fight, before the overwhelming weight of the Japanese fire had eliminated it as a decisive factor.

For three days the artillery duel went on, and all the

This British Fortress gun, firing from an extremely well camouflaged position on the coastline, was one of the islands of resistance that helped delay the Japanese advance on Singapore Island.

while Japanese bombers droned overhead in successive waves, unopposed by any enemy airplanes, and, after the first day, with little if any antiaircraft fire to bother them. Day by day, the fire from the British lines grew weaker, as battery after battery was put out of action, and it soon became obvious that the time for the infantry assault was at hand.

On the afternoon of the 7th, the infantry-engineer assault teams were moved up to their jump-off positions, and the Japanese light and medium artillery began concentrating their fire on a 300- or 400-yard strip of ground running along the north shore of the island from Kranji to East Point. Observers who watched this final phase of the preparatory bombardment say that the land across the straits was a solid mass of smoke and fire and that it looked as though nothing could live under that rain of shells. That night, however, when the assault teams shoved off in their rubber boats and assault barges to make the dash across the kilometer-wide stretch of water, there was ample evidence that a good many men had lived through that hail of fire.

As soon as the British realized that the attack was actually at hand, they flooded the Johore Straits with searchlights and turned loose the fire of all the machine guns and mortars that were still in action. The few remaining artillery batteries, not wiped out by the Japanese barrage, also joined in and concentrated their fire on the waters of Johore Straits.

The Japanese had not expected that so many British guns would still be active and their losses were unexpectedly heavy. In fact, the first wave was repulsed, and very few survivors succeeded in returning to their own shore. The final outcome, however, was never in doubt, for there simply were not enough British guns to cover the two fronts on which the Japanese were attacking.

At some time between midnight and 1:00 A.M. on February 9th, one of the Japanese combat teams gained a foothold on the island of Singapore on the northwest shore about five miles from Tengah air base. The British at once attempted a counterattack to take this beachhead away from the invaders, but the attack seems to have gone astray in the darkness and confusion of the fighting. Only one company of Australian troops succeeded in reaching the Japanese position. Here a sharp hand-to-hand fight took place, and for a while it looked as if the Japanese might indeed be driven back to their boats. But another battalion came over just in time, and from then on the attackers were never in any danger of losing what they had gained. Before dawn, another Japanese detachment succeeded in effecting a landing east of the causeway, between Woodlands and the Seletar naval base. During the daylight hours that followed, a steady stream of reinforcements was employed in enlarging these beachheads sufficiently to permit the organization of a new offensive on the island of Singapore itself.

A third landing was effected that same night on the island of Pulau Ubin, less than a mile from the fortress of Changi. By the afternoon of the 9th, these troops had gained complete control of the little island and of what was left of the British batteries located there. Before the surrender came, the Japanese trained the one remaining serviceable gun in the fortress of Pulau Ubin against Changi and had the satisfaction of bombarding the British with a gun from one of their own batteries.

As soon as the Japanese had firmly established themselves on both sides of the causeway and, by the fire from these beachheads, had eliminated that of the defenders of the causeway, a party of engineers set about the task of repairing the kilometer-long bridge, which had been destroyed by the British after the last of their troops had crossed from Johore Bharu. Either the Japanese engineers performed an incredible feat (which is what they claim) or else the British did a very poor job of demolishing the causeway (which is what photographs would seem to indicate), for by noon on the 8th the bridge had been repaired sufficiently to enable foot troops to cross, and by evening of the same day, wheel traffic was pouring across the causeway in a continuous stream.

From this time on, the battle was merely a matter of time. Actually, the ensuing six days saw the fiercest kind of fighting, but the result was never in doubt. The Japanese used the German so-called spearhead method of attack: that is, the fighting was done by two columns which penetrated the British line and then fanned out behind it to the east and west. So that before the battle was over they had broken the British army up into a number of islands of resistance, the principal ones of which were located at the RAF base at Seletar, the

fortress of Changi, the high ground north of the reservoir, and the high ground around Bukit Timah. This last-named place was defended by what was left of the Australian division, and the defense of the town was considerably aided by fire from the guns in the batteries off the south coast, which shelled the Japanese to good effect during the three days that it took them to drive the Australians out.

The last four days of the battle were marked by great confusion, with isolated groups of British almost completely surrounded, fighting desperately in the hope that conditions might not be so bad in some other part of the island and that aid might reach them before they were forced to give in. Even the Japanese troops were badly disorganized, and the direction of the fighting seems to have been pretty well decentralized. Each regimental and column commander seems to have changed the direction of his attack as circumstances required.

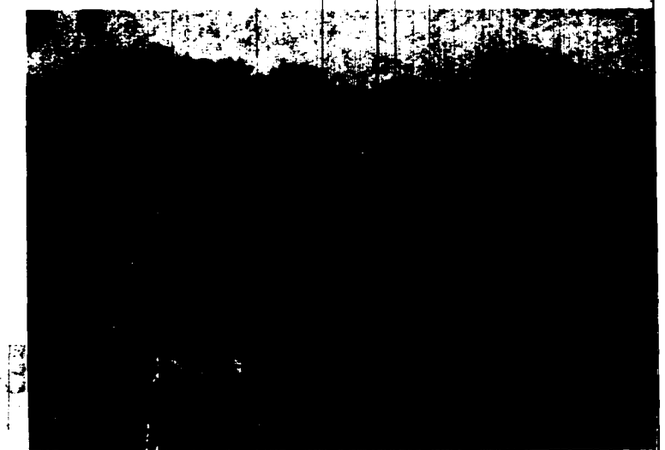
One by one the British centers of resistance collapsed, and by the morning of the 15th, Japanese and British troops were fighting in the northwest suburbs of the city of Singapore itself. It was obvious then that further resistance was useless. General Percival, the British commander, sent word to General Yamashita that he was prepared to negotiate for the surrender of his troops and of the island fortress. The two officers, together with a few members of their staffs, met at the Ford Motor factory at 7:00 o'clock on the evening of February 15th. By 7:50, General Percival had signed the document which unconditionally surrendered one of the greatest naval bases and fortresses in the world.

Natives remove debris in one of Singapore's less bombed streets.

In little more than two months the Japanese had traversed "impassable" country, had engaged repeatedly in heavy fighting against well trained troops, had marched more than 600 miles, and had, in a two-weeks siege and assault, reduced an "impregnable" fortress. Singapore, the center of the defense of the ABCD powers in the Far East and the base vital for their "punitive blockade" of Japan, had fallen. With it, those powers had lost most of their sources of rubber and tin to the very nation from whom they had hoped to withhold those commodities. Soon, largely as a result of the fall of Singapore, they were to lose the Netherlands East Indies and some of the richest oil fields in the world.

As the Japanese authorities did not fail to point out, Japan had broken through the "ABCD encirclement ring" and was now in a position to institute a counterblockade of its own.

General Sugiyama and General Yamashita, conqueror of Singapore, confer during an inspection of the fallen city.

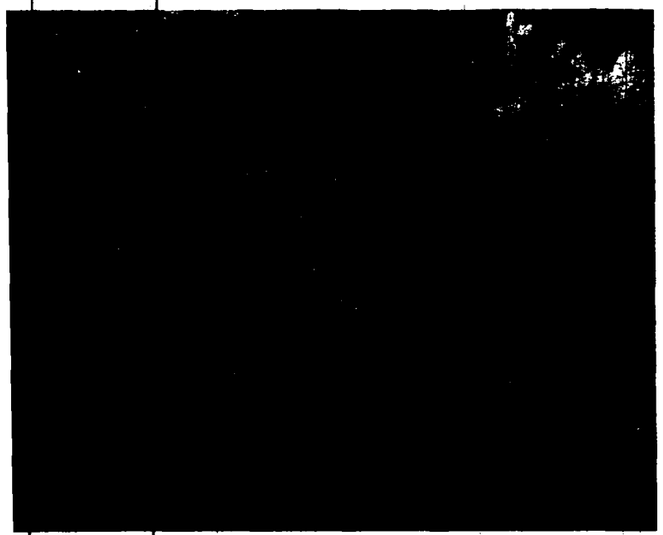


When the Green Light Flashes

by Lieutenant P. A. Young, Parachute Regiment, British Army

IT was immediately after the fall of France that paratroop training began for volunteer personnel of the British Army. The moment was psychologically exact. We had come back from the beaches at Dunkirk with one desire—a chance to meet the Germans on equal terms with first class weapons and equipment.

We settled down to train and harden ourselves—to repel invasion if and when it came, but above everything to prepare for the day when we would return to Europe. Most of us had been in France. All of us were filled with a new spirit, and it was with delight that we realized that the old days of defensive tactics were gone. Our training, even in those days of imminent invasion, was for attack!



British Official Photo

British paratroops and their supply chutes make a massed descent during training.

Training

For long weary weeks we toughened and hardened ourselves. We did away with transport and, carrying full equipment and avoiding roads, we marched for miles across country. We dashed over assault courses while bullets whined and sang overhead. Everyone became expert at map reading, compass work, small arms, unarmed combat. We practised night work, full scale attacks, small raids and patrols. We learned to forage for ourselves, cook our own food, read the stars, and read the country. We drove every type of car, stood at the controls of railroad engines, inspected coal mines and electric plants and practised sabotage. We fired every conceivable type of weapon from a pistol to a 25-pounder gun. We learned all about explosives, and we practised with all types of German and Italian weapons until we knew them as well as we knew our own.

We grew into a team. We worked together, swore together, ate together. I had a happy knack of cooking and so when I could spare the time I usually turned into platoon cook on maneuvers.

Also, we learned parachuting. Starting with exercises in the gymnasium, we worked up to leaping from trucks, practising from a parachute tower, and jumping from a captive balloon. Then we jumped from all types of aircraft until we were experts and could have an entire company landed and formed up ready for action within ten minutes of dropping. We studied German methods.

Raid on the Coast of France

At last the day arrived. One December day in 1941 my company left the battalion for a secret destination, and there we trained for action. We were not told for some time that we were going to raid the coast of France, but we guessed something was brewing. We trained in close coöperation with the Navy and the Air Force and, after a few heart-breaking days of waiting for the right weather, we climbed aboard our aircraft—all of us armed to the teeth and carrying explosives.

British paratroops break away to go into action after grabbing arms from the container dropped with them.

British Official Photo

Our object was to blow up the German radio location station at Bruneval, near Le Havre. It was situated on the cliff top, and we were to land in a field 500 yards behind it. The first party to land was to be a platoon of 40 men, heavily armed with rifles, Bren and Tommy guns and grenades. They were silently to surround the beach defenses and wait for a signal to attack. Then would come the main objective group, including engineers, armed for close combat with Tommy guns, pistols, knives and grenades. My section would lead this group, go straight to the set itself, and hold it until the arrival of the others who were to deal with a house (the Nazi headquarters) on the way. Finally was to come another platoon which would provide a covering screen. We were to get away by boat.

Tracer bullets from the defenses flew past as we came over our field. The Red light flashed. I was No. 1. I swung my legs over, winked at my men, and waited. Green light! I dropped.

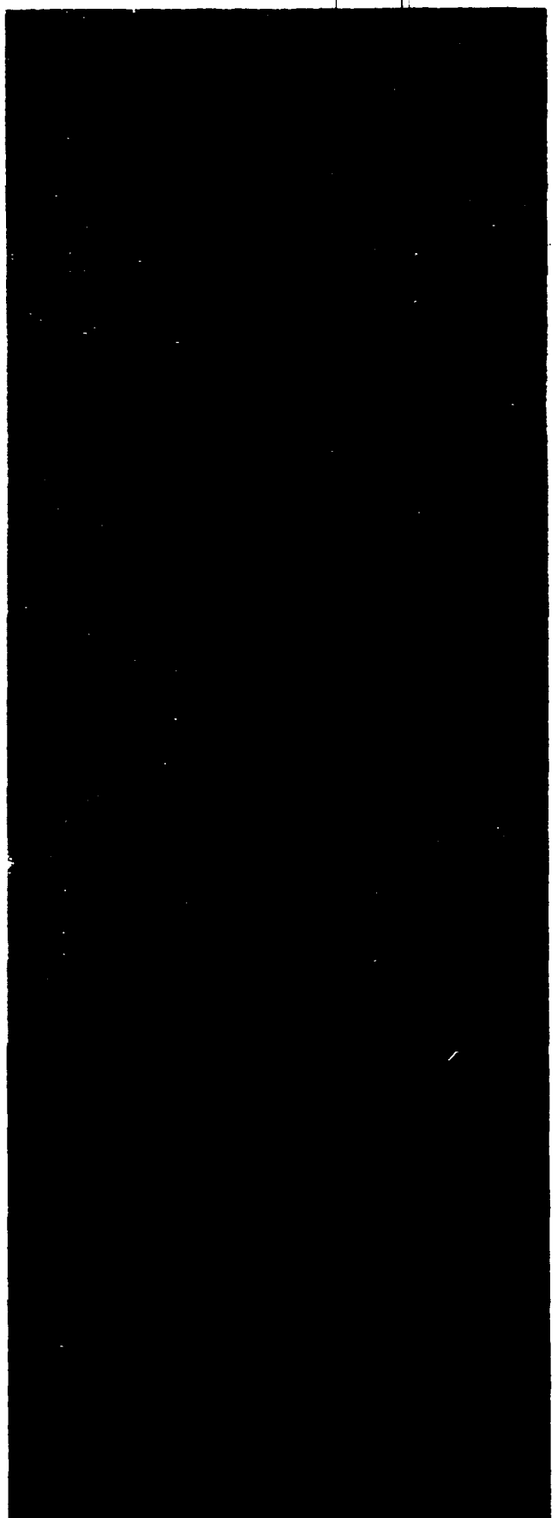
Shadowy figures floated to earth beside me. Machine guns chattered below, and the bullets sang past. Ah! Here we were. I dashed to our container and collected my men. "All correct!" I led the way, and we sprinted for a gully to our front. The beach attacking party were on their way; the covering group were touching down behind us. The ground was familiar—we knew it by heart from models and photographs. I reported to the C.O. He looked at his watch. "Get going, Peter!" I ran back to the section. "O.K., boys, this is it. Off we go!"

We ran lightly across the snow towards the set. A shot rang out, and another. We skirted the house and made for the set. I had a bomber on either side of me—fingers around grenade pins. My automatic was ready, my knife in my left hand. We were 200 yards away. No sign of the Germans yet.

Wire! We three in front covered our faces and flung ourselves upon it. The rest ran over our bodies and lay down on the other side. The last men pulled us clear. We re-formed and moved off. A machine gun opened up on our left, and a group of bewildered Germans appeared to our front.

"Grenades!" I yelled. Out with the pins—throw! We flung ourselves down as they burst among the Germans. Some fell. Others ran. The man on my left dropped one right in the machine gun pit. The gunner pitched over the edge of the cliff. The gun was blown to bits. We sprinted forward, firing as we went. My sergeant dropped on one knee and aimed at a running German. Crack! The German pitched on his face. Now we had the set. From all around came the rattle of fire and the crash of explosives. The others were attacking! The German beach defenses were firing madly out to sea. They did not realize that they were being attacked from the rear. We began clearing the dugouts.

A British paratrooper with full equipment and parachute. He is armed with a Sten submachine gun which is tucked underneath the parachute harness on his chest.



British Official Photo

The engineers arrived and we were reinforced by the other group. We covered the engineers while they prepared their charges. The fire grew in intensity. One of them dropped; another took his place. At last they reported "All ready!" The C.O. led the way and, dragging one bewildered prisoner with us, we began to withdraw towards the beach.

The set exploded with a roar behind us. Warning shouts greeted us as we topped the rise leading to the beach, and machine guns opened up.

The beach defenses were still in action. The C.O. rapidly explained his plan. We had to get to the beach without delay so that the boats could come in. Contact was made by radio with the group down there around the pill boxes and, dropping flat, we wormed our way forward.

We attacked together by throwing grenades in teams. About 25 grenades exploded simultaneously among the German trenches and pill boxes. Then we charged, the Scotsmen among us shouting their battle cries. There was no fight left in the Germans. They surrendered.

We then contacted our landing craft by radio. They were waiting three miles off shore. The other groups closed in, and we formed a defensive ring around the beach and waited. Except for desultory sniping and a little shelling, the Germans made no attempt to stop us.

At last our boats came chugging in, pouring a hail of fire from their guns to the cliff top. They couldn't come right in so we had to wade and swim out to them. At last we were all aboard and off we went. The return trip to England took 14 hours and during that time, while destroyers circled around us and Spitfires droned overhead, we saw no sign of any Germans, though we were specially equipped with antitank rifles to deal with their E-boats should they appear.

The raid had been a total success. The Germans had been taken completely by surprise. They had lost over 60 dead. Their radiolocation station was completely destroyed, and we had three prisoners. Out of our original 120, we had one killed, seven lightly wounded, and five missing. We had lost no aircraft, and our ships remained unattacked. We had learned valuable lessons. We knew now that our grenades were effective against anything the Germans had, that our training was correct, that toughness and physical fitness were as essential as mental alertness. We knew, too, that we had been right to insist upon the strictest discipline while on the job, and comradeship between officers, N.C.O.'s and men in our leisure hours.

More Training

After a brief period of leave we started training again. We passed on the lessons that we had learned to others, and once again went at it full blast! This time we worked on a bigger scale together with American parachute troops recently arrived in England. Their transport aircraft were better suited to our purpose than our own bombers. They were a fine crowd of fellows, and keen good-natured rivalry developed between us.

As the numbers of American transport aircraft and equipment increased, more volunteers were admitted. For nearly a year we carried on—fighting imaginary battles all over England, studying new methods, practising new ideas. New weapons were introduced—high explosive charges that could be converted into grenades that would blast any tank the Germans had. Also, a new type of Tommy gun, new uniforms, equipment and steel helmets appeared.

When our formation sailed for the invasion of North Africa in November, 1942, it was a highly skilled and technical body of men, in the pink of condition, splendidly equipped and yearning for action.

Tunisia

A few days after landing, we were once more in our aircraft—flying over the bare mountains and arid plains en route to Tunisia!

Our objective was an airfield just inside the Tunisian border, and here we were lucky. The whole battalion baled out and landed unopposed. The French received us with open arms and provided us with food and transport. Thus equipped, we headed for Tunis.

We did not know where the Germans were. Our orders were to push ahead as far as possible until we could advance no farther, then to hold the enemy until the First Army came up. Thus began our first campaign as paratroops. We met the Germans just outside Mateur, destroyed seven of their tanks, and dug ourselves in.

We held on for over two weeks. In that time the Nazis threw in attack after attack but gained no ground. Then other troops came up. We remained in action until April—fighting as shock troops. The campaign was long and arduous. Conditions were tough, and we were glad that we had trained for them. Fighting was vicious and raged up and down the line for months, without either side gaining ground.

Many of the Nazis had come from the Russian front. They were badly shaken and demoralized by their terrific defeat at Stalingrad, and we resolved to try and equal it in Africa.

Because we wear red berets, the Nazis called us the "Red Devils," and when the men realized this they threw away their steel helmets and attacked wearing their berets!

I was eventually wounded during the battle for the German-held strong point on Djebel Mansour. Sadly depleted, we came out of the line in April and went to the rear. It was estimated that my battalion had killed over 7,000 Germans and captured another 2,000. The battalion was reinforced, enlarged and re-equipped, and somewhere in the African desert, before the final victory in Tunisia, training started once more.

Back in England, I heard the news from Sicily. Once again the "Red Devils" had struck.

The Greeks Have a Word for It— "AERA"

by George Haniotis

Colonel Christodoulos Tsigantes, commander of the "Sacred Brigade" of the Greek Army, attached to the British Eighth Army across Libya, performed invaluable service on advance missions from Alamein to Tunisia.

RANKING with the British commandos and the fierce Moroccan Goums, the Greek "Sacred Battalion" was one of the most picturesque fighting units that took part in the North African Campaign. This battalion, a unit of about 500 young Greeks, eighty per cent of them former officers in the Greek army, was formed in August of 1942.

Many more officers than enlisted men were able to escape from Greece following the Axis occupation. As there were not enough troops for them to command, a number of these officers conceived the idea of banding themselves into commando-like units. They chose the name "Sacred Battalion" after a volunteer group of selected Thebans in a war with Sparta. During the Greek War of Independence in 1821 the name was resurrected and given to a group commanded by Prince Alexander Ypsilanti.

The present "Sacred Battalion" has adopted as its insignia a spear and laurel wreath with shield on which is inscribed, "With this or on it," after the advice of the Spartan mother to her son as she handed him his shield.

The men of the Greek battalion were distinctive in the polyglot Allied armies because of their full beards, dark red balaclava wool helmets, and commando boots. The commander, Colonel Christodoulos Tsigantes, is a strict disciplinarian who insists that all candidates for his unit go through special qualifying tests, difficult in the extreme.

There is no second in command. All other ranks, regardless of their shoulder insignia, serve on an equal basis, and are chosen for special tasks according to their qualifications.

The "Sacred Battalion" first saw action with the Fighting French troops under General Leclerc and later fought alongside the New Zealanders under General Freyberg. It was the first unit to push forward ahead of the French in the initial move to out-flank the Mareth Line and was among the first to enter Gabes. It is reliably reported that the Italian troops particularly lost all stomach for fighting when they heard the Battalion's battle cry of *"Aera."*

While the "Sacred Battalion" is perhaps the most picturesque, it forms only a small part of the Greek forces in Africa and the Middle East. Two brigades, three air squadrons and a number of specially trained parachute troops are ready and waiting for the day when they can return as avengers to Greece.* A Greek navy composed of some 35 units has been constantly in action since the initial onslaught of the Italians against Greece on October 28, 1940. These units took part in the recent action in the Dodecanese and Aegean Island area.

Greek armed forces, composed principally of volunteers from Greek communities abroad and persons escaping from occupied Greece, are not the only ones who have been carrying on the fight. Inside Greece there are approximately 30,000 guerrillas who are active. Lacking proper arms, mechanized units, or air support, they have been forced to operate in small bands, harassing the enemy by every means at their disposal. Many a supply and troop train, destined to reinforce Marshal Rommel in Africa, was derailed by these guerrillas and sent to the bottom of some ravine in Greece. These small groups have recently been joined together under a centralized command in constant touch with Middle East headquarters, and they may be counted upon to render signal assistance to the Allied forces when the time of invasion comes.

*Recent dispatches state that paratroops of the Sacred Battalion have landed as reinforcements on Samos Islands.

CAMOUFLAGE

For Armored Forces

by
Lieutenant S. Daniel Cavallero, CE

TO each fighting man, camouflage means just one thing: a way to stay alive, to live, to shoot and to kill.

The soldier needs to forget such pedantic phrases as, "If you want to come back alive, practice camouflage," and "Camouflage is the greatest insurance a soldier can have to stay healthy." That type of non-aggressive attitude is not going to win. It is not going to kill Germans or Japs. The soldier's job is to kill the enemy—not hide from him—to kill him with every weapon at his disposal; and the man is a fool who disregards the deadliest weapon of all—*surprise!* This is the weapon that camouflage gives the soldier and *against which it protects him.*

What is Camouflage?

Camouflage must be thought of as any aggressive form of deception that will enable the soldier to approach within killing distance of the enemy. It is any means of disguise that will mislead the enemy regarding position, strength, and intention—that will confuse him so that he will waste his blows and fall into ambush.

Camouflage is not an insurance against death. It is an *assurance* for having the maximum striking power, whenever and wherever it is needed. In nature, many of the smaller creatures are camouflaged against aggression, but the tiger and the leopard are camouflaged for aggression. That is the camouflage for the soldier—an aggressive action designed to liquidate the enemy!

There is a tendency to think of camouflage as highly specialized work done only by experts who are called upon to make conspicuous objects disappear by some magic known only to them, rather than as the simple, common sense precautions which any soldier can take. Concealment of large installations in the rear areas, such as airdromes, factories, and munitions plants, does require specialized training; that side of camouflage can be left to the specialists. The concealment of troops and equipment in the field requires no camouflage expert—no artist skilled in color theory and manipulation—but rather a practical man, who sensibly recognizes a few basic principles and applies them. Nevertheless, the problem is a terrific one.

Training Must Begin Early

The ground patterns of man's peacetime work and activities are unlike his work and activities in war. In peace, he is concerned with cultivated fields, orchards, villages, and towns. Man's major activity is restricted to the existing road nets. Few changes occur from year to year in the general appearance of the terrain.

With the advent of war, however, the army moves in and everywhere scrawls its signature on the face of the earth in the form of encampments, convoys, artillery layouts, and a bewildering maze of tracks from tanks, troops, and motor transport. (Fig. 1) All these signs are peculiar only to the army, and are easily identified. To the enemy who has been trained to read their meaning, these signs tell a whole story. The location and strength of a carelessly concealed unit and its intentions are obvious to him. This information enables the enemy to lay his plans to gain victory for himself and visit destruction upon his opponent.

These marks or signs are not necessarily great scars on the terrain, nor always a maze of tracks. They may be the apparently unnoticeable ones made every time a tank is driven or a man walks across a field of grass, or digs a prone shelter in the ground. One of the soldier's chief aims, therefore, is to hide the marks he makes, or to find ways of making them less conspicuous, or to disguise them so that they will not disclose so much valuable information to the enemy.

The German and Japanese armies have no camouflage schools as such. The art of concealment is taught to the soldier as a necessary part of his basic training. He is taught to use it not for passive defense alone, but also as a weapon of offense—as the tiger does—to creep up unseen and gain the advantage of surprise; to conceal his fighting power long enough to provide an opening for a knockout blow.

Training in camouflage must begin as early as possible, and it must continue. It is too late to learn under fire. The soldier will not have the opportunity to profit by his own mistakes there. The result of a mistake in battle is final! Obviously, then, the practice of camouflage must become instinctive, as much a part of the soldier's life as sleeping, eating, and breathing—as powerful a weapon for him as it is for the jungle animal who *lives* and *fights* by it. So must the soldier. How is he going to make use of this powerful weapon? What are the camouflage principles to be followed?

Fundamental Principles of Camouflage

Camouflage is not difficult. Basically it is so simple as to be disappointing to one looking for an impressive bag of tricks. It's nothing more than good, plain, common sense! Camouflage measures can be simple but extremely effective.

Grimly enough, however, the only test of the success of a camouflaged position is the "ordeal by fire." Only when the enemy sniper finds no target in his sights; when the antitank gunner scans the landscape in vain; when the bomber passes over without releasing his devastating load, is camouflage successful.

In modern streamlined warfare, armored combat is characterized by great mobility, fire power, armor protection, and shock action. Positions, supplies, and equipment, formerly safe because of their location far behind the lines, now are subject to swift and complete destruction by roving armored vehicles or enemy bombardment.

Camouflage technique for the fast-moving, hard-hitting armored unit can be resolved into a practice of the most basic principles and strict adherence to these principles through discipline.

In brief, camouflage can be reduced to:

1. The recognition and intelligent use of existing natural concealment.
2. Camouflage discipline—avoiding or neutralizing signs of activity that may reveal information to the enemy.
3. The disruption of characteristic outlines and shadows, and the toning down of reflective surfaces, which enable the enemy to locate and identify a position.

The motto, "Hide—then HIT!" was coined for tank destroyer units. During the closing phase of the Tunisian campaign, tank destroyers did just that, and they were death to the Axis tanks. Cleverly concealed, they caught the Axis tanks in traps and fired on them from the flanks.

The concealment task for the armored forces will vary. For troops in touch with the enemy it will be a matter of choosing a concealed position from which the mission of the moment can be accomplished, and then exercising proper camouflage discipline and the principles of scouting and patrolling. In many cases, the dominant consideration may be speed of movement and wide dispersion.

At any rate, the problem normally will be one of individual tanks or small units. It is here that the camouflage training of the individual soldier will play an important part. If he has been impressed with the thought of camouflage as the deadly fighting weapon of *surprise*, then his every move will be made with that objective in mind—to reach the enemy with all his fighting power unimpaired, and to pounce on him unawares, with the full force of a knockout blow.

Natural Concealment

Since camouflage is only a means to an end—not an end in itself—the amount of work it involves should be kept to a minimum. There will be many other duties and problems that must be handled, so simple logic makes it plain that shortcuts should be looked for.

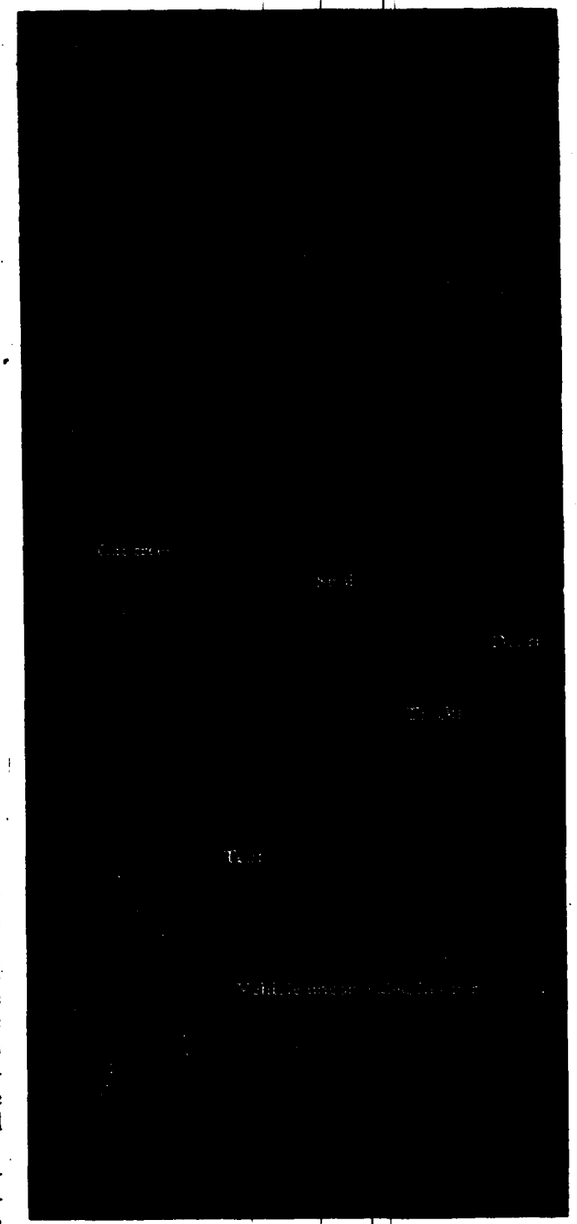


Fig. 1. Signs of military activity often give away valuable clues to the existence of an installation. Some typical examples of revealing traces are shown above. Tank tracks are different than those of other vehicles, hence, the presence of an armored unit in an area may be determined by these tell-tale traces alone.

One of the best ways to eliminate unnecessary camouflage work is to choose a good position. Fifty to one hundred per cent concealment can be obtained some-

times merely by choosing a location with plenty of natural concealment and shadow, or by cleverly blending with existing ground patterns.

Artificial materials, such as drapes and field expedients, should be used only when there is no natural concealment, or too little. When concealment is unavailable, siting a vehicle on a line of a terrain feature will make it much more difficult to pick up from the air. (Fig. 2) If that same vehicle is placed several feet away from that line, which may be a hedge, the side of a road, or only the line between two types of fields, it is an object separate from that line, and is distinguishable from it. On the other hand, parking it on the line or touching it, makes it a part of that line and therefore less noticeable.

Since the basis of concealment is the constant use of the background, the aim is to match that background in pattern, color, and texture. A distinctive contrast will be seen quickly.

Concealment is not only against ground, but also against air observation; hence, not only the background behind must be considered, but it must be remembered that the ground underneath is the background from the air observer's point of view. Ability to conceal involves recognition of the value of natural materials as concealment. A soldier can become so much a part of his surroundings that, although able to see and act against an enemy, his location will be unknown to him.

The regulation OD paint was too dark for the average North African terrain. For better blending, vehicles were never washed while in frontline areas. Dust and mud collected on them and, by using a little distribution of the dirt and additions of sand and mud, their color and texture were developed quite satisfactorily to match the color and approximate texture of the terrain background. Crankcase oil made a suitable binder to hold the dust and sand in place on the vehicle surfaces. The topsides of vehicles so treated should be somewhat darker than the sides. As more vegetation appears in the terrain, some of the mud and sand can be washed off in irregular patterns to give a mottled effect. It is rather amazing to see the effective vehicle camouflage obtained by these crude expedients.

Shadows

An object is recognized by its form or outline, and its shadow. Therefore, after moving into the most favorable position, the soldier's first job is to break up the outline and shadow of his tank. (Fig. 3 and 4.) This may be done quickly by placing natural material about

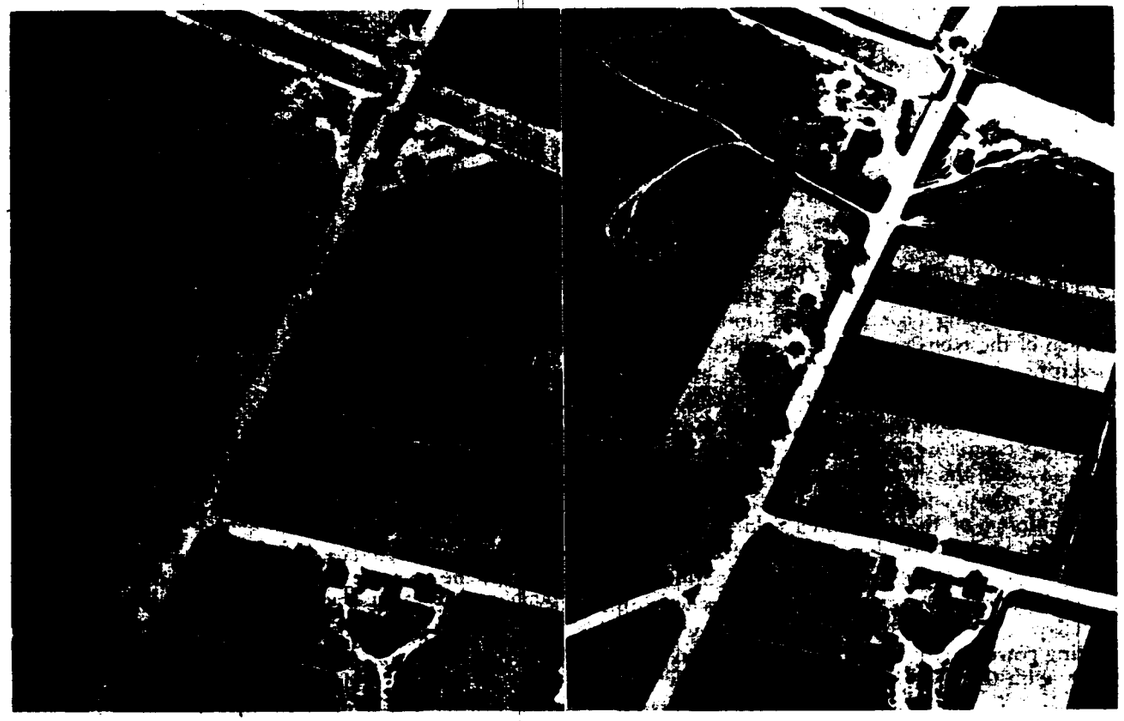


Fig. 2. In the picture on the left, shadows, regular spacing, and careless parking reveal the positions of 67 vehicles in the above illustration. The picture on the right tells the story of what careful parking and elimination of shadows mean. How many vehicles can you find now? This area is short on wooded terrain but long on line. Lines are the elements in terrain which must not be tampered with, but which offer a refuge in seemingly open terrain.

Fig. 3 and 4 Before and after. Outline, shadow, and reflections are broken up and concealed with natural materials.

and on the vehicle, with care not to mass it too heavily. It is the work of a moment, yet it may be the difference between the accomplishment of a mission or an end in smoking ruins!

Shadows can be either friends or enemies. With proper use, they will help to conceal; but also they can be a dead give-away.

The shadow of an object is very noticeable, particularly on aerial photographs; therefore, the object may be located by the contrast of its shadow on the ground, and identified for what it is by the shape of its shadow. In many cases, the object itself may be so well toned down in the proper color that it is practically invisible, but its cast shadow reveals its characteristic form. (Fig. 5.) That is all that the enemy airman needs.

On the other hand, the natural shadows of trees, houses, scrub growth, hedges, sand dunes, rock outcroppings, etc., found in the terrain can be used to excellent advantage for concealment. An object in shadow is more likely to be overlooked.

If a tank is parked on the shady side of a large tree (Fig. 6), the shadow of the tank is lost in the shadow of the tree. When the shadow moves, the tank must be moved with it!

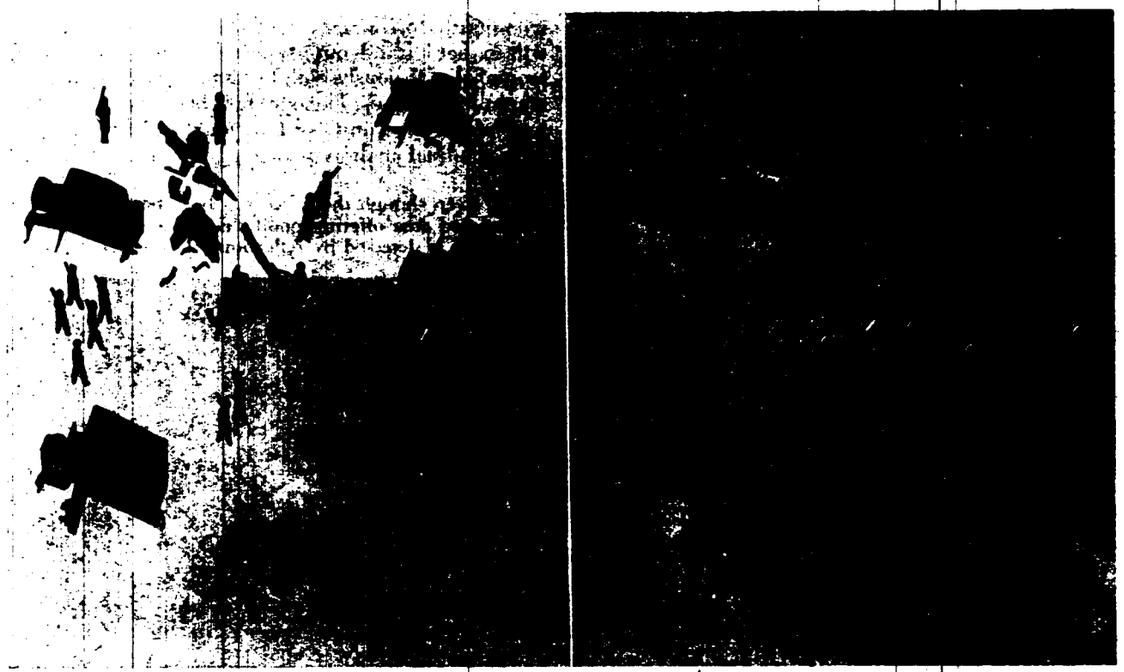


Fig. 5. Not only are the shadows themselves conspicuous, but from their shape one can identify the smallest object. The left half of this picture shows a group of military objects with their shadows. On the right, the objects themselves have been removed and only the shadows remain. These shadows give the enemy desired information.

If nothing but scrub growth lower than the tank is present, the tank should be parked on the sunny side so that its shadow falls upon the scrub growth and is distorted by it. (Fig. 7.) This at least makes the vehicle less conspicuous. In desert terrain the shady sides of sand dunes, wadis, and rock outcroppings offer a measure of concealment sometimes unrecognized.

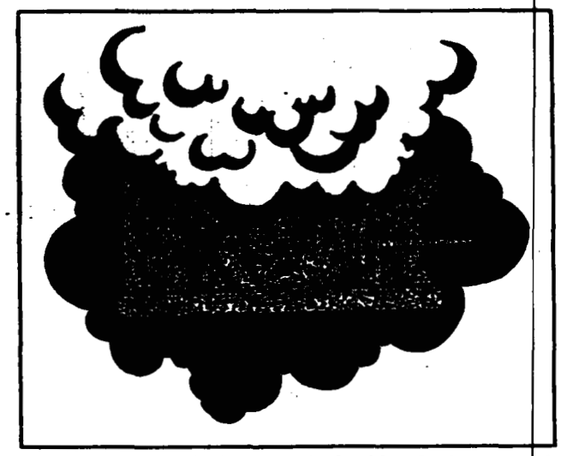


Fig. 6. Vehicle parked on the shady side of a large tree is lost in its shadow. Move the tank with the shadow!

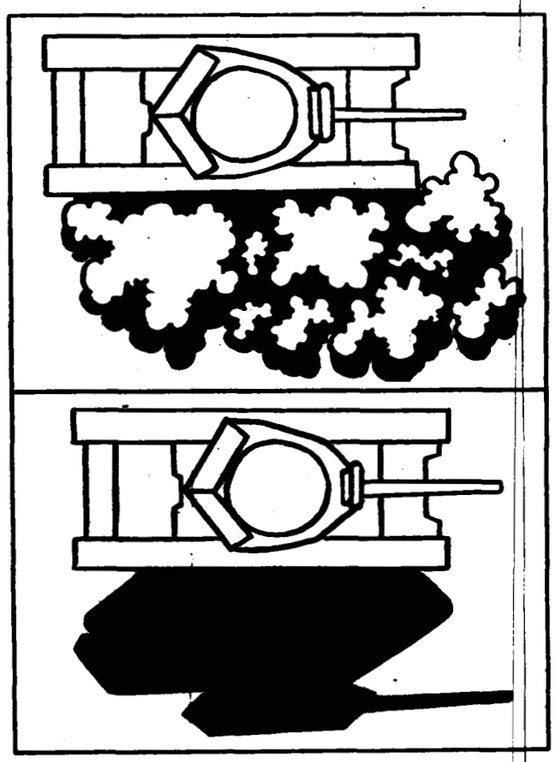


Fig. 7. Compare the parking of these two tanks. Scrub growth distorts shadows and aids concealment only when the vehicle is parked on the sunny side.

Shine

The enemy is looking for little mistakes. He knows what he is looking for, because he makes errors too. The windshield of a truck, the headlights, and the various surfaces of the vehicle—because of their smoothness and regardless of their color—can cause a shine that can be seen for a considerable distance from the air. An old piece of burlap, an army blanket, a shelter half, a jacket, or any natural material should cover loosely the reflecting points. This should be done even when a drape is being used. It is a simple measure but one which, if neglected, can nullify all other concealment measures. One quick flash and the enemy observer has spotted his target. (Fig. 8.)

Camouflage Discipline

The term "camouflage discipline," one of the most important of the fundamentals, might be expressed "camouflage—by behavior!" It means simply this: A unit must take care not to change the appearance of the surrounding terrain in such a way that signs of activity are relayed to the hostile observer. Is it good sense to maneuver into an excellent fighting position, in the hope of catching the enemy off guard, and leave a definite track leading to the new location—or conscientiously to conceal a tank with foliage, then let it wilt so that it stands out in contrast to the fresh material around it? Obviously not! The smart boxer never telegraphs his punches. The first shot should be the enemy's first inkling of a unit's or individual's presence.

In the final analysis, war is a battle of wits, and the loser gets few second chances. A new path across a field; an old road which, over the course of a few days, suddenly becomes wider—these are signs that tell the enemy observer a whole story. He is trained to read the meaning of such signs, and within a few hours he may be sending his respects in the form of high explosive bombs or shells!

Fig. 8. Even though this truck has been backed into foliage-covered area offering good shadow and concealment, the truck is detected by reflection from its windshield.

If tracks are on hard ground, sometimes they can be brushed out by dragging branches back and forth over them, or leaves and grass can be scattered over them. (Fig. 9.) Tracks on soft ground, however, are difficult to eliminate. The necessity for a controlled track plan is obvious. Several tanks in single file leave only one set of tracks, whereas the same number of tanks, unless directed properly, can leave individual sets of tracks. By the time a whole patrol has moved in, the appearance of the ground has been so changed that nothing can restore it. (Fig. 10.) Each tank should follow the one ahead—using its footsteps, so to speak—and cut off sharply into concealment. Not all tracks can be concealed, but they certainly can be minimized.

By following the natural lines of terrain features—along hedges, fence lines, the edges of woods and fields—tracks can be blended into those natural lines and be made quite inconspicuous. Tracks which cannot be so concealed should continue past the position to an existing road or other logical terminus. (Fig. 11.) Planning of traffic does more toward track elimination than all subsequent efforts. Necessary tracks are *planned*; all others are avoided.

Drapes

Since certain combat elements such as tanks are particularly important to the success of attack missions, they are always sought by enemy observation. It is most important to reduce their visibility and conceal their type identity to gain a tactical advantage. This can be done effectively by intelligent selection of ground patterns, utilization of proper natural materials, net cover, and, to a certain extent, disruptive patterns.

In the absence of good overhead concealment, and when time will not permit more elaborate construction, the drape is an excellent method of concealing identity

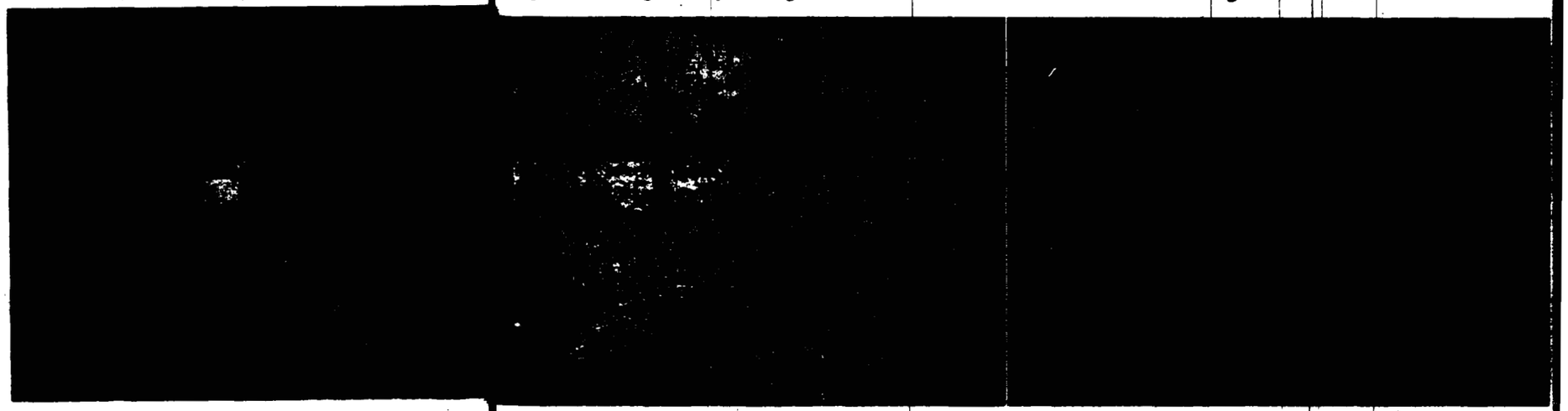


Fig. 9. Concealing tracks by covering with leaves and brush.

Fig. 11.

Fig. 10. Result of uncontrolled track plan. Ninety per cent of these tracks could have been avoided. Concealment measures following this are futile.

Fig. 12. Drape over tank in rocky, desert terrain.

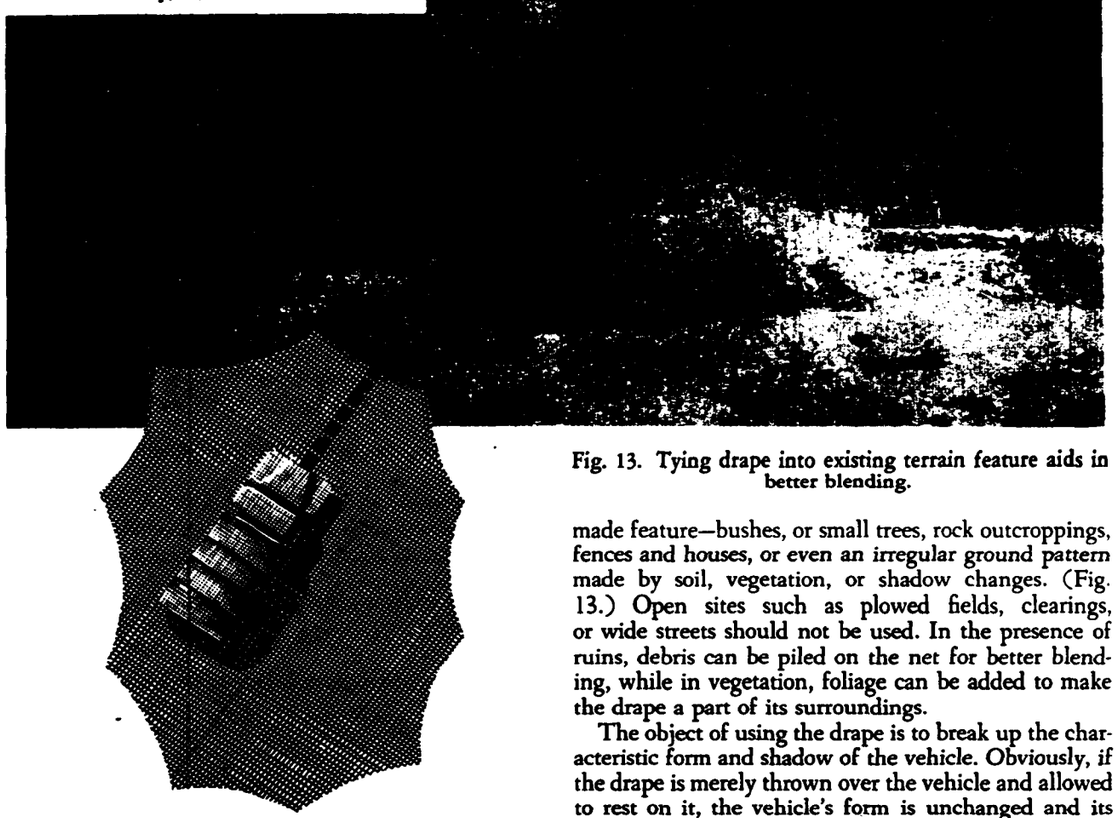


Fig. 13. Tying drape into existing terrain feature aids in better blending.

quickly (Fig. 12), if the tracks are carefully regulated to prevent their revealing the nature of the concealed tank. The standard drape is either a small mesh net, ungarnished, or a large mesh net, garnished. It must be remembered that the latter type is totally ineffective unless heavily garnished to approximately 70% coverage of the voids. Too often, the net without garnishing is considered as the proverbial "magic veil." The garnishing does the concealing. *The net itself is merely a support for the garnishing.*

The draping, however, is likely to be worthless unless a proper site is chosen. A position should be picked where the net can be related to some natural or man-made feature—bushes, or small trees, rock outcroppings, fences and houses, or even an irregular ground pattern made by soil, vegetation, or shadow changes. (Fig. 13.) Open sites such as plowed fields, clearings, or wide streets should not be used. In the presence of ruins, debris can be piled on the net for better blending, while in vegetation, foliage can be added to make the drape a part of its surroundings.

The object of using the drape is to break up the characteristic form and shadow of the vehicle. Obviously, if the drape is merely thrown over the vehicle and allowed to rest on it, the vehicle's form is unchanged and its shadow is the same as before. (Fig. 14.)

The net is held away from the surface of the object by supports, which may be saplings or poles or perhaps branches and bushes. (Fig. 15.) In the desert terrain of North Africa, tanks carried poles or boards from Arab tents to support their drapes. Thus an irregular form is presented. To minimize the shadows, the drape is drawn out and staked to the ground or held down by weights, or the edges may be thrown over low bushes.

In erection of a drape, the folded net is placed on top of the vehicle and opened out. Supports are placed, and the edges of the net are pulled outward and staked down in an *irregular pattern*.

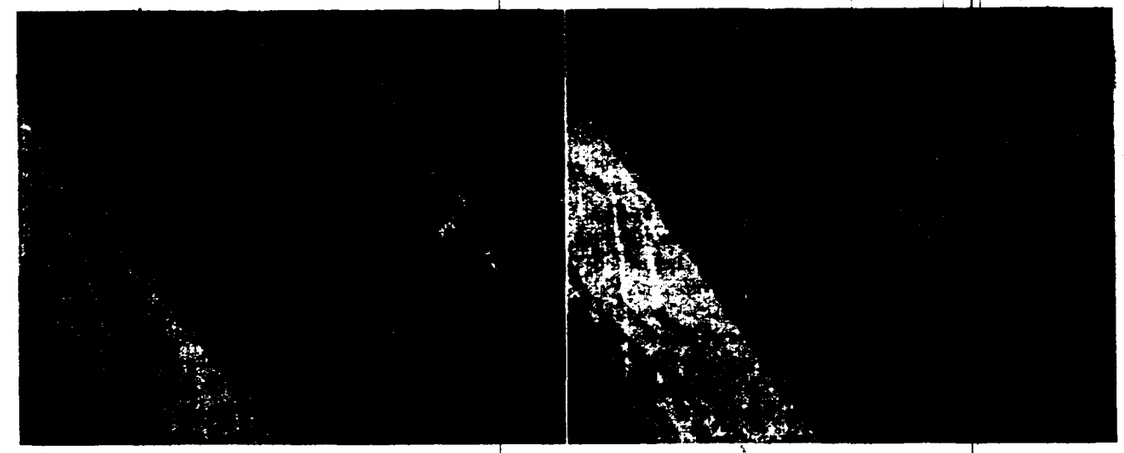


Fig. 14. Drape laid loosely over the vehicle at the left accomplishes nothing. The form and shadow are unchanged. At the right, the drape has been propped up with branches to distort vehicle outline and shadow.

Bivouac Camouflage—The 1st Armored Division in Africa

A combat unit actually spends only about ten per cent of its time in actual combat. The remainder of the time is spent in assembly areas, or in moving up to or away from the front.

Bivouac camouflage is an important normal activity in all combat theaters. The careless unit can either lose most of its personnel and precious equipment or keep them in fighting trim at the crucial point at the critical time.

Prior to the movements of the 1st Armored Division during the North African campaign, a preliminary advance party was always sent ahead to select the new bivouac or concentration area, and perhaps several alternate areas. This was done as soon as the division commander decided to move, usually several days prior to the actual movement. This party consisted of officer representatives from G-3, and the engineer camouflage officer. Upon completion of this phase, they returned to the division.

A day prior to the division move, the unit advance party, consisting of officer representatives from division headquarters and each unit of the division, proceeded to the selected area to reconnoiter and lay out the area for occupation. One-quarter-ton trucks were used in order to move rapidly and without attracting attention. Accompanying the group were an engineer officer and selected personnel (camouflage-trained) from the engineer component of the division, who were charged with the duty of selecting the most suitable areas for concealment and establish-

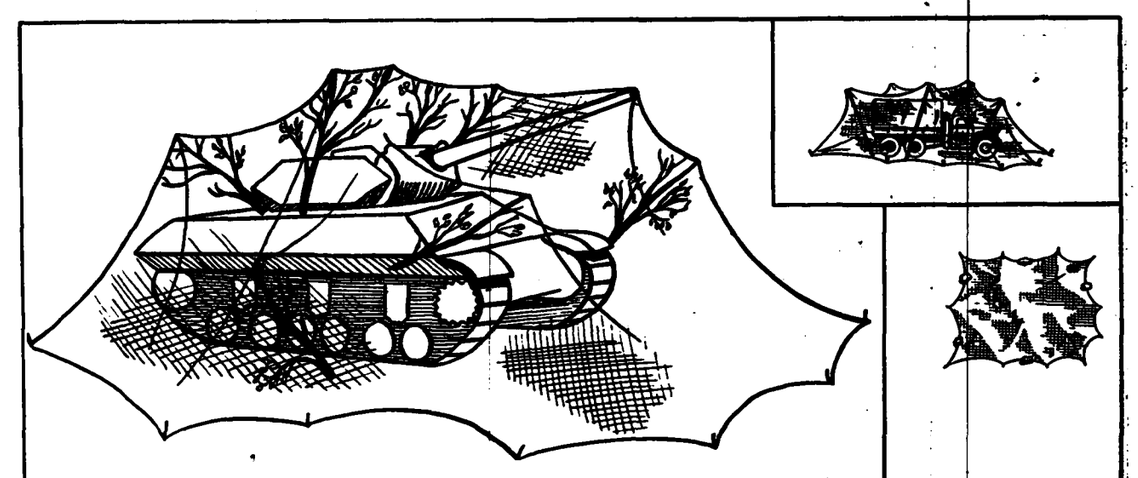


Fig. 15. Net held away from tank by brush and saplings.

ing a track plan and unit locations in the locality approved for the bivouac by the division commander.

This was the second phase, and the party remained in the area overnight.

When the division moved, it was met several miles outside the new area by the advance party personnel. Each of the party then led its respective unit into the new area in accordance with the prearranged unit location and track plan. By this method, reshuffling of units and vehicles and tracking of areas that would be impossible to obliterate, were avoided. For better coordination and greater efficiency, the same officers were always sent out in the advance parties.

If the division had to move with no more than a few hours notice, the preliminary advance party and the unit advance party would move out together and perform their tasks in the time available. It was in cases of this kind that the use of the same personnel facilitated operations the most.

In brief, the successful occupation of a bivouac area consists of three phases.

1. Preliminary reconnaissance by the advance party, and layout of the unit locations and main track plan.
2. Occupation of the area, quickly and inconspicuously, under the control of guides.
3. Rapid concealment of all personnel and equipment.

A Few Basic Rules

In a bivouac or concentration area, certain basic camouflage principles are rigidly enforced. Vehicles are always widely dispersed to take utmost advantage of natural concealment and in north latitudes they are placed on the north side of trees or other objects to obtain the maximum shadow period during the daylight hours. When natural concealment is not complete, vehicles are dug in as much as possible, the extent depending upon the type of vehicle, cover, and time available. If nets are necessary, they are placed and draped immediately. Each driver and assistant driver, or tank crew, is directly responsible for carrying out these basic camouflage practices. Since movements practically always are made at night, all camouflage must be accomplished before daylight, no matter how tired the personnel. Daylight means enemy planes and observation, and it is then too late to camouflage.

When natural concealment is not complete, prone shelters are sited on the north side of available cover. All spoil is either carried away, placed under trees and bushes, covered with leaves and grass, or resodded with turf saved before digging was begun. No banks of spoil should be permitted around the edges of dug-in or shelter-trench installations, since they increase the shadow effect. In sandy, sparse-cover areas, sand-stained shelter halves can be placed flat over prone-shelter trenches to decrease shadows and provide protection for personnel. The edges of sand dunes or wadi (gully) banks make excellent sites for vehicles to be dug-in partially, and the sandy brown nets effectively draped. Practically no shadows result, and the installation will not be discernible even from close view. This is particularly recommended for larger vehicles which are difficult to camouflage in areas of limited overhead cover.

Personnel must not congregate; mess groups must be scattered; and all reflecting surfaces, personal clothing, and equipment must be carefully concealed from view. Laundry must not be left in the open. Tracks can be brushed out sometimes with bundles of branches, but everyone must be warned against making unnecessary tracks. They are difficult to conceal and are always sought for by the enemy. Personnel and vehicles must follow at all times the set track pattern established for the particular bivouac area. *Violators must be disciplined.*

Air Observation

The possibility of air attacks is always present at the front. Camouflage, therefore, must cover the aerial view as well as the lateral or ground view. The effectiveness and the discipline maintained in the camouflage of all units must be checked constantly. If there are any high points for observation in the locality of the installation place, an air OP should be placed there and his air observer's duties combined with camouflage check-up. He should report each evening on the day's violations of the unit's camouflage plan; also, any violations of the track plan by either personnel or vehicles. These OP's should be maintained by all units in an area of bivouac or concentration.

The unit in bivouac is especially vulnerable to enemy aerial observation and attack. Except for its security elements, its men are resting and much less on the alert than in the field of battle. Moreover, the elements of the unit are more concentrated than usual. It is at a time like this that camouflage must be at its best, and camouflage discipline must be enforced rigidly. The carelessness of *one* soldier may result in the annihilation of the entire unit or the failure of the operation.

Conclusion

In mobile situations—and today most of them are mobile—there is seldom time for elaborate camouflage construction. Bivouacs are entered quickly and left quickly. Obviously, little else can be done but follow the simple yet effective rules of dispersion, siting for better concealment, use of natural material and shadows —and the establishment of a *track plan.*

Troops who have been under fire have a much keener appreciation of camouflage. They are aware that it is a very personal proposition. Stripped of all its supposed mystery, it is at the same time a means of approaching within killing distance of the enemy, and a matter of self-preservation; a method of saving precious equipment and supplies from destruction, and of bluffing the enemy as to the unit's strength and intentions.

To the weapons that a soldier already has, he must add another—*surprise.*

Are You a Tank Destroyer?*

IT's great for a man's ego. It makes him feel infallible. Sit him behind the controls of a 30-ton tank and he's sure to feel powerful. "Yah! nothing can stop me." Jam it in gear. Push that accelerator down to the floor. Drop out the clutch. Feel the lurch of the tank as the tracks bite. Give it hell. Pick out the roughest, toughest obstacles. Ram right into or over them. "Nothing can hurt this vehicle—it's a tank."

Yes, it's a tank. And because it's a tank, it's subject to more mistreatment than any vehicle in the Army. It's mistreated because lots of men don't realize that a tank is made up of the same type gears, pistons, and bushings as those in any other vehicle—and need the same care.

From the toughest proving ground in the world came reports that our American tanks are as good as anything our enemy has—or better. In Libya and on the Russian front they proved that they could stand up under the worst conditions nature could provide. But even the best materials and engineering can't stand up under the murderous treatment of a careless tank driver.

You may have your own ideas on how to destroy a tank but here are a few samples of how some greenguards destroy tanks and then blame it on the materials or design.

Starting Radial Engines

Just crawl into the first radial-powered tank you see and start it up—that's all. If the tank's been sitting still for 12 or more hours it's possible for you to break the engine up as effectively as a German 88 could.

Radial engines have a number of cylinders pointing down (Fig. 1); the combustion chamber in each of these cylinders is *under* the piston (Fig. 2). While the engine isn't running, oil and gas may drain from the crankcase into the lower combustion chambers. If the engine is started *without* removing the liquids from the combustion chambers, the pistons are forced to compress the liquids just like air. But, you know that liquids can't be *compressed.* Wham, when the piston hits the oil and gas, something has to give—and it's usually the piston or the cylinder head.

To prevent this tank-busting, a seasoned tank driver will crank the engine by turning the hand crank over 50 times before starting it (if the tank has not been run overnight). Cranking the engine forces the pistons to go through the exhaust strokes which pump the liquids out of the combustion chambers. If you have trouble cranking, you may have to remove the spark plugs so the liquid will have a means of escaping.

If you're ever in doubt as to whether the tank has been cranked over or not, don't take a chance—crank it.

Idling Speeds

Blowing cylinder heads apart and breaking pistons is an effective but crude way of destroying tanks. Some GI's with a more delicate touch have developed more subtle methods—idling speeds for example.

These boys stop their tanks and allow the engine to idle at 400 to 500 rpm's while they're eating their field rations or calling up Mabel. Somebody said that the smooth ticking of the engine aids their digestion. But this fine, smooth idling of the engine is the calm before the storm. Prolonged low idling speeds on radial engines cause extremely high temperatures in the cylinder walls and low temperatures in the spark plugs. Also, there's very little oil circulation. First thing you'll notice is misfiring and smoking, caused by fouled plugs. Later as the oil on the moving parts burns off—pistons and cylinders score, bearings wear and in general the engine gets shot.

Radial engines should *never be idled at less than 800 rpm.* When you have to idle an engine, set the hand throttle to run the engine at 800 rpm. The low idle

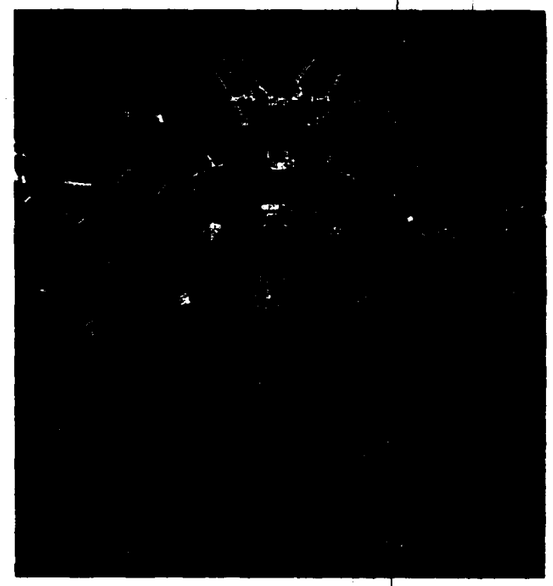


Fig. 1.—It's easy to see by this light-tank radial-engine that four of these cylinders are pointing down.

*Courtesy *Army Motors.*

If you've got to bust tanks, break up those Nazi Mark VI's — not your own M4's.

Fig. 2.—Cut-away view of an upside-down cylinder.

speed (400 rpm) controlled by the carburetor is only to be used for shifting gears.

Diesel engines are also damaged by low idling speeds. If you have to idle them, set the hand throttles to idle both engines over 600 rpm.

And while we're on the subject of engine speeds, another way to finish off a good engine is to "lug" it. Lugging a tank means to continue driving it in a high gear after the speed of the engine has slowed down. This generally happens when you're driving in a high gear over smooth terrain and suddenly go into heavy mud or up an abrupt hill. Some greenguards do the same thing by slowing the engine speed in order to slow the tank speed. When the engine rpm's drop, the engine can't develop enough torque (twisting force) to keep the tank moving. The engine loses speed rapidly. You can almost hear each cylinder firing individually. During this time the engine is knocking itself apart, the pistons vibrate in the cylinders, power is applied in jerks, the tank shivers, shakes and gasps. Plenty of parts are being ruined while all this is going on.

A good driver *never* allows the terrain or tank speed to slow up the engine rpm's. He shifts to a lower gear as soon as the tank slows up or if he wants to reduce the tank's speed.

Radial engines, especially, are mutilated by low engine speeds. These engines were designed to run for long periods between 1800 and 2200 rpm. For short periods, they can be run at 1500 rpm. When operated at these speeds they'll give very little trouble. But lug a radial-powered tank along in 3rd, 4th or 5th gear at 1200 or 1300 rpm, and you'll have to change engines at 50 hours.

A good thing to remember is this: whenever you're in a gear higher than 2nd, no matter how slow the tank has to travel, your engine speed *must be kept above 1500 rpm*. If this causes the tank to travel too fast, shift to a lower gear. *Don't ease up on the throttle!*

Overspeeding

Gunning a tank too much is bad business too. Every tank has a top governed engine speed, which is the greatest number of rpm's it can stand in prolonged operation. For short runs it can take a little more, but not much. See your manual for details.

We won't go into the methods of getting the rpm's to exceed the legal limit, but we've seen it happen, and you probably have too. Some guy roars his engine like a bat out of Hell—then it starts to cough and sputter, won't run smoothly. It's suffering from "valve surge," which means the valves can't keep in step with the rapid cam action and therefore go into a fluttering motion of their own. At first there's no permanent harm, but after a while the valve lock washers give up all hope of controlling the crazy valve action; they break and drop the valves into the cylinders. After a piston has beat on a valve a couple of times, you'll have a cylinder full of first-class scrap.

If this doesn't happen first, chances are the engine will overheat, and you know what *that* means—the lube

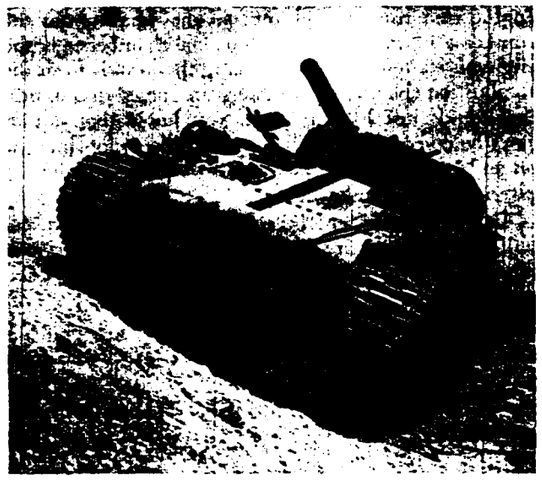


Fig. 3.—This guy defied the law of gravity—but he broke his rear idler housing doing it.

film in the engine breaks down, and you get scored pistons or bearing failure.

Overspeeding is especially apt to happen when going downhill. Don't forget you have brakes to take a load off your engine. Maybe it would be a good idea to dig out the June *Army Motors* from the bottom of that pile of *Breezy Stories* and read the article on "Give Your Tank a Brake."

Climbing Hills

Even our tanks have limitations and a good tank driver learns them. While watching a tankman putting his medium tank through its paces, we saw a rear idler housing sheared off neatly as if it were done with a cutting torch.

All this driver did was to try to climb the tank over an abrupt hill. But not knowing the right way to handle such a hill, he didn't get over it—but he did put his tank out of operation.

Here's how:

He approached the hill at a sharp angle with the tank transmission in third gear. When the tank hit the soft stuff at the base of the hill it lost speed. By the time the nose of the tank found its way up on the hill (Fig. 3), there was too much load on the engine. It stalled.

Next, the driver started the engine, shifted to creeper gear (1st gear), braked the left track to straighten up and gave her the gun.

Here's what happened:

In trying to run the tank up the hill at an angle the driver was forcing the right track to do all the work. The engine itself develops enough torque in 1st gear to pull the tank up such a hill, but in this case the torque is not applied equally to both tracks. It's being applied mostly to the right track.

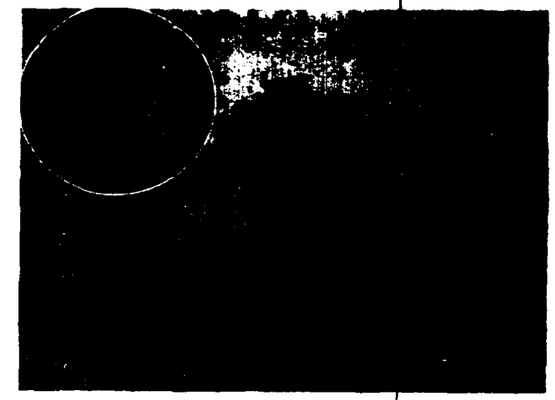


Fig. 4.—This tank could have licked a dozen Nazi tanks —but one careless driver put it out of action.

Naturally, this pull centered on the right idler housing, and because the housing was never designed to take all the torque necessary to pull 30 tons up a steep grade —it broke (Fig. 4).

Had the driver known his tank thoroughly, he would have charged up the hill at an angle which would allow both his tracks to take part of the load. But, if by chance he found himself in the position shown in Figure 3, a good tank driver would have backed the tank down and changed direction before trying to go over the hill.

A tank is big, all right—and it weighs plenty—and you can knock over a house with one. Just remember, though, that it needs loving care and lots of it.

Baby yours.

Cavalry Journal Prisoner of War Fund

An unsolicited donation of $197.19, to be used for prisoners of war, has been received from the 3d Cavalry (Mecz.), commanded by Colonel F. W. Drury. This sum, which has now become the nucleus for *The Cavalry Journal Prisoner of War Fund,* has been turned over to the proper authorities for immediate use.

American Red Cross packages recently carried by the *Gripsholm* to prisoners of war held by Japan contained the following items:

4 handkerchiefs, 3 hand towels, 1 wash cloth, 1 comb, 12 safety pins, 4 cakes of soap, 2 toothbrushes, 1 4-oz. container of tooth powder, 1 chess, checker, and Chinese checker set, 2 pencils, ½ lb. cheese, ½ lb. malted milk, 1 lb. prunes, 1 lb. raisins, 100 army formula vitamin tablets, 1 polo shirt, 2 prs. socks, 1 steel mirror, 4 packages of double-edged razor blades, 1 shaving brush, 1 stick of shaving cream.

In many cases, the Red Cross is allowed to act as "next of kin" to prisoners and internees. The *Prisoners of War Bulletin* for November reports:

". . . the Red Cross was able to complete the work (for the *Gripsholm*) on time, and even to include in the 2,892 adopted prisoners and internees, several hundred previously unreported prisoners of war in the Philippines whose names were obtained by the War Department only a few days before the loading began."

For prompt and efficient handling, send your contribution for prisoners of war direct to

The Cavalry Journal

1719 K Street, N.W. WASHINGTON 6, D. C.

Tank Radio Communication

*by Lieutenant W. E. Felty**

"TIGER 2, this is Tiger 3. Enemy AT gun located 300 yards west of Hill 34." This was the message received by the C.O. immediately after he had given the "Move Out" in his attack order to the platoon leaders.

The attack could not be halted. The enemy AT gun was waiting for the first tank to come into effective range. The C.O. quickly sent a message to the leading platoon: "Destroy AT gun, 800 yards to your left-front."

The platoon leader made a quick decision and directed his platoon sergeant: "Cover my advance to Hill 34."

Fifteen minutes elapsed between the time that the AT gun was reported and the time that it was destroyed. Had it not been for radio, the AT gun might have destroyed a tank.

Control of Tanks

Modern tanks are fast and very effective in battle—if properly controlled. This control is greatly improved by efficient use of radio communication. On the other hand, improper use of the radio by undisciplined or poorly trained operators can often result in serious errors and unnecessary delays in the communication system. These unnecessary limitations are usually traceable to their source, and in the majority of cases the faults go back to the training of operators—many times, as far back as the first class in basic radio procedure.

Much of the malfunctioning of radio communication is caused by (1) the tank commander who, because he is poorly trained in radio telephone procedure, invariably throws the net into confusion; (2) the one who does not know the phonetic alphabet and consequently pronounces a difficult word so that it cannot be understood by those concerned; (3) the man who speaks too fast and must repeat a number of times; (4) the one who tries to give commands to his driver without realizing that he is on "Radio" instead of "Interphone," and "cuts in" on a station sending an important message; (5) and the two who are just "chewing the fat."

Thorough training is often lacking where it is most needed—within the company and platoon. A regimental, battalion, or even company commander may not be concerned directly with the message, "Jones, (Section Leader) cover my advance to that ridge," nor will it necessarily change the plan of attack just because Jones, whose radio was on the wrong channel, failed to cover the platoon leader's advance. But it may have *unnecessarily* caused the loss of two tanks.

In the final analysis, the success of the higher unit must depend on the effective employment of its subordinate units. It should be borne in mind, therefore, that each subordinate unit must have carefully supervised training in radio operation and radio telephone procedure.

Radio personnel in battalion, regimental, and higher headquarters are usually highly trained specialists and are picked for such jobs because they are experts at this work. In the company and platoon it is different. The tank commander, in addition to his other duties, is the radio operator. As such, he is responsible for seeing that the message sent from his radio is in the prescribed form, that words are clearly spoken, the message complete, and that the station to which it is sent receives it. In order to be capable of carrying this responsibility, the tank commander must have thorough training and practice in radio communication.

Training

In the Army, an individual's ability to accomplish his work efficiently is usually based upon his initial or basic training. There is no exception to this regarding radio operators. If the initial training is thorough, the operators will be fast and accurate in their work. On the other hand, if a high standard of efficiency in the initial training is not maintained and classes in procedure are few and far between, the unit commander will not have the efficient radio communication that is so vital to that unit in the stress of battle.

During their first basic class, students should be made to realize the important rôle of radio telephone communication and the vital necessity of learning and following proper procedure. In subsequent classes, they should spend many hours training, drilling, and practicing under the tutelage of competent instructors and assistants.

Training in radio communication should include (1) basic classroom radio telephone procedure, (2) complete instruction in the use of the radio set to be used, (3) advanced training in radio telephone procedure, and (4) complete training in the performance of 1st Echelon of Maintenance. None of these should have training priority over the other as they are all of equal importance.

Basic Classroom Procedure

Basic classroom procedure is usually the hardest to instill.

Although radio is generally regarded as a subject requiring the skill of experts, student radio operators should be taught in the beginning that their responsibilities in handling radio procedure do not involve long formulae and intricate theories. Operators need know only the purpose of a few controls on the radio set and a few procedure phrases. *But this knowledge must be exact.* It is much worse to use a procedure phrase incorrectly than not to use it at all.

Each classroom should have a blackboard available so that adequate illustrations can be given of each item in radio telephone procedure. After students have learned the basic procedure, they should be drilled by having them write it on the board. An even better training practice is to have four or five students stand in front of the class and call words as if they were using a radio net. Other students then have the opportunity of correcting mistakes. Constant drilling in this practice-method will train the student to think of what he is going to say before he starts talking. It will save a lot of time as well as damage to radio sets, when the class reaches a more advanced stage. New men on the radio often have a tendency to forget what to say after the transmitter is turned on. This blocks the air and may also cause damage to the radio equipment.

Instructions in Use of Radio Set

Before a tank driver is proficient he must know the tank—its capabilities, limitations, all necessary driving regulations, etc. Likewise, the radio operator must have a thorough knowledge of the radio and its controls in order to get the most efficient use of his set.

From the viewpoint of the operator, the radio sets used in tanks today are simple. They require no knowledge of their complicated interior.

Advanced Training

Just as the tank driver must have much practice in driving a tank, the radio operator must have continued practice in radio operation and procedure.

Throughout all instruction and practice, the student operator should be taught to use uptodate procedure consistent with current regulations. Many difficulties arise from the use, by some operator, of his own procedure or some obsolete procedure. Neither of these is ever understood by the new man who is familiar only with prescribed regulations. This causes loss of much valuable time and achieves nothing but confusion on the radio net. Men must be taught to realize this early in their training period.

During the advanced training phase, radio nets should be monitored occasionally in order to ascertain that the proper procedure is being used, and that operators are not getting into bad habits of making ground rules and short cuts in the use of procedure.

If time permits, it is also advisable to have practice nets in radio procedure. These should emphasize the use of all items of procedure that have been taught, in order to keep the men from forgetting certain parts, which they may have had little or no occasion to use during the normal course of training in other duties.

1st Echelon of Maintenance

Nothing will continue to function properly if it is not maintained. The radio set employed in the tank is a delicate piece of equipment, necessary to the fighting efficiency of the whole tank crew. Tank commanders, therefore, should perform a 1st Echelon check on the radio each time that they check the tank and other equipment. If the set needs repairs, the repairman should be so informed. A routine check in itself, however, is not sufficient. The tank commander must also have enough knowledge of the radio set and how it works to make an accurate report on the failure of any radio equipment.

Summary

In order to have fast and effective use of tanks, it is first necessary to have fast and efficient radio communication. In order to have this there are but a few necessary rules to follow:

1. A definite plan for the training of tank commanders as radio operators will increase radio efficiency.
2. None but authorized procedure should ever be used on a radio net.
3. Frequent practice nets are valuable aids in training.
4. Well planned 1st Echelon of Maintenance is necessary.

Report on German Radio Equipment

by U. S. Signal Corps Officer, back from Africa

German radio equipment is "five years behind our own." This inferiority in design, components and construction appears to be due to the fact that the Germans standardized their radio apparatus during 1934-1938 and have not attempted further improvements.

"German sets are well built and have a great deal of strength, but those tested in Africa were certainly not made for service there. They lacked waterproofing and were not dustproofed. In many cases, stop-gap measures were used. For instance, we have noticed that tape and various sealing compounds were used in an attempt to make sets resistant to corrosion and to exclude dust. An obvious fault was the lack of impregnation of coils and transformers to keep out moisture."

Although fairly good operators, German signal prisoners do not appear to be very well trained on technical lines.

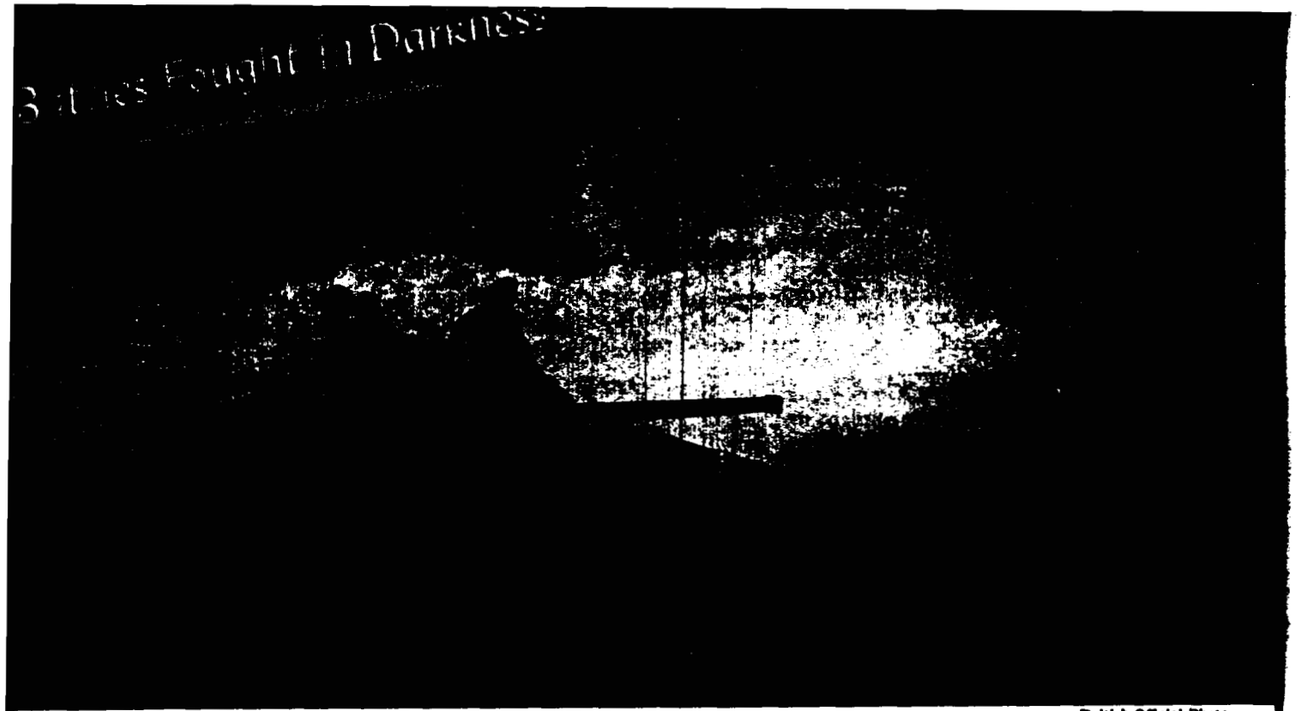
"In many cases, German radio sets have been found intentionally sealed to prevent tampering so that German operators could not attempt their own repairs. 'Yankee ingenuity,' on the other hand, makes it possible for American boys to repair or improvise their own equipment if they have the tools and parts."

Captured damaged enemy equipment is "cannibalized" for coils, condensers, resistors, tubes, batteries and meters. These are used to repair U. S. equipment, and also enemy apparatus to be used by the Allies.

United States forces have not yet had to resort to use of captured equipment.—*Bureau of Public Relations, War Department.*

*748th Tank Battalion (M) (SP).

Battles Fought in Darkness



British Official Photo

At sunset, British tanks in Sicily move up to new positions north of Rammacca.

DECISIVE battles in this world war will probably be fought in the dark. That is the text for modern armies, according to the military gospel of General Montgomery who, while training troops in Britain, always insisted that great results could be achieved in night fighting by troops rightly and adequately trained. And at El Alamein he proved it.

In World War I the general scheme was to assemble the troops under cover of darkness, and to launch the attack at dawn. During the present war, German commanders adopted such tactics in Poland, France, Russia and Africa; and Generals Wavell and Auchinleck in the Western Desert did the same.

New weapons and new methods, such as the laying of vast minefields containing hundreds and thousands of mines have, however, multiplied the cost of a close approach in daylight to strong positions held by large numbers of fully armed, resolute troops.

Marshal Rommel at El Alamein believed that the British would not be able to penetrate the defenses he had constructed during three to four months of ceaseless work.

General Montgomery solved the problem by an immense concentration of artillery on a front four to five miles wide, which flung shells on the enemy at the rate of 1,800 tons an hour; and a thorough system of mine detection and clearance, followed by infantry night attacks.

Despite the advantage of holding prepared defenses, covered in places by minefields five to six miles deep, the Axis troops were beaten both in defense and attack. All the major British attacks were launched at night. All the enemy's chief counterattacks were attempted during the day.

Night fighting is peculiarly difficult. It calls for careful planning and careful training, for individual intelligence and strict discipline.

Commanders in the past, warned by examples in military history, as a rule have restricted their night attacks to assaults on besieged fortresses, where the ground has been familiar and the position of the breaches unmistakable. But even under the most favorable conditions, the attempt to coördinate the movements of several columns of troops has often broken down.

General Montgomery's main assault at El Alamein on October 23, 1942, was made in the north on a front six to seven miles wide. He employed four divisions. At first their common direction was east to west. Later the troops on the northern and southern flanks struck northwest and southwest to broaden the wedge they had driven into the Axis defenses.

With more than 50,000 troops moving at night across monotonous desert on different lines of march towards different objectives, the risks of confusion were great. Any unit might easily go astray, and for the success of the operation, every movement had to be coördinated with all the rest. Each unit had to know its own position and the positions of its neighbor units. This knowledge also embraced the air force, the artillery and the engineers.

Thanks to the tireless sorties of Britain's R.A.F. and the excellence of their innumerable photographs, together with daring and persistent ground raids by all British formations, the attacking troops knew the exact position of the enemy's guns and defended localities.

Throughout the eleven days' struggle at El Alamein, General Montgomery never interrupted his plan of night attack. Despite all the risks of confusion, he was never held up by the dark; and, attacking in the dark an enemy whose numbers were little less than his own, he inflicted four times the casualties that he suffered.

Two means to Montgomery's success were (1) the thorough training of all ranks in night movements, and (2) the selection and instruction of pace counters in every unit.

Finding the way in the dark is partly an innate gift and partly an acquired skill. Some men are hopelessly bewildered in the dark. They are even confused by a strange countryside in daylight, and such men cannot be taught.

While only a few men seem to possess that remarkable sense of locality which enables them to find their way in the dark as if by instinct, the large majority have an aptitude, more or less pronounced, that is capable of surprising development.

Much attention is given to fieldcraft in the training of Britain's new Army. Men learn to find their way about in all kinds of country, in all kinds of weather, and at all hours of the day and night. Once the puzzles of map reading have been mastered, and the habit formed of noting natural signs and features, and making mental pictures, the dark dwindles from an impenetrable obstacle to a mere hindrance. In the Western Desert, the brilliant stars act as sign posts in the sky.

The ordinary Briton is seldom given to watching the night sky. In the Middle East he has discovered that some attention to its pattern will show him the points of the compass and tell him the hour.

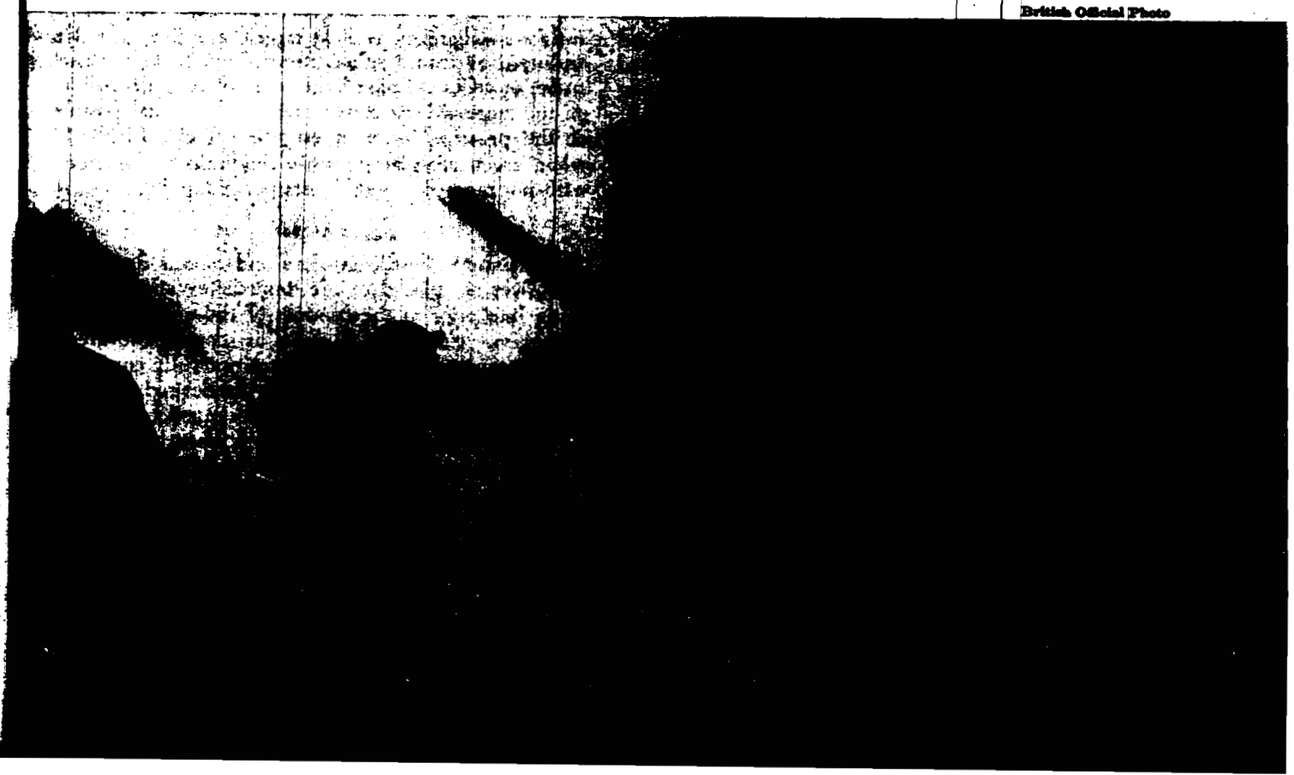
Montgomery's defeat of Rommel demonstrated that unless a general is prepared to forego large and perhaps decisive advantages, he must often move and attack in the dark. With this conclusion, a new theory in military tactics is born.

Something much nearer than the stars, however, was required at El Alamein to guide Britain's Eighth Army, and keep its different parts in position. This was provided by an ingenious and elaborate system of light.

The first stage in the advance was the clearing of gaps in the minefields. Where each gap was to be made, an officer of the Royal Engineers had placed himself at the entrance with a telephone and wireless set. He was followed by other engineers who marked the route with colored lights. Through the minefields, troops were still helped by the use of lights to keep direction. Thus troops fighting their way forward were able to answer for themselves the question: "Where are we," and to announce: "Here we are."

A medium gun of General Montgomery's Eighth Army opens the night barrage on the Mareth Line. This was another application of the tactics that broke the enemy defenses at El Alamein.

British Official Photo



Training in Night Firing

At the Cavalry School

FIELD MANUAL 23-60, Caliber .50 Browning Machine Gun, prescribes methods of night firing which are pertinent to all small-caliber weapons. These methods are based on the registering of fire during daylight hours and the recording of pertinent data upon range cards while using sight or instrument readings and deflections relative to an aiming stake or a lighted aiming box. They are sound and afford excellent training within the scope of their application.

Such methods, however, are not always feasible. They may be used only when time and the tactical situation permit prior registration of fire and the preparation of range cards. They do not cover the occupation and the hasty preparation of defensive positions at night, where effective fire may be required without prior registration on the target. This type of action can be expected to be used frequently in every theater of operations. The registering of weapons in a defensive position indicates to an observing enemy the location of the position. If alternate defensive positions can be occupied and an effective fire delivered without prior registration, the defense will gain an element of surprise that may well prove decisive.

Setting Up the "Flasher" System

To provide training applicable to these latter situations, the Cavalry School has developed a training aid which simulates an enemy night attack. This is achieved by a flasher system of vari-colored lights representing the muzzle flashes of hostile weapons.

Twenty-four lights are installed in the firing area. Each light is controlled from behind the firing positions by switches. White lights flashing at the rate of 30 flashes per minute simulate rifle fire, while red lights flashing at the rate of 100 per minute represent enemy machine-gun support. To represent mortar targets in a certain area, blue lights are placed in the extreme corners of the area indicating enemy reserve or support troops. Amber or yellow lights represent enemy mechanized vehicles or tanks.

The flasher proper consists of two rectified and filtered power supplies, two vacuum tube flasher circuits, and a control panel. The source of electrical power is a generator on a sound truck. Each flasher circuit consists of a vacuum tube, a relay, and a time-circuit. The time-circuit consists of a condenser and two resistors, one charge and one discharge. The rate of flash is controlled by the value of the resistors, with the time "on" relative to the time "off" being dependent upon the proportionate value of the charge and discharge resistors. The flasher used at the Cavalry School was constructed from salvaged parts and material from junked radio sets. If salvage is not available, all parts may be purchased commercially.

Four conductors are brought from the flasher unit to a switchboard. These conductors are: one common, one slow flasher, one fast flasher, and one continuously hot lead. The switchboard consists of a panel containing as many switches as there are targets that are to be controlled.

The flasher lights are controlled by one operator at the control switchboard located just in the rear of the firing line. The operator begins by closing switches on slow flasher circuits whose lights are closest to the firing position to simulate an enemy skirmish line fire. At an appropriate time, lights representing enemy machine-gun support are operated. For a diagrammatic sketch of the wiring system, see Figure 1. This figure is diagrammatic only; lights should be placed so that they represent suitable targets on particular terrain.

In addition to the lights representing the location and particular types of hostile fire, silhouette and other ground targets are placed in the immediate vicinity of the lights to correspond with the probable disposition of the hostile squads, sections, and other units. Targets are arranged to show as nearly as possible a true representation of the attacking or assaulting force. Tank and/or mechanized vehicle targets are constructed to outline the forward silhouette of the vehicle, with the amber or yellow blinker light being placed in a position on the target which corresponds to the actual position of the principal weapon on the vehicle. Lights for other targets are placed within the limits of the group, with not more than two lights per group.

Realism

To simulate hostile artillery and mortar fire, heavy explosives are placed in the immediate vicinity of the firing line prior to the conduct of the exercise. Prone shelters are started by students as soon as they reach their positions. These shelters are not fully completed during the exercise because it is not desired to devote more than the minimum time to this practice, since it is fully covered in other instruction. It must be included, however, to emphasize to the student that as soon as he moves into a position he must start preparation of individual cover.

For further emphasis, hostile artillery fire is simulated. To warn the students of the approach of enemy shells, No. 2 artillery whistle fireworks are used. (These resemble firecrackers and when lighted give off a peculiar whistling sound resembling the shrill noise of an

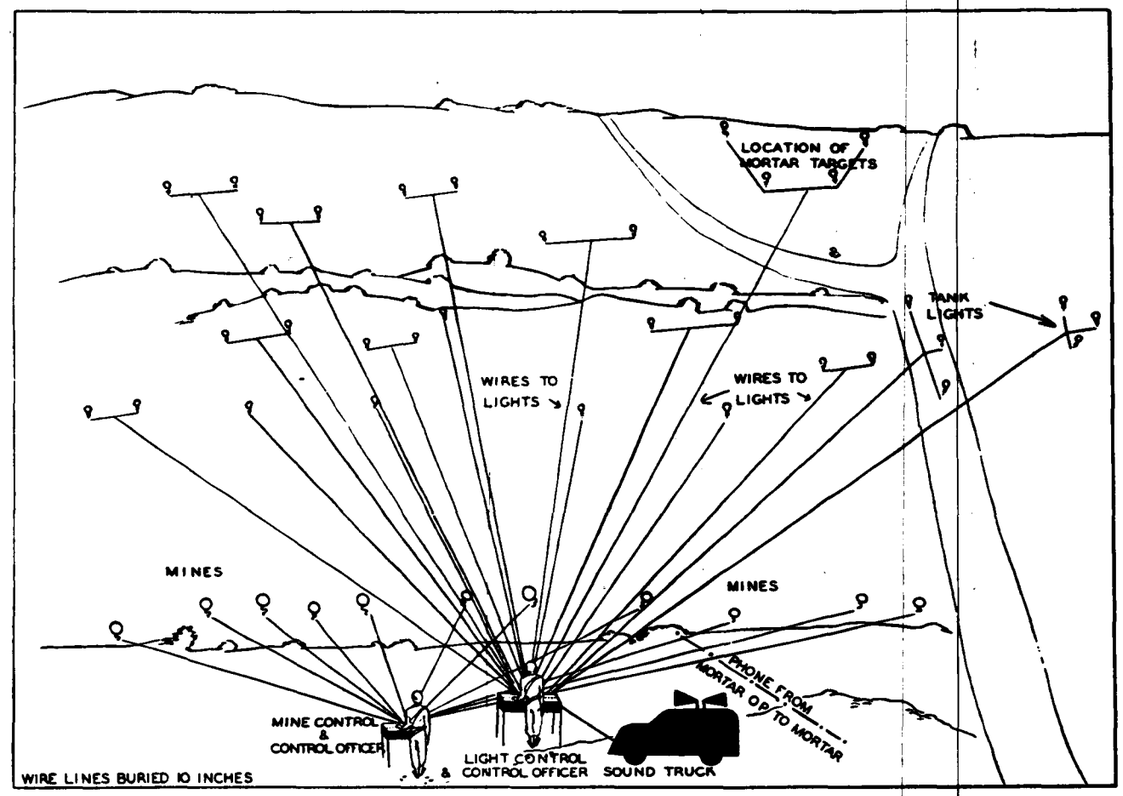


FIGURE 1

A SIMPLE WIRING SYSTEM FOR USE AS A NIGHT FIRING TRAINING AID.

artillery shell in flight.) When one of these whistles is heard, students must insure that they take maximum advantage of the prone shelters which they have started. By means of a switch on the control box, an explosive charge is set off to simulate the impact of the artillery shell. Further battle noises and effects are obtained by a variety of air-bursting fireworks.

Daylight Preparation

The practical exercise and the night firing for the students at the Cavalry School start at 1500. The students first emplace their weapons in a position which they expect to occupy until after dark and which they may be required to defend.

All weapons are registered, range cards prepared, and aiming stakes and lighted aiming boxes located. When this is completed, the students are required to reconnoiter an alternate position located approximately 400 yards to the flank. They are told that it may be necessary to occupy and defend that position during darkness. They are directed to select positions for their particular weapons and mark those positions in an unobtrusive manner so that enemy ground reconnaissance would not observe the markings.

At the time of this instruction, the students have not received instruction in defensive tactics other than the type of fires used. The period is intended to cover only the technique of night firing and hasty cover. For these reasons and for safety precautions, all weapons except the 37mm guns and the mortar are on a general line.

Most of the precautions are dictated by range limitations at the Cavalry School. As far as possible, however, these regulations have been subordinated to tactical dispositions. Covered routes of approach to the position are also reconnoitered and thoroughly understood. During this reconnaissance, possible target areas or routes of enemy approach to the position are discussed by the instructor.

This operation is concluded approximately one hour before darkness. The students are then assembled in an area defiladed from the alternate position, where supper is fed and additional instruction given. During this time, targets are set up in front of the alternate position and the lighting system installed and connected.

Night Practice Firing

At dark the students occupy the previously prepared position and fire a series of problems requiring approximately two hours. They are then given an order to move to the alternate position and prepare to repel an

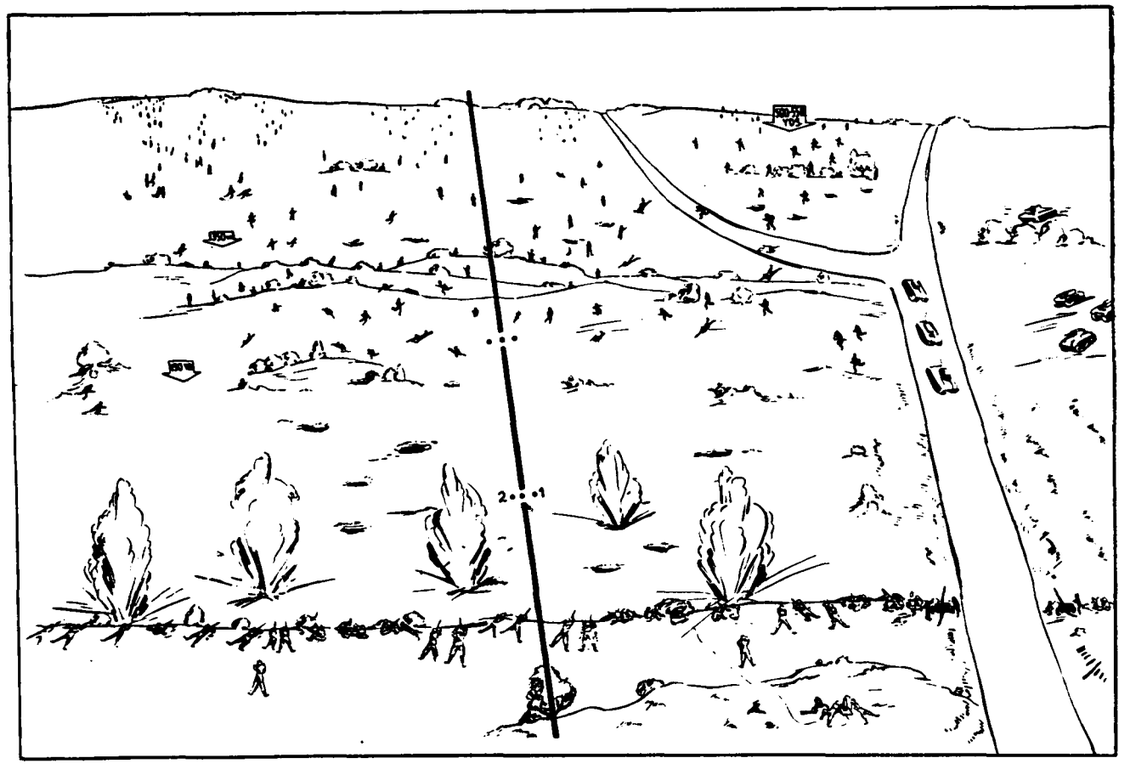


FIGURE 2

enemy attack which information indicates is being organized. The class moves, under blackout conditions, into the alternate position. Noise is to be kept to the minimum. Exposure on skylines is avoided. The position is occupied and prone shelters are started.

Students act as commanders under the guidance of instructors. All are made familiar with the tactical situation. Student unit commanders are required to report when their units are properly disposed. Instructors then check all weapons and all personnel to insure adequate safety precautions. Platoon sectors are prescribed by direction with respect to the firing line, with sufficient overlap between platoons to insure no uncovered areas to the front.

Since the safety precautions already mentioned permit fire in only one general direction, all-around organization of the position is impracticable with the Cavalry School facilities. Except for the width of the sectors assigned to each platoon, however, the conduct of the problem in complete darkness obtains the same effect as though all-around defense were organized.

The targets and the lights are placed in the best avenues of approach for the particular enemy force represented. They are dispersed over the entire front so that the fire of each platoon must extend into the sector of the adjacent platoon in order to insure complete coverage of all targets. The students are required to orient themselves on the general direction of their platoon line. They are then told to fire only at targets appearing to their front or slightly to their flanks in order to insure overlapping fire. Again, range limits prohibit enfilade fire on targets in adjoining sectors.

Some artificiality must be introduced into the targets upon which the mortars can fire in order to avoid destruction of the lighting installation. Obviously, the advancing enemy personnel should be their primary target. Instead, the fire of the mortars is restricted to areas which the enemy might use as assembly positions. The observers for the mortars are located on the front line and preferably on the flank, since axial observation during darkness is not efficient for range determination.

The first loading of all weapons is accomplished as quietly as possible. Machine gun and rifle bolts are eased forward by hand and are not permitted to be actuated freely by the spring. At this time instructors caution the students upon the following points: Since they are confronted with an attack from a direction which was not clearly foreseen, the enemy situation is certain to be obscure. Therefore, thought must be given to the conservation of ammunition. Indiscriminate firing must be avoided.

Adjustment must be made by observation of their tracers. Since a tracer shot which is over the target gives no accurate indication of its point of strike with relation to the target, it is better to shoot low and work up to the target initially. It must be assumed that all enemy personnel is not concentrated in the lights representing firing weapons. Therefore the area in the vicinity of each light should be searched. Students should not fire except when the lights are actually flashing or when a flare illuminates the target.

Only a limited number of flares of short range are used. It is pointed out to the students that, except in open terrain where flares can be fired well to the front, their use may also disclose some of the defensive dispositions. Students are also told that the supply of flares is limited. Therefore, they must depend upon other means of adjusting their fire.

Adaptability of This Training Aid

Remarkably efficient results have been obtained from the use of this training aid and the methods of fire adjustment herein described. As high as 70 per cent of the total number of ground targets have been struck. The lowest percentage of targets hit to date has been 45 per cent, and a steady improvement has been noted since this low mark was made on the first use of the aid. The number of vehicular targets hit by the 37mm guns has ranged from a minimum of 30 per cent to a maximum of 80 per cent.

This training aid can easily be modified to meet the training needs of tactical platoons and squads. For example, the system of flasher lights can be scaled down to include only one target or an appropriate combination of rifle, machine gun, mortar, or antitank gun targets. They may be supplemented by trip wires on which tin cans are hung. These should be installed by the unit personnel prior to darkness and their general direction from the position marked unobtrusively by small stakes or large nails.

Before the unit moves into the position in darkness, prone silhouettes may be set up generally along the trip wire. A cord is attached to the wire and led to a point on the flank or rear of the position. The cans can then be made to rattle as desired. Machine guns then open at assured short ranges which are increased gradually until low grazing fire is being delivered in the direction of the sound.

More realism can be added by close-in trip wires with similar targets and by requiring the use of hand grenades against them. This restrains the "trigger-happy" soldier and emphasizes the fact that the enemy may be trying merely to locate automatic weapons.

The effectiveness of the method of adjustment, as indicated by the percentage of hits obtained, would appear to make this type of training extremely valuable. It should be followed, however, by a critique to stress the importance of observing the strike of *each* tracer, and the fact that it must be determined before fire is opened whether or not the enemy attack is merely an effort to locate our automatic weapons, in order that they may be neutralized prior to an attack on a larger scale. It should also be pointed out that the use of tracer ammunition will make it easier for enemy observers to locate such weapons.

More About the Kitchen Truck

Like Topsy, kitchen trucks are too often "just growed." The article on this subject in the September-October issue of The Cavalry Journal offers an efficient solution to this important problem and should do much to alleviate haphazard arrangements by directing thought along these lines in the proper direction.

As in most military situations, *a* solution is not necessarily *the* solution. In this connection, two supplementary suggestions are offered.

If any cooking is to be done on the march—which is perfectly feasible, and practical, in that it is a great time saver—certain precautions in the interest of safety of the mess detail are important.

1. Some means of communication between the cooks and the driver should be provided so that in the event of fire, the truck may be brought to a halt immediately. One such device that has proven satisfactory is a 6-volt buzzer or door bell in the cab. This is connected to the truck battery and controlled by a stop light switch actuated by either one of two wires strung through eyes screwed into the top of the bows on either side of the truck. The wires should extend down the rear bow to the tail gate so that wherever in the truck a man is—even if he is driven to hanging over the tail gate—he can pull a wire to signal the driver.

2. With the stoves arranged across the front of the truck, a sudden emergency stop may cause the cooks to be precipitated into the hot stoves with painful results. This dire possibility has been prevented by rearranging the stoves along one side of the body and placing the ice box across the front. This further permits a larger ice box and a longer work bench locker opposite the stoves.

John T. Snodgrass,
Lt. Col., C.A.C.

In the article, "How to Prepare the 2½ Ton Cargo Truck as a Kitchen Vehicle," in the September-October issue of The Cavalry Journal, it seems that one small but important safety precaution has been overlooked. If the unit is to be used on the move, some means should be provided to anchor the leg of the "knock-down" table to the floor. Unless there is such an anchor to prevent up-and-down as well as side-to-side movement, the jostling of the truck is likely to cause shift of the leg to such an extent that the table will lose its support and fall to the floor.

Any number of obvious methods could be used to lock the leg in position.

Howard M. Collins,
M/Sgt., DEML.

Dismounted Reconnaissance

A Training Problem from the 2d Cavalry

by Major Thomas B. Hargis, Jr.

"YOU can't see anything sitting in a vehicle." The truth of that statement is self-evident, but to get the present day soldier to believe it is another story.

Mechanized reconnaissance units have been often and bitterly criticized for their failure to obtain vital information. The criticism was justified without question, but very few units ever did anything to avoid it except to ride their vehicles harder and faster than before.

The 2d Cavalry Learns to March

When the 2d Cavalry was reactivated in January of this year, the commanding officer was determined that the regiment know how to walk as well as ride. During the early phases of our training we out-marched many infantry units—a practice not common to mechanized units. Our marching culminated in a dismounted march from Columbia, S. C. to Charleston, S. C., a distance of roughly 150 miles. This included one march of 25 miles in 8 hours with full pack.

After the troops had learned to march and had become well hardened, the training progressed to dismounted scouting and patrolling in large doses. All men in the regiment received this training. Later, in August, as a final test of their proficiency, all troops participated in a dismounted patrol problem that lasted for two days.

This problem took place in the area bounded on the south by U. S. Highway 1, on the north by Wateree Pond, on the west by Highway 21, and on the east by a N-S line through Lugoff. An area roughly 25 miles square. (See sketch.)

The patrols were composed of not more than seven men, led by an officer or N.C.O. The men carried full field equipment, including "C" rations for one day.

The following situation was given to all patrol leaders just prior to the beginning of the problem. (A thorough check was made before starting patrols to see that they thoroughly understood the situation as given.)

Situation

General Situation: Red forces advancing between Wateree and Congaree Rivers have reached the line of Highway 1 and have established a strong counterreconnaissance screen. They are believed to be concentrating armored and infantry units on their left flank.

Blue forces are retiring slowly to the southeast but still hold the east bank of Wateree Pond.

Special Situation: The 2d Cavalry has been ordered to discover strength and composition of enemy forces in Longtown, Bloomingdale Church, Blaney, Highway 1, Highway 34.

Information: The following essential information was required:

1. Strength and identification of units, particularly armored units.
2. Ammunition dumps.
3. Highways. Are the following roads being used by armored units:
   a. Highway 34 Ridgeway to Junction Highway 1.
   b. Highway 213 to Junction Highway 270. Highway 270 to Blaney.
   c. Road from Oak Grove School to White Oak Church to Highway 213. Highway 213 to St. Johns Church.
4. Creeks and Bridges.
   a. Are bridges over Sawney's Creek between Ridgeway and St. Johns Church intact?
   b. Is Sawney's Creek fordable for foot troops between bridges?

Instructions: Patrols were ordered to reach observation points by daylight of the next day and to remain in observation all day. At 2300 that night they were to move north to Wateree Pond where boats were to be available. Identification was to be established by giving "whip-poor-will" call 3 times answered by boat commander with "hoot owl" twice.

All information was to be turned in upon reaching the other side of Wateree Pond.

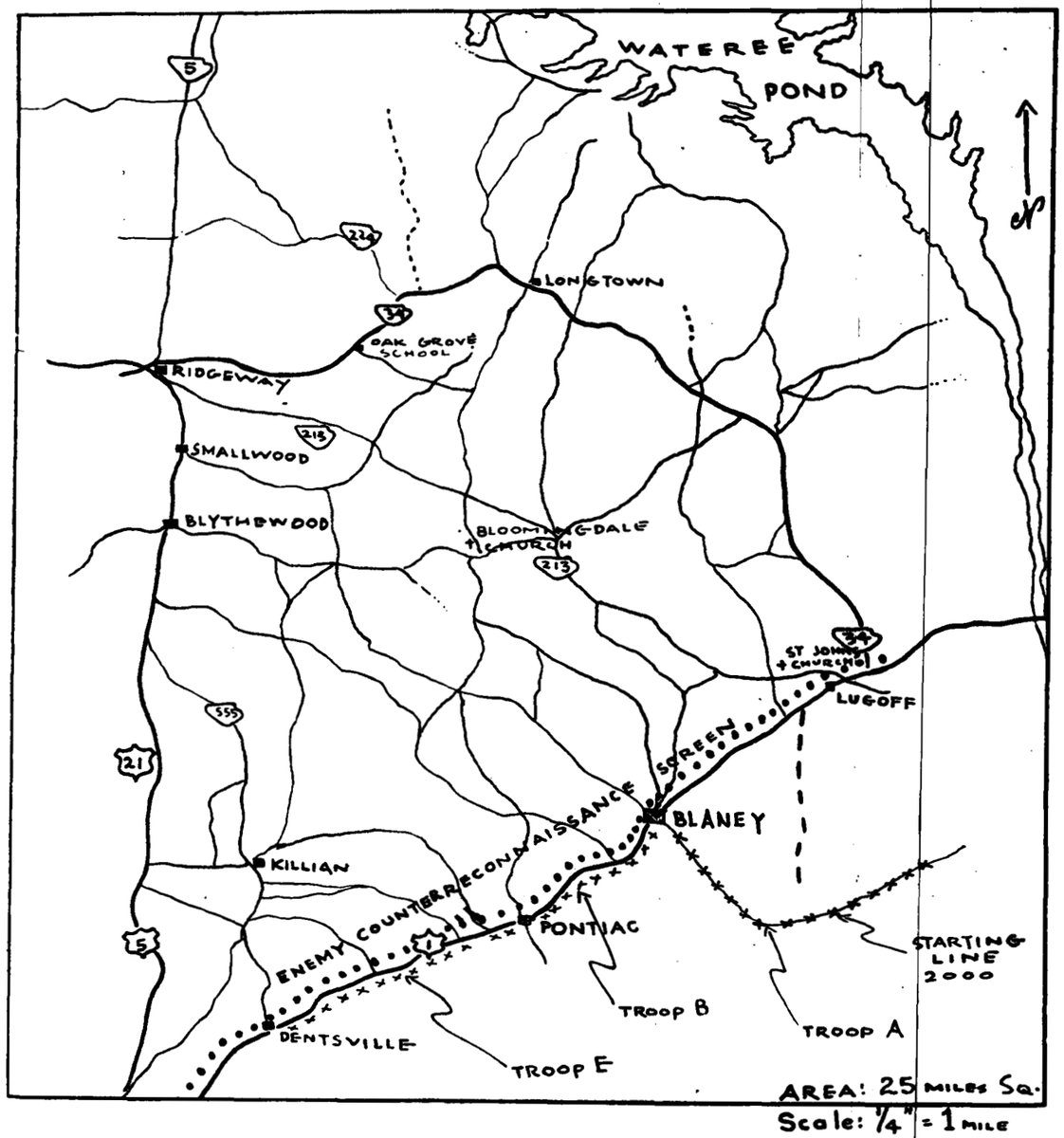
Controls: The enemy was represented by large signs placed in the area indicating location of various sizes and types of units. In addition, vehicles with similar signs were dispatched along roads to simulate movement of armored and motorized elements.

Aid stations were established throughout the area to care for any men who were hurt or became ill during the course of the problem.

The area was patrolled throughout the problem by staff officers and squadron commanders to insure proper movement and concealment of patrols.

Operation: The line of Highway 1 was divided as shown on sketch, and zones were assigned to each troop. To avoid bunching, patrols were placed on a starting line at intervals of ¼ mile. All patrols started at approximately 2000.

The patrols moved on roads during darkness, and numerous checks by staff officers revealed that only a few were careless. By daylight the next day, most of the patrols were in position to observe the roads in their area and to continue their attempt to secure information. At about 0100 the next morning patrols began arriving at Wateree Pond, and the call of the "whip-poor-will" and "hoot owl" could be heard. By daylight



all but a few patrols had been ferried across and information was beginning to reach Regimental Headquarters.

Results: The information obtained by the patrols in most cases was excellent. All installations or enemy columns represented were found and reported, and a very complete picture of the represented enemy was obtained. The results were in general excellent and the problem was considered a very successful one.

Conclusions: From this problem the 2d Cavalry has become thoroughly convinced, not only of the practicability, but the absolute *necessity* for dismounted patrols by mechanized units. In no other way can a complete picture of the enemy be obtained. When counterreconnaissance screens cannot be penetrated, patrols on foot must go forward to get the information required by Regimental Headquarters.

Communication for these dismounted patrols will be difficult. One solution may be carrier pigeons. The 2d Cavalry is now on maneuvers in Tennessee, and our dismounted patrols are to carry pigeons. If they are successful, then we shall have mastered one drawback to dismounted patrolling.

You cannot get information sitting in a jeep.

Morale and Censorship*

by Commander Frederick J. Nelson, U. S. Navy

The American soldier needs food, weapons, and protection against the elements. But he also needs something more! He must have a *spark* to keep him in motion—something to make him fight on, no matter what the odds.

AS INDIVIDUALS, members of our fighting forces require certain well established elements to keep their morale at a high pitch.

The first is food. Man is an engine, and he must have fuel to operate. Reduce the ration and you reduce fighting efficiency. Cut it drastically for a considerable period, and a man loses the will to fight. Starve him, and he weakens to the point of submission.

The fighter requires weapons. For years the officers of our Army and Navy have said that if the lawmakers gave them as good weapons as their enemies, they would do a creditable job, and recently, where this situation has been true, they have made good their boast.

Food and weapons are not all. The fighter requires protection against the elements, warm clothing for the winter campaigns, suitable garments for tropical service, and no matter where the fighting may be, comfortable shoes.

But even if you feed a soldier or sailor well and provide him with good weapons and clothing, you still do not have an outstanding fighter. He needs a spark to keep him in motion—something to make him fight on, no matter what the odds.

The American fighting man is not a mercenary. Of itself, the recent pay increase did not do much to raise the morale of the fighting forces. What it did was to enable our men to supply their own personal needs, to pay for insurance, canteen purchases, movies, etc., and still have enough left to send some money home to mother or father or to other dependents.

It is always advisable to explain what men are fighting for in terms of the things that they hold most dear. Freedom is an abstract sort of something to the man behind the gun, but he will understand if you reduce it to terms of his right to sell the farm, to vote without coercion, or to take the job he wants. And if you put the reason for requiring his services in words relating to his family life, his mother, younger sisters and brothers, his wife and children or his girl, you are then talking about the things he cares about and for which he is always willing to fight.

Leave is a big morale factor because it performs beneficial mental readjustments. It is necessary that the fighter be able to see for himself what his efforts will attain. We hear it said, "If I could only be home with my folks for a week end—if I could just talk to my girl again." He wants to see how things are going at home with his parents, what his girl thinks about him. And if everything is all right, if his girl still waits for him, or if his wife and children are still safe and comfortable, he will return from leave a better fighter, and nothing can stop him in his enthusiasm to get the war victoriously over.

With our forces on many fronts, leave for the majority of the soldiers and sailors is now out of the question. Most of our men realize this, and they will not grumble too much, if only they can hear regularly from their kin. Even though letters are a poor substitute for leave, it cannot be denied that mail is their biggest single morale booster. The proverbial wine, women, and song are secondary, and *often a substitute for what the mail failed to do.*

Not only does the fighting man want mail, but he wants it regularly. In addition, he likes to get it as soon after it is written as circumstances permit. Some months ago, the Congress passed the free mail privilege

*U. S. Naval Institute Proceedings, April, 1943.

for the personal correspondence of soldiers and sailors, but a letter is seldom sent "free" for any distance if an air-mail stamp will get it there sooner.

Unfortunately, the morale value of regular fast letter correspondence has not been fully impressed upon certain groups who exercise control over the delivery of mail to men in the service. I refer to our censors.

Fighting men all agree that censorship is a necessity in time of war. All that they ask is that it interfere as little as possible with the free flow of their correspondence—not an unreasonable request. And they think that once a letter has been censored, it should be sent promptly to the addressee.

There are three groups of censors who pass on soldiers' and sailors' mail. They are Army censors, Navy censors, and national censors.

Service censorship is carried out by the Army and the Navy within their own organizations, but the systems used in these two branches of the services are not alike. Soldiers' mail is censored by their company officers, who rotate this unpopular duty. Army officers censor their own personal mail, but it is subjected to spot censorship by U. S. Army censors. Mail of enlisted men in the Army, once passed by an officer, is not censored again. To facilitate prompt receipt of mail from the States, the Army has established a system of "A.P.O.'s" (Army Post Offices). Thus, a soldier stationed abroad has his mail addressed to A.P.O. 694, c/o Postmaster (of some Eastern, Western, or Gulf port). In that way no information is given about his location, and his mail is not censored before leaving the country because it has a United States address.

In the naval service, all the personal mail of both officers and enlisted men is censored by a designated censor, invariably an officer. Only a few senior naval officers are permitted to censor their own mail—captains, executive officers, flag officers, and members of their staff—but all may be spot censored at any time. These differences in the censorship regulations between the Army and Navy for officer's mail must not be construed as being indicative that our army officers exercise superior discretionary powers in their correspondence. It is just another difference between these two services.

National censorship is a factor in the life of the armed forces because it is this organization that censors the mail going to the soldiers and sailors. Here we find a group of individuals—mostly women, with but a smattering of training, and with no military background—dictating, in a blundering way, what members of the armed forces may read in their letters about the thoughts of their family, the sentiments of their kin or the conditions of their country.

If a strike is called in the home town, some censors will snip any mention of it from letters to the armed forces, although clippings from the local paper enclosed in the same envelope, and carrying the news in greater detail, will be passed. Some censors object to criticism of national policies, others to mention of restrictions or inconveniences on the home front. If rising prices or scarcities are commented upon, it is a safe bet that they too will be deleted.

Not so long ago, an officer received from his wife, a letter that had been unusually slow in reaching him. Noting that there was about two weeks' difference between the date on the letterhead and the cancellation on the envelope, the officer made a few inquiries. In the course of the investigation, he learned that this letter, which contained a general discussion of conditions in his home town, was returned intact to his wife by one censor with the statement that it would be bad for the morale of the recipient. The writer, upon receiving the returned letter and mindful of the inconsistencies among national censors, did not alter one word but simply addressed the letter to her husband in a new envelope. The censor who received it on the second trip, presumably having different ideas about what was good for a fighter's morale, passed the letter in toto.

In the great citizens' Army and Navy that we are building today, there is an alertness and consciousness of community and national problems that differs greatly from the German or Jap fighters, who are unconcerned with national issues in their blind obedience to a dictator. For this reason, censorship of things that the man in the service is thinking about anyway, and upon which he dearly desires home comment, is apt to enrage him. He feels that he is being treated as a schoolboy, not as a voting citizen of the country. After all, it is his own country—in a peculiar democratic sense, the one for which he is fighting, possibly dying. His morale is strong enough to take the plain unadulterated truth. A badly "snipped" letter or newspaper may lead the recipient to imagine that matters are far worse or more serious than they are, and this will have a distinctly unfavorable reaction on his morale.

Possibly much censoring and snipping could be avoided if the general and specific directives to censors were published for the country at large to understand. If the rules are clear and reasonable, they can stand the light of public scrutiny and will aid the home front in excluding questionable matters from their letters. Voluntary coöperation in this distasteful matter would doubtless lighten the censor's burden and speed up the mail deliveries.

It is in the censorship of weather that censors make themselves ridiculous. Every schoolboy knows that in certain parts of the world weather migrates. A comment by a sports announcer that it is a beautiful clear autumn day at Chapel Hill is priceless information to the submarine command off the Virginia Capes. Similar information that a hurricane has swept over Martinique tells a "wolf pack" in the Caribbean that visibilities will be low until the storm blows itself out.

But weather does not migrate in all latitudes; in some, not at all; and in others, only during certain seasons. For a sailor stationed in the Canal Zone to remark

in a letter that it was raining there in August, is to reiterate common knowledge. To say that it was raining hard, is also common knowledge. In fact there is nothing anyone could write about the weather in Panama that isn't in every textbook on climatology. The same thing holds true for most tropical latitudes, but the national censors will slit a letter to ribbons that makes any reference to weather anywhere. And should you begin a paragraph by saying that you are low and dreary, and feel as dull as the day, you may be assured that the addressee will never read that. Believing that you are transmitting secret weather information, the national censors will pounce on your sentence with a poised indelible brush or open scissors. More common sense directives could eliminate such inconsistencies.

The question logically arises then, why should incoming mail to our soldiers and sailors be subjected to national censorship? Are there any people anywhere more anxious than our soldiers and sailors to bring the war to successful conclusion as soon as possible? Is there any group more anxious than our officers to deny information to the enemy and in a better position, by virtue of their training, to pass on what may be said in personal correspondence? It is they or some part of the military organization itself, rather than clerk censors, who should be given the responsibility of deletion. It must be borne in mind that it is not the censorship of incoming mail that members of the services dislike, but only the inconsistencies and the delay incident thereto, a delay that often neutralizes any advantages in time gained through the use of air mail.

"V" Mail has done much to improve the regularity of correspondence to the armed forces. But, while it gets the word back and forth, it lacks the personal element. In short, it is coldly mechanical. Men would like to receive their letters intact, to read from the stationery on which the letter was written. And of course, they all would like to feel that what was sealed in that envelope was for their eyes and for no one else. It has long been recognized that people bare their souls in their letters, and private correspondence to members of the fighting forces should be kept as private as consistent with the interests of security.

Complete Addresses are Necessary to Get Mail to Soldiers Overseas

In addressing mail to a soldier it is necessary to give his rank, name, Army serial number, organization and Army Post Office number. By organization, the War Department does not mean the Army or division to which the soldier belongs, but rather the unit. Following is a model address:

Pvt. John Doe, ASN 1234567890,
Troop E, 112th Cav.
APO 502 c/o PM,
San Francisco, Calif.

Censoring mail is an irksome task. To make the job as light as possible some officers discourage their men about writing too often or putting their thoughts into too many pages. The post-card check-off list, as a substitute for letter correspondence, must be an answer to the indolent censor's dream, for to discourage letter writing by insisting that such brief post-card forms be used or to encourage brevity in personal correspondence is to shake the keystone of morale.

A fighter must have an outlet for his sentiments. He needs some vehicle to get his thoughts to those he knows will value his opinions and who have a sympathetic understanding of his type of human nature.

Sometimes, of course, a man just likes to blow off a little steam. Letter writing is the least harmful way to reduce high internal pressure, for mental complications arise only when men are unable to get the load off their minds. Besides, when a man is writing letters, he is using his powers of concentration and expression—a development most useful in his daily work. Writing helps to crystallize thinking, and when men are writing letters, their conduct is always exemplary.

Censors have two important missions. One is *to preserve the security of information*, and the other is *to promote rapid delivery of correspondence*. It is in this second category that many censors are deficient.

When a soldier or sailor deposits his mail for censorship on his post or ship, he knows that his officer-censors will make an effort to get it out in the next mail. He knows that the officers realize the morale value of regularity in personal correspondence. He knows, too, that his officers have a full understanding of what should be deleted. And if inadvertently some information indiscreetly slips from the point of his pen, he will be cautioned personally about his carelessness. Furthermore, his letter would not be delayed to insure that time would render the suspected information valueless. The officers and men of the Army and Navy know that the primary mission of service censors is to get "the mostest mail through fastest." The national censors must learn that too.

Censorship is an indispensable, unpleasant feature of modern warfare, and the necessity for censoring the outgoing mail of the armed forces cannot be denied, but if censors strive to get the mail through as quickly as possible, the men in the field and on the high seas will not complain.

"Morale is a lot of little things," as a popular advertisement quite truthfully states. Without doubt, letters may be the greatest wartime morale builder in both service and civilian life. A service community is stimulated into renewed activity after a big overseas mail comes in.

A commander in the Solomons writes that he wishes all battles could be fought after "mail day." Letters supply the spark that we all need to win this war. Encourage them, clarify the rules of censorship, and speed them to their destinations!

Mountain Cavalry*

by

Captain D. Ernesto Castaneda Araoz

CHARACTERISTICS of mountain terrain entail a special form of operations so diametrically distinct from preconceptions of warfare in flat country that precepts established by ordinary regulations are often broken in order that other rules may be applied especially for mountain action.

The great distances to travel, plus the enormous differences of elevation, demand an excessive endurance of mountain troops. This must be augmented by efficient and adequate means of transportation.

If certain characteristics of mountain warfare are taken into account, it is easy to arrive at the conclusion that in order to conserve energy, speed up the operation, and exploit surprise, an element more mobile than infantry, mounted on mules or mountain horses, is necessary.

"Rough and broken fronts, dispersion of action and *maximum value of time* are the characteristics of this type of warfare."

"Movement more than concentration of fire, is the essence of mountain combat; silence of operation, therefore, is necessary."

"This maneuvering type of warfare, inspired by the economy of means and of energy, profits to the utmost by surprise. It is particularly fruitful in results, because the mountains lend themselves to it in its widest application."[1]

Reconnaissance

The lack of roads and communication facilities in this type of terrain make it imperative that the command be supplied with accurate data. For this, the commander must rely on mobile units that can supply opportune information from ground reconnaissance—the mountain cavalry.

"Good and timely reconnaissance supplies sure and practical data."

"Careful reconnoitering expedites sure and positive data about the terrain."

"In the high mountains, more than anywhere else, the service of reconnaissance constitutes an important task. It is difficult and often decisive. It has intimate contact with the commander's plan of operation, and when brought forward to the adversary's position is of such importance that it has a direct bearing on the future development of the action."

"An efficient reconnaissance performance should be a great distance forward, with the object of supplying the necessary information to complete and perfect the operation."

The above paragraphs, transcribed from one of our training manuals, lead to the conclusion that as far as speed is concerned, reconnaissance can best be executed by mountain cavalry. In this way, the mass of the infantry can be held until the last moment in order to arrive at the scene of combat with all of their shock force, to seek the decision. This reconnaissance mission, given to the mountain cavalry, must be complemented whenever possible by aerial reconnaissance.

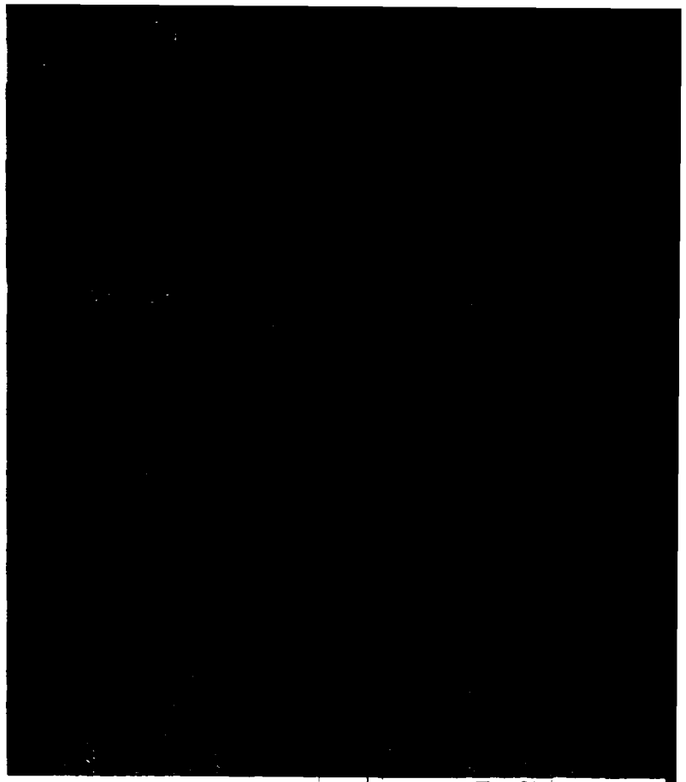
Combat Missions

In mountain terrain, it is advantageous to gain as much ground as possible before reaching the defiles in order to effect an uninterrupted advance and thus prevent the enemy from getting the advantage of that terrain. Because of its mobility the mountain cavalry has a decided advantage on this type of mission.

Frontal attack in the mountains offers very little

[1] *Information Bulletin of the Military Forces*, No. 14, 1941.

*Courtesy *Revista Militar* (Argentina).



Three Lions

In the lake district of southern Argentina at Bariloche, the glacier of Tronador adds to the difficulties of the mountain terrain.

probability of success. Consequently, the decision will usually be sought by means of action against the flanks and rear of the enemy, in which case, cavalry can be put to good use executing a full and rapid action against the least expected point.

Once the mountain infantry has broken the hostile resistance and commenced its pursuit, it becomes necessary to attempt the annihilation of the enemy. Mountain cavalry, because of its greater mobility, can flank the retreating enemy and hold him until the annihilating force of the infantry arrives.

A more frequent mission for which the mountain cavalry possesses a special aptitude, will be that of delaying action. The terrain almost always offers cover for the mounts immediately behind the delaying positions. Thus, a position can be occupied until the last moment; then, by moving rapidly to occupy the subsequent delaying position, cavalry can again use its mobility to make its action felt in the intermediate territory.

By its characteristics, mountain cavalry can successfully carry out guerilla warfare, and enter deep into the enemy lines in order to operate against enemy supply lines or hostile reserves. For this, the terrain is well adapted, particularly if sufficient capacity of movement is maintained.

Mountain Mobility

What is the rate of march of mountain cavalry on mule- or horseback? During recent trials in the big mountains, mounted troops have been able to march an average of 6 to 7 kilometers per hour—an impossible speed for a foot soldier to obtain. It is clear that this speed could not be sustained for more than five days marching, even if part were at forced march, which means a great wear on the animals. When this effort is necessary, there must be no hesitancy in putting a forced march into effect, if by it a successful action can be realized, a surprise perpetrated, or a retreating enemy flanked.

The normal speed of mountain cavalry in the high mountains is from 4 to 5 kilometers per hour, which provides an advantage over the dismounted men, both for combat and reconnaissance missions.

If the fatigue of mountain infantry, even though better trained, is taken into account, a long march in mountain terrain will necessarily lessen its combative strength at the moment of battle. But if the troops which must carry out this operation are transported on mule- or horseback, they can arrive at the combat with full combative strength, even though the mounts have suffered great fatigue.

Mountain cavalry is not presumed in any way to replace the mountain infantry, as infantry will continue to have the most efficient shock strength and will decide all definite action. Cavalry is intended only to provide the infantry with a valued element of mobility and to coöperate with it in a united effort, without the least idea of self-glory and in the spirit of sacrifice which must animate the soldier, especially when it is necessary not only to defeat the adversary but to surmount the difficulties of the terrain and to endure the severity of nature.

Organization

According to the characteristics of the terrain and the form of mountain warfare, the units of cavalry specializing in this type of operation must have a particular organization. The organization of regiments is plenty large enough. (Brigades or divisions are not considered necessary.)

First, the unit must be extremely mobile, possess heavy fire power, and be divided easily into self sustaining subunits. Consequently, it is necessary that the subunits (squadrons) count on a strength of fire capable of maintaining a combat of prolonged duration in isolated missions.

The regiment could have the following organization:

- Staff, with communications section provided with radio-knapsacks, telephones, and blinkers on pack horses.
- Three squadrons of riflemen organized as before mentioned.
- One squadron of machine guns of 3 sections of 3 pieces.
- One section of light mortars of 3 pieces.
- One section of sapper-destructors.
- Pack animals.

This organization, though it does not appear fast, is necessary for reasons that will be seen.

Only rarely will the regiment act together, but will act most often as subunits over an extensive front. This necessitates subdivision, that naturally decreases the apparent lack of speed of the remaining portion of the regiment.

There will always be squadrons in the different combat missions that must operate on a front where the difficulties imposed by the enemy may be greater. This will make it necessary to give them additional fire power, which the commanding officer of the regiment will be able to do, as he has a squadron of machine guns and a section of light mortars on which to rely.

In the mountains, mortars will prove very valuable, whether used to silence a nest of automatic arms cleverly placed or to scout blind spots, so frequent in this type of terrain.

Lastly, whenever the complete regiment must be used in combat, either in attack or for resistance, its fire power makes it able to operate with success.

Regarding proper cavalry missions, such as offensive and defensive patrols, an organization of this kind affords the fire power necessary to accomplish them. The detached patrols would be relatively strong without weakening the nucleus (reconnaissance detachment) too much. This detachment will always have arms capable of acting as auxiliary of the patrols, which can be put into action at convenience or held in strength at their post when this is best suited to the situation, or when their mission is considered complete.

The advantages of this arrangement also fit into reconnaissance missions, since, while most reconnaissance patrols have only the mission of *seeing*, they will also have to do battle, either to drive back another patrol in a narrow pass or to try to open a roadway if they have fallen into ambush—which can happen easily in mountain terrain.

Equipment

Personal equipment can be similar to that of the mountain infantry of our army.

As for mounted equipment, the saddles now used by our troops are not the most appropriate for mountainous country.

In San Juan, as well as in Mendoza or Neuquen, the mountaineers, whatever their financial resources, use a saddle which in certain mountainous regions is called a *casco chileno* ("Chilean cask"). This consists of two packsaddles of hardwood, with two saddle-trees of iron, relatively high, attached to the saddles with rivets or screws. From one saddle-tree to the other runs a wide leather strap, attached to these and also to the packsaddles by means of halters. It is much lighter than our "lowland" saddle.

The difference in weight is so appreciable that it is possible to carry an additional blanket, not only useful but at times imperative in the low temperatures of the mountains. Moreover, for the convenience of the rider, a small cushion can be used to make the saddle softer, necessary on long marches that will be frequent and almost normal in the mountains. This cushion can be substituted for the saddle padding with the advantage of furnishing a warm seat that does not have to be filled with straw, so difficult to obtain.

The use of the breast strap and crupper is highly necessary in the mountains where steep slopes must be descended or climbed. With these elements, frequent delays to adjust equipment are avoided. The breast strap is not a capricious innovation with respect to the breast covering, but works in a more balanced way than the latter, for in passing around the breast of the animal it is joined to the two rings of the cinch.

Special Training for the Mountain Cavalryman

In effect, training of the soldier to acquire the lung capacity and adaptation of the circulation to the fatigues of the mountains is of highest importance. Marching exercises and races over varied terrain, combined with respiratory exercises, should be given. Races and marches in ascending ground, obstacle courses, climbing ropes, trees and rocks will prepare the soldier to run and march in the mountains. Relay races while carrying certain weights will train soldiers for handling ammunition supply in combat. Weight lifting also will prepare the soldier's muscles to carry and lift loads on the horses.

Instruction in skiing and marches in snowshoes are indispensable, as on many occasions the mountain cavalry will have to leave their mounts and make prolonged runs across snowy fields to places where the situation requires them.

Conclusion

Mountain cavalry is not a new theme for us, and it is not believed that anyone will be surprised by this article. But if the idea is not new, it is still an obligation to us who have had the fortune of knowing the mountains to offer suggestions, not for adaptation in totality or even in part, but to awaken a professional anxiety in our comrades, especially those younger.

Mountain Fighting in the Caucasus

DURING fighting for mountain roads and passes in the foothills of the Caucasus, entirely new and successful methods of coördination evolved between cavalry and artillery.

When the Germans attempted to advance against a populated place, they were suddenly counterattacked by Red cavalry. Recovering from their surprise, they opened artillery fire first on the horsemen, then on the Soviet artillery battalion. The Red Army men kept maneuvering their guns, installed on a narrow mountain plateau, from one point to another and got the upper hand in the artillery duel.

Meanwhile, the cavalrymen dismounted and made their way to the German position. They were accompanied by mobile artillery which tackled the enemy gun positions and took them by surprise from the flank. The Germans hurled into action a company of automatic riflemen who were soon completely wiped out.

The Nazis had to divide their forces to combat the artillery and the dismounted cavalrymen, and this gave the Red Army men a chance to make a devastatingly successful cavalry charge.

The Red Army men in the Caucasus were supported strongly by the mountaineers themselves, who detailed their best guides to lead the Red Army to the enemy's rear and show them advantageous positions for ambushes and traps.

The forest-covered slopes were very favorable ground for Red snipers. Dozens of them hid among the rocks and bushes. In one sector where the Germans launched an attack, a Soviet sniper, taking up a position on an overhanging cliff, picked off eight Nazis with eight shots.

The Germans detailed a special detachment of 50 automatic riflemen to hunt for him. In a few hours 17 more soldiers had dropped to the sniper's bullets, and the Nazis were forced to give up their efforts. The Soviet unit holding the height threw the enemy back to his initial positions.

—*Soviet Information Bulletin.*

British Remount Depot Trains Pack Horses

In the mountainous parts of Abyssinia and Eritrea, particularly in the campaign leading to the capture of Keren, the Royal Army Service Corps Pack Trains carried ammunition and food where no other means of transport, apart from men on foot, could possibly have gone. Likewise in Tunisia—it has been said that the only fault of the pack transport there was that there was not enough of it. The same tale is being told also of Sicily.

*by Captain E. E. Phillips**

NEAR Melton Mowbray, down in "the Shires," the heart of the English fox-hunting country, there can be found the sole remaining remount depot of the British Army.

Until about six years ago Melton was only one, and not the largest, of a number of remount establishments whose primary function was to furnish troop horses for the cavalry, and chargers for the mounted officers of all arms. Now, of the "old" depots, only Melton is left. Its business today is the provision and training of horses and cobs for pack-carrying in mountainous or trackless countries, and for draught work at stations at home, with a few mounts for officers in mountain artillery and pack units on special field duties.

In the old days, Melton and the other remount centers supplying the British Army were run as semi-civilian concerns, under the general supervision of a Director of Remount Services at the War Office. Now the whole matter is under the control of the Director of Veterinary and Remount Services, at the War Office, and the white metal badge of the Royal Army Veterinary Corps, with the figure of Chiron at its center, is the military emblem most in evidence at Melton.

Out of the town the depot lies at the top of a gentle rise, surrounded by what in England is regarded as an extensive grass farm—though miniature by American standards of space—in pleasant undulating country. The central brick buildings were, long ago, a stud farm in the midst of the Quorn, the Belvoir and the Cottesmore Hunts countries. There are also rows of hutment stables of later construction. Altogether a few hundred horses can be accommodated, in boxes, and there are always many others out on the grass farm.

The Commanding Officer, Lt. Colonel J. J. Plunkett, O.B.E., of the R.A.V.C., travelling over the length and breadth of the British Isles, buys horses at a fixed maximum price, for the War Department. He knows every dealer and every farmer who has horses to sell in England, Wales, Scotland and Northern Ireland. He buys cobs mostly, from Yorkshire and East Anglia and, still, from that most fruitful horse-recruiting ground for the old cavalry, Ireland—but also many cobs from Wales, a few from Scotland, and just a sprinkling of ex-hunters from various parts of the Kingdom.

The horses are bought strictly with an eye to the particular work that they will be required to do, and on purchase must be known to be reasonably quiet to ride or drive. No initial breaking-in of horses is done at Melton in wartime. In these days they are usually wanted for pack work (the right size is between 14 and 15 hands) but because of the vital interests of economy of rubber, motor fuel and oil, and the release of motor drivers for service abroad, there is also an increasing demand for draught animals for short-distance cartage around static Army establishments up and down the country.

At Melton the newly-bought remounts arrive in batches of perhaps twelve to twenty at a time, many of them very "green," poor and nervous, like new boys at a school. They need time to be conditioned, and for the best results should spend several months at the depot before going to their units to begin their real work. This conditioning consists almost exclusively in giving the horses light daily exercise and practice at the work for which they are intended. They are walked and trotted around for so long each day and kept on a good regular routine of feeding and grooming.

Cobs and ponies, already quiet under a rider, are usually quickly trained to carry packs. Near the depot is a little area of grassy mounds and gullies which represents hilly country for this sort of practice. Now and then a beginner, especially if his pack slips and drags a bit, will kick up his heels trying to buck it off, and there is some fun for a few minutes; but normally this training goes on uneventfully enough.

Horses destined for draught work are started with a heavyish log to pull, and a walking driver with a long rein. Then they learn to go in pairs—an experienced horse paired with the learner. They learn to draw one of the old Army general service wagons, on long reins, or an old limbered wagon with a rider riding-and-driving, postillion fashion. They all take their turns in carting around the district loads of forage and other stores connected with the depot.

Finding and keeping a staff, sufficient in number and of the right sort, in the face of the all-round demand for man-power and woman-power, is a major problem at Melton. The subordinate staff are all civilians, though many of the men have had their share of horse soldiering—some in India or Egypt or South Africa as long as 40 years ago. Most of the men are in fact elderly, or downright old, with the long-lined and leathery faces that seem to belong to old horsemen everywhere, for the younger ones have gone into other forms of war service.

Commanding Officer, Lt. Colonel J. J. Plunkett, O.B.E. *(left)* and his Adjutant, Captain Hart, make their morning round.

About half of the staff now are women and girls, who, as the colonel warmly acknowledges, have produced a very fine war effort. "Believe me," he says, "the winter here is hard for them." Each one does the same sort of work as a man in the depot. The girls, like the men, are taken on as either riders or stable hands, and usually they stick to the side of the work in which they start. Most of the riders now are girls, some of them quite young. They wear workmanlike, well-used riding kit, including either jodphur trousers or breeches and puttees, and velvet hunting caps. Those about the stables favor gay-colored bands or handkerchiefs as headwear. Most of the girls sport the badge of the R.A.V.C., backed with a crimson cloth patch embroidered "Remount Depot."

There is about Melton a quiet air of friendly discipline between all officers and subordinates which makes for smooth and efficient working. In fact, the remount depot is another sphere of the British war effort in which women, and some old men, are doing a great job!

*P. R. Service, Northern Command, British Home Forces

Riders in Three Months Can Be Done

*by Lieutenant James Vaughan, Cavalry**

THE life of Riley! The Cavalry School's Department of Horsemanship preserves that tradition. In deadly seriousness it carries on with the spirit that made the legend.

In the old days, up to and including the year 1940, the average student who came to the Cavalry School was already a good rider. Then, too, he knew more than a little about taking care of his animal in garrison and in the field. The course made horsemen and horsemasters of good riders.

While continuing with the responsibility of the Basic and Advanced Officers' Courses, the Department of Horsemanship accepted the challenge of officer candidate instruction. The directive which established the officer candidate school course was just that—a challenge. What previously had been taught in nine months now had to be taught in a third of that time. It called for new viewpoints and techniques of instructing. It demanded a new objective.

With requirements in tactics, weapons, communications, and administration to be met, all departments of the school had to concentrate subject matter and intensify instruction. The Department of Horsemanship no longer could hold by its previous standards of perfection. Its goal no longer could be accomplished horsemen capable of top performances in jumping, polo, and dressage events. Its mission was clear.

The product of this instruction had to be new officers for horse cavalry units, who could set the example and conduct road and cross-country marches so as to preserve the condition of both men and horses. Further, young officers with limited previous experience had to be prepared to teach new soldiers the fundamentals of horsemanship and horsemastership.

The first few officer candidate classes to train at the Cavalry School were composed for the most part of picked men from horse regiments. Nearly all of the candidates had had several years of service. Quite a few were graduates of the Cavalry School's noncommissioned officers' course. Experience was a common characteristic. With these classes, the Horsemanship Department took advantage of the opportunity to try out new methods and techniques of instruction. Schedule sequences were changed, and the effects on the progress and efficiency of the average student carefully noted and evaluated. Each horse was studied to determine his suitability as a class mount.

As time went on, the experienced cavalry soldier became the exception among candidates for commissions. There was more enthusiasm than experience in these classes. Here and there among the students was a man who had ridden, owned, and shown horses previous to his induction. To even a man of this background, the military seat and the army horse were revelations.

Since learning is the process of acquiring experience, the Horsemanship Department felt keenly its responsibility for giving each individual student the maximum of experience in the limited time allotted. It was concluded that horsemanship, as it was to be taught, briefed down to four factors: *confidence, seat, hands,* and *experience*. Each instructor was directed to instill his students with the first, teach them the second and third, and advise them on the fourth. In the following paragraphs the six essentials of the Cavalry School method are described.

First: Care is taken to assign mounts with temperaments and manners appropriate to students' temperaments, capabilities, and previous riding experience. Difficult horses, or those unsuitable to individual students, delay instruction and retard the development of confidence in the student rider. A tractable, even-tempered horse teaches the student almost as much as the instructor himself.

Second: Many hours in the riding hall and sand ring are devoted to work at the walk and trot. The rate of improvement determines the extent of this phase of instruction. The hands and seat are given special attention. The progress of each student is noted carefully.

Third: Constant supervision by the instructor in charge of the class is a department doctrine. Assistant instructors see to it that the most minor faults in a student's body position, legs, and hands are corrected. Repetition of constructive criticism impresses the student with the importance of an erect but supple spine and of a seat firm but without tension. Experience has shown that it is easier to teach the military seat to men of limited or no riding experience than to those who have developed incorrect practices in their civilian riding. The completely inexperienced student normally heeds all instructions, and unless he is decidedly inapt, progresses rapidly because he entertains no preconceived ideas of his own capabilities.

Fourth: Work without stirrups at gaits other than walk comes only after the instructor has assured himself that his students have that "in the saddle" feel. The average individual, not being allowed to use his stirrups, "tenses up" the first few times his horse moves out at the trot. If he falls off, the next time that he is required to take up the trot without stirrups, he stiffens and becomes insecure in the saddle. A kind of *rigor mortis* sets in. The man's confidence must not be shaken by too premature work without stirrups. Real balance must be acquired gradually.

Fifth: Suppling exercises are given regularly. They are great builders of balance and confidence. Instructors are cautioned not to employ them excessively. The fundamental suppling exercises are best given during periods of work at the slow gaits without stirrups.

Sixth: Students learn and are required to perfect riding hall movements. No equitation exercise of comparable value has been devised to teach men how to handle and ride their horses. They produce alertness, quicken and make more precise responses and the use of aids. Progressively, the students are required to perform riding hall movements at all gaits. The riding hall and its adjoining sand ring are the classrooms of horsemanship.

The ability to ride at controlled gaits outside of the hall and ring is the test of preliminary instruction.

Fort Riley is ideal for mounted work. Terrain of all types is available. The banks of the Republican River offer sand comparable to the desert's deep, difficult footing. For the cross-country gallop there are rolling plains. Remember Morris Hill, Machine Gun Ridge, and those far stretches over which the drag hunts were laid? The rimrock and stone quarries make for treacherous footing. So do the rock-strewn canyons, like Jug and Wildcat, with their deep swamp grasses. The ruggedness of the reservation provides many good slides which try the man-horse team.

At almost any time the instructor, who has reconnoitered his training areas well, can lead his class to mud of practically any depth and consistency. Work over this varied terrain gives a student confidence in himself and in his horse. He doesn't get it all at once. The first few times out, he rides over easy rolling country at the walk and trot, with the instructor emphasizing control of the horse and choice of footing. As the class progresses, rougher country is taken in stride at the trot and gallop.

Every opportunity is taken for bringing the student and horse together and welding them into a true man-horse team. Almost all of the field problems conducted by the Department of Tactics require students to be mounted.

Concurrent with equitation, other equally important and related subjects are included under horsemastership. Students receive thorough classroom and laboratory instruction in care of the animals in the field—conditioning, horseshoeing, marching, packing, and transporting animals by truck, rail, and ship.

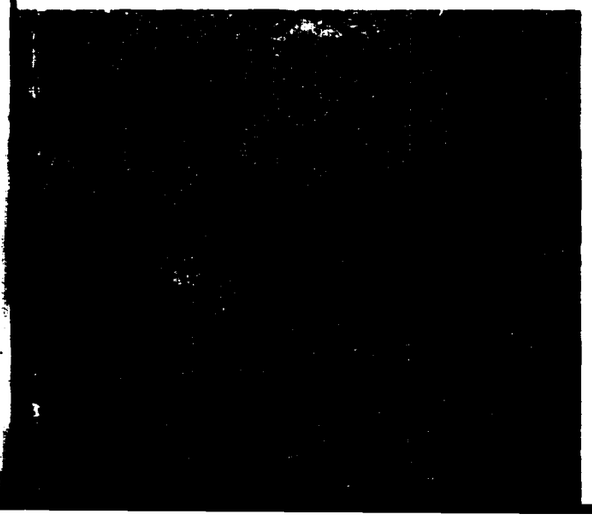
During the last three weeks of instruction, the student is provided a generous amount of mounted work over obstacles. Jumping develops the rider's control of his horse. Mounts are selected carefully for these periods. Instructors make sure that all horses assigned are willing and able jumpers. At first, obstacles taken are just high enough to give the student a feeling of flight and are channeled in a chute to prevent runouts. The experience of going through the chute without reins and stirrups teaches the student that to remain mounted he must use his balance and his legs alone. He must not seek to support himself with his hands.

The course for officer candidates offered by the Department of Horsemanship ends with a Training Exhibition over a course of varied jumps not exceeding 3′ 6″. Some of the best performances have been turned in by candidates who learned to ride after they arrived at the school.

The horsemanship and horsemastership instruction that an officer candidate receives at the Cavalry School is comprehensive, intensive, fundamental. It produces riders who can advance to higher degrees of skill in horsemanship by adhering to the only immutable rule of this art—the daily application of the seat of the breeches to the seat of the saddle.

Individual instruction is stressed, and the progress of each student is carefully noted.

The completely inexperienced student usually progresses rapidly because he entertains no preconceived ideas of his own capabilities.



*Department of Horsemanship, The Cavalry School.

Remington's Cavalryman

Colonel C. A. Sevane, U.S.A., Retired

THE subject for Frederic Remington's masterpiece was a very live and active cavalryman—Corporal, later Sergeant, Jack Lannon of Troop G, 3d Cavalry, commanded at the time by Captain Francis G. Hardie. The sketch was made in the early summer—about June—of 1898, during the period of the army concentration at Tampa, Florida, just prior to the sailing of the expeditionary forces under General Shafter for Santiago, Cuba.

At that particular time, several cavalry regiments, including the 3d, were in Tampa, engaged in various maneuvers under the command of General Joseph Wheeler, the ex-Confederate cavalry general who had been appointed by President McKinley to command the cavalry in the U. S. forces destined for operations in Cuba.

During those maneuvers, the troops would be deployed in long lines, with extended intervals, on assumed tactical positions. Carbines were generally advanced and carried resting on the forearm, as shown in Remington's picture. In these positions there would be halts for considerable periods of time, while General Wheeler, accompanied by his staff, would ride along to make observations and then issue further instructions. It is probable that Mr. Remington may have been a member of General Wheeler's party on one of these exercises, which extended for close to a month in Tampa, and that while so riding, the characteristic pose of Lannon came to Remington's attention.

It is well known that artists usually idealize their subjects, but Remington's portrayal of Lannon is almost a replica of his appearance in actual life. I knew Lannon personally for about two years. During this time I was a sergeant in Troop C, 3d Cavalry, which I later commanded as a first lieutenant. Troops C and G occupied adjoining barracks in garrison and were together in Tampa. I knew Lannon in both places and his likeness could not be mistaken for any one else. His person was most distinct. He was a man who would attract attention anywhere. About 6 feet 2 inches tall, he was lithe, agile and wore a sweeping white mustache. At the time that the picture was made, Lannon had already completed more than 30 years of enlisted service and was eligible for retirement. This would indicate that his first enlistment could not have been later than 1868. All except three years of his service was spent in the cavalry and most of it in the west.

The uniform and equipment depicted by Remington were equally as accurate as the characterization of Lannon. The campaign hat shown in the picture was at the time the standard article of issue for field service. The army had not yet adopted khaki uniforms, and participants in the Cuban Campaign wore blue shirts and blue trousers. Riding breeches had not come into vogue but made their appearance shortly after the Cuban Campaign. It was customary for men and officers alike to use trousers that had been cut off above the ankles and a slit made for a few inches on the side, with buttons attached. In the field, men wore leggings, and officers wore black boots. The McClellan saddle with wooden stirrup was standard. The overcoat was rolled in front, while the bedding was rolled and strapped to the cantle.

Lannon is shown wearing a kerchief blowing in the wind. This was possibly a red handkerchief, as considerable latitude was allowed in such matters when men were serving in the field. Lannon could not have worn this article in garrison, but there seemed to be no objection under conditions as stated. At that time neckties were unknown for field wear, and many men often had the top button of their shirts open. The necktie for field wear commenced to make its slow appearance in the days of protacted tours on the Mexican border. At first a few, then many, troop commanders serving at detached points encouraged the informal wear of a black four in hand tie until gradually this article of adornment was incorporated in the uniform regulations.

The belt across Lannon's shoulders was the sling belt, which was standard equipment at the time. It terminated in a snap buckle hooked into a movable ring adjusted to the middle of the stock of the carbine. When a man was dismounting in the field he would draw and snap the carbine at the end of the sling belt and, throwing the carbine over the right shoulder, he would dismount, then return the carbine to the hands, unsnap the buckle, and have free use of the weapon.

The carbine in use at the time was the Springfield caliber .30, which had been issued to the cavalry not more than one year before to replace the old .45 caliber carbine. The infantry had had the .30 caliber Springfield rifle for a longer period, but the new carbine for cavalry came later.

Carrying the new .30 caliber carbine on the horse was a problem that took several years to solve. The old carbine boot, in which the .45 caliber carbine was carried, was adjusted to the cantle on the saddle. Inclined forwards, it gave a very comfortable and easy position for the weapon. But the new carbine could not be carried there because of the bolt which projected against the side of the horse. A new carbine boot had been provided and adjusted in a forward position attached to the pommel. In most regiments this boot was carried on the right side, and the saber was left in its old position on the left side, as shown in the Remington picture. The new boot elevated the position of the carbine so that the bolt did not strike against the horse's flesh. In some regiments, however, where the bolt problem was seen in a different light, the carbine was transferred to the left, and the saber to the right. Finally, this arrangement became the standard practice.

In the field, the halter was worn under the bridle, and the halter strap was tied to the left pommel ring. The old style shoemaker curb bit and the buckskin leather gauntlet with cuffs were standard items of issue. Another article of equipment was the lariat and picket pin, carried by all cavalrymen. These were relics of Indian Campaign days in which the practice of picketing horses at night in lieu of long forage was customary.

The Cuban Campaign was very short, but the Philippine insurrection, which came quickly afterwards, created many changes in equipment and uniform. Step by step, the army threw off the old and adjusted itself to the new.

I did not see Lannon pose for Remington. If I had, no one would have considered that important at the time, nor would it have established an infallible link between what I might have seen and what exists today. The important point is that in this sketch, those who knew Lannon recognize him beyond any doubt. It must be appreciated that, after all, Remington did not go to Tampa to make a rendering of Lannon. He was an artist, and like the newspaper men, went to Tampa to search out material covering the war. Undoubtedly, he made many sketches. That was his business.

As so often happens with the work of artists, time seems necessary for full appreciation of their work. Today, all can see that Remington in this particular sketch left a memento to the cavalry that will increase in value as time removes it in distance. In this particular case, it was not until some four years later that Remington's etching first appeared on the cover of THE CAVALRY JOURNAL, at which time everyone in the 3d Cavalry was able to recall that it was Lannon's likeness that was represented. Lannon died while with the occupation forces in Cuba but I recall talking at that time with the Adjutant, Captain (later Lt. Colonel) Henry L. Ripley who, prior to the first appearance of the picture on THE CAVALRY JOURNAL cover, remembered Lannon posing for Remington. Some years before these events Remington, in gathering material for his book, "The West from a Car Window," had visited with Hardie. It is possible that in renewing the acquaintance in Tampa in 1898, Captain Hardie may have directed Remington's attention to this particular trooper as a subject for a sketch.

Since I remained in the 3d Cavalry until 1914, all this information is impressed very clearly on my mind.

As depicted by Remington, Sergeant Lannon was an outstanding product of his day—a figure worthy to be symbolic of the cavalry in any day.

The Cavalry Journal Cover

For almost forty years—from January, 1903, until August, 1942—Remington's etching of "The Cavalryman" was printed on the front cover of each issue of The Cavalry Journal.

At the time that Frederic Remington made the etching, it was a realistic portrayal of a U. S. cavalryman—his uniform, his manner, his equipment, his mount. It represented, not only the spirit, but the outward appearance of the cavalry, which had ridden in the vanguard and protected the flanks of a great nation moving westward across the plains and mountains amid Indians and wilderness.

Times have changed, and so has the cavalryman's uniform, his equipment, and sometimes his mount. The cover of The Cavalry Journal, in keeping with the trend of the day, now carries photographs of modern battle, new equipment and current heroes. But Remington's cavalryman still remains a symbol of the spirit of the cavalry. As such, he has been placed in a frame, on the back cover, where, it is hoped, he will remain indefinitely as representative of the courage, the stamina, the loyalty, the strength that was and is fundamental in the cavalry spirit.

Book Reviews

HERE IS YOUR WAR. By Ernie Pyle. Henry Holt & Company. $3.00.

Ernie Pyle needs no introduction to millions of newspaper readers who turn to his column before doing more than scan the headlines. Those who do require an introduction should waste no time in reading this book.

Columns could be written to review *Here Is Your War,* but they would be inadequate beside the following quotation from the book itself—its own best commentary:

"I haven't written anything about the Big Picture, because I don't know anything about it. I only know what we see from our worm's-eye view, and our segment of this picture consists only of tired and dirty soldiers who are alive and don't want to die; of long darkened convoys in the middle of the night; of shocked, silent men wandering back down the hill from battle; of chow lines and atabrine tablets and foxholes and burning tanks and Arabs holding up eggs and the rustle of high-flown shells; of jeeps and petrol dumps and smelly bedding-rolls and A rations and cactus patches and blown bridges and dead mules and hospital tents and shirt collars greasy-black from months of wearing; and of laughter, too, and anger and wine and lovely flowers, and constant cussing. All these it is composed of; and of graves and graves and graves."

AMERICAN GUERRILLA. By Captain Douglas M. Smith and Cecil Carnes. Bobbs Merrill Co. $3.00.

Underlying this very readable and extremely interesting book is the important story of a new type of warfare, or, more exactly, a newly organized technique of a very old method of warfare.

An American by birth and heritage, Captain Smith served in the French Foreign Legion as a second lieutenant in the first World War. Before he re-joined the Legion in 1941, he made a thorough study of what he believed would be an important phase of this war—trained guerrilla fighting.

In *American Guerrilla,* Captain Smith tells of his belief in the efficacy of trained men working behind enemy lines. When his own desire to organize such a group was frustrated, he joined David Stirling's "Bunch" in Middle East, culled from French and English volunteers. The story of what these men did makes exciting reading. But more than exciting are the practical lessons learned by the author during his participation in this type of warfare.

Captain Smith was sent to America to survey and collect equipment suitable for use by guerrilla fighters. It was while on this trip that he gave his story to Cecil Carnes, who has done a splendid job of presenting a vivid picture of a hitherto unrecorded phase of modern military activity.

CAVALRY JOURNAL readers will recall that the Bengazi raid was written up by Captain Smith for the May-June, 1943, issue.

MAKERS OF MODERN STRATEGY. Edited by Edward Mead Earle. Princeton University Press. $3.75.

This book is an outgrowth of the famous seminar on military affairs which began several years before the outbreak of the war, and was conducted at the Institute for Advanced Study by Mr. Earle.

The important figures influencing military strategy, from Machiavelli to Hitler, are ably analyzed by authorities on the men and their eras. The authors of the various chapters include Crane Brinton, professor of history, Harvard; Gordon A. Craig, assistant professor of history, Princeton University; Hajo Holborn, professor of history Yale University, Hans Rothfels, author of *Carl von Clausewitz, Politik und Krieg,* visiting professor of history, Brown University, and others of equal note, both American and European.

The material congregated in this book could be obtained only by the careful and thorough reading of a voluminous library—an act requiring more time than any active man has today. It is here carefully selected and presented by men eminently equipped to sift the material and preserve that which is essential.

This will probably prove to be one of the most valuable books compiled for students of military strategy.

NAPOLEON AND MODERN WAR. By Colonel Conrad H. Lanza. Military Service Publishing Co. $1.00.

The Military Service Publishing Company is to be highly complimented on the excellent series of small, inexpensive, and splendidly prepared books now being issued as *Military Classics.*

The latest addition to this series is an annotated copy of Napoleon's Maxims. Colonel Lanza has prepared a book that all military men familiar with the earlier books in the group will want to add to their collection. He has wisely not neglected to give a chronology and ample index to enhance the value of the book.

THE FRAMEWORK OF BATTLE. By Lt. Colonel John G. Burr. J. B. Lippincott & Co. $3.00.

Colonel Burr has written this book as a guide for laymen. He explains the technique of warfare, how campaigns are planned, why certain strategy is followed, and what goes on in the minds of officers in command of armies.

In view of the number of treatises written in recent months by amateur and armchair strategists criticizing the planning and conduct of the war, it is to be hoped that this book will be widely read. It should enable civilians to grasp more intelligently the mechanics of warfare.

THE SHARPS RIFLE. By Winston O. Smith. William Morrow and Company. $3.00.

There is increasing interest on the part of marksmen, historians, and collectors, in the firearms of the Nineteenth Century, particularly in the first successful breech-loading rifle invented in 1848 by Christian Sharps.

Going to original sources and discovering much material hitherto unpublished, the author presents the complete story of the Sharps rifle. He gives its background, traces its development through the various manufacturers responsible for it, and discusses its use as a military weapon.

Of interest to collectors today are charts on the identification of models and considerable material on care, operation, maintenance, manufacturers of cartridges, and table of loads.

The sketches are excellent and the index and chronology as well as the appendix provide important references.

THE DUKE. By Richard Aldington. The Viking Press. $3.75.

The fact that by defeating Napoleon at Waterloo, the Duke of Wellington closed the career of the greatest military genius of his era would have been enough in itself to attract biographers. Added to this was an ability, displayed throughout his life, to make the best of any military situation—an attribute which commands respect and admiration from any generation of soldiers. This ability was the result of his misfortunes as well as his personal qualities.

Constantly held back in rank, Wellington made a careful study of the needs of each command that he held. The knowledge thus acquired stood him in good stead, when in later years, as a general, he knew each detail of his army and was able to do what many of his generation could not do, see the picture in detail down to its finest point, and utilize his men accordingly.

Unlike most novelists turned biographers, Mr. Aldington has not allowed his imagination and command of English to run away with facts. He has used them to enhance a life, interesting in itself, and has produced a fascinating and delightful biography of the man who started his career with little hope of advancement, and ended it as one of the most essential figures in the life of the British Empire.

MOTHER AMERICA. By Colonel Carlos P. Romulo. Doubleday, Doran & Co. $2.50.

Colonel Romulo, winner of the Pulitzer Prize for newspaper articles on the Orient, and author of *I Saw the Fall of the Philippines,* has written another arresting book. Men through the ages have said in many ways what Burns stated most simply, "Wad God some power the giftie gie us, to see oursel's as ithers see us!" Colonel Romulo offers the white race the unpleasant privilege of viewing itself in the mirror of Oriental opinion. It is not a healthy image reflected there.

The author gives a brief history of the Philippines and the milestones in their fight for independence. He holds American colonial policy up as a model for all nations with possessions in the east, and points out that of all colonials in the Pacific area, only the Filipinos fought as a people united beside their rulers.

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THE BATTLE IS THE PAY-OFF. By Captain Ralph Ingersoll. Harcourt, Brace & Co. $2.00.

Having enlisted, taken his basic training and gone to O.C.S., Captain Ingersoll writes as a soldier, and not as an observer, of his own reactions to his baptism by fire.

In speaking of the American public, the author states, "I have found out two things about you since I got back from Africa. One is that the gaps in your knowledge of the Army are big, obvious, and unnecessary; and, two, that you really want to know." It is to fill in these gaps, and satisfy this desire to know that he has written the story of El Guettar as he saw it, from the time that orders were issued to his company of combat engineers. He tells what they did, and how they did it, and how they felt under fire. There are few little personal anecdotes, but there is much forceful writing on the subject of the army and the way it works.

Although this book is written primarily for the civilian, in order that he may understand some of the whys and wherefore of the army, soldiers will also find it both interesting and important.

NEW ZEALAND. By Walter Nash. Duell, Sloan & Pearce, Inc. $3.50.

Americans have always been strongly attracted toward New Zealand and Australia. A number of books have been written to familiarize us with the latter, but correspondingly few have been published on the other island country.

Mr. Nash rounded out his mission as New Zealand's minister to this country by writing this book. Comprising a complete picture of New Zealand's resources, men, history and life, this book makes a valuable contribution to our national knowledge.

BRIDGE TO VICTORY. By Howard Handleman. Random House. $2.00.

Mr. Handleman has written in thoroughly good newspaper style a graphic description of fighting in the Aleutians. He has successfully captured the atmosphere of these bases—cold, foggy and miserable.

His greatest weakness is his desire to quote the doughboy's point of view. Had he given his own reactions more fully the reader would indirectly have got as full a picture with less choppiness.

THIS IS INDIA. By Peter Muir. Doubleday, Doran & Co. $2.50.

Although this book contains much material based on fact, it falls far short of being among the first run of books on India. Its value as an "unbiased" book can best be judged by the fact that the first four chapters are sarcastically condemnatory of the Indian people.

WORLD WAR II. By Major Frank Monaghan. J. G. Ferguson and Associates. DeLuxe Edition, $7.50. Trade Edition, $5.00.

Watch the next issue for review of this fascinating history of World War II.

WEATHER AROUND THE WORLD. By Ivan Ray Tannehill. Princeton University Press. $2.50.

Weather Around the World, as its name implies, describes weather conditions on land and sea, in all quarters of the globe. Although intended for laymen, professionals will find this book of value if only for the descriptions and charts of weather data in 185 key places in the world.

The photographs not only well illustrate the text, but are excellent examples of camera art.

ANIMAL REVEILLE. By Richard Demperwolfe. Doubleday, Doran & Co. $3.00.

Stories of animals have always had a certain appeal, and Mr. Demperwolfe has filled his book with many interesting anecdotes. Many of them, however, are amusing incidents rather than examples of the practical use of animals in the war.

There are passages of excellent description, such as the account of General Dovator's use of cavalry south of Moscow. Even these portions of the book are weakened by statements of questionable veracity, such as: "Taking a tip from Russia and Germany, America concentrated on cavalry, buying up the best animals the country had to offer."

YOUR BROTHER'S BLOOD CRIES OUT. By William Gropper. Portfolio. The ACA Galleries. $5.00.

Gropper has again turned his talents to war and produced an excellent series of drawings, which those interested in propaganda art will find equally as valuable as the series by the same artist on the Spanish Civil War.

THE ARMY PLAY BY PLAY. By Members of the Armed Forces. Random House. $2.00.

When John Golden offered prizes for the best one-act plays by members of the armed forces, 115 presentable scripts were submitted. This book contains the five plays adjudged the best. They were a success on Broadway, and are now on tour to raise funds for the Soldier's and Sailor's club.

With one possible exception, they are good theater.

BEST CARTOONS OF THE YEAR 1943. Edited by Lawrence Lariar. Crown Publishing Co. $2.00.

Just as the name implies, this book brings to cartoon fans a collection of the cleverest examples of the year. Cartoons always provide an amusing commentary on the life of an era, and the past year has offered ample material with which to work.

TEACHERS MANUAL. By Lt. Commander Nicholas E. Moseley. Cornell Maritime Press. $2.00.

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