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THE CAVALRY JOURNAL

Improvised U. S. Cavalry passes through an Italian town on way to front.

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he Jeep-Lin in Italy

"A Motorized Vehicle is no better than its terrain . . . a horse is."

Leading a pack horse with mounted machine gun, this cavalry reconnaissance trooper with the 3d Infantry Division rides his Italian mount out of a stream crossing.

Above: A lone trooper ascends a steep hill "beyond the jeep-line." His Italian horse is accustomed to this terrain.

Left: A machine gun squad of a mounted reconnaissance unit crosses a stream near the 3d Infantry Division front in the Appenines in Italy. The basic ammunition load has recently been increased to 10,000 rounds in view of the large amount of front-line fighting in which these troops are engaged.

ALONG the mountainous Fifth Army front in Italy, where men deal with realities, not theory, mounted reconnaissance troops of the 3d Infantry Division, under the direction of cavalrymen, have made a dramatic and valuable contribution to the drive on Rome.

Since Salerno this improvised cavalry, ranging day and night through the wild Appenines in front of the infantry, has maintained liaison, patrolled, fought, gotten information, taken prisoners. More than 150 horses have been engaged in these operations. As many soldiers have been given the *rudiments* of cavalry training. In addition, several hundred mules are being used daily to pack food and ammunition high up into the mountains. One complete organization of pack artillery fights regularly on the division front.

More horses and cavalrymen are joining other units of the Fifth Army. The explanation is simple: *A motorized vehicle is no better than its terrain; a horse is.*

The Fifth Army is pushing over some of the toughest fighting country of the war. For months, line troops have been fighting thousands of feet up steep, forested slopes, sometimes in snow. Weeks of continual rains have flooded all forward areas, turned mountain streams into muddy torrents. Retreating Germans have systematically mined roads, blown bridges.

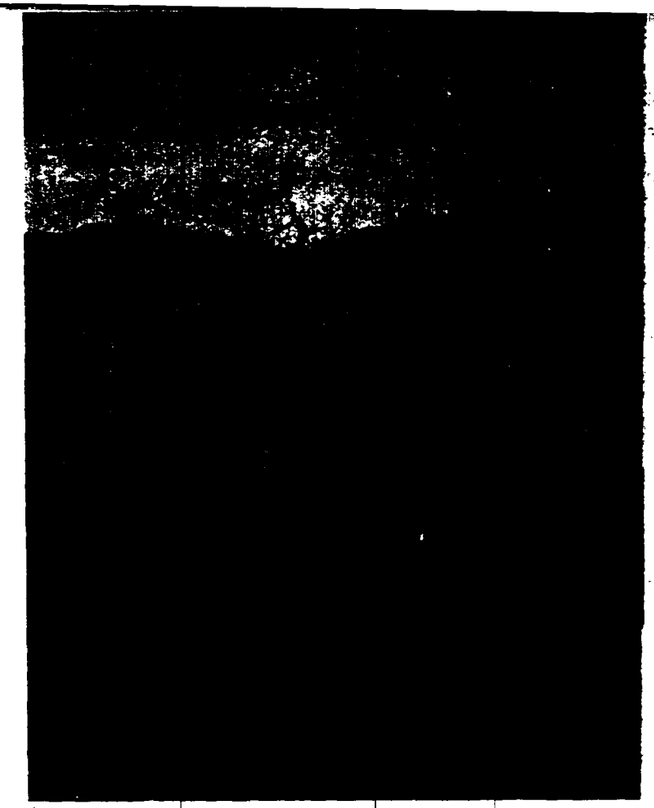
Recently, bombers were used to drop cans of food to outlying units. These units were not cut off or lost. They constituted an active section of the Fifth Army front in Italy. This is cavalry country.

Animals were used for the first time in European operations in Tunisia, where donkey pack trains were hastily assembled to carry food to troops isolated in rocky hills. In Sicily, Seventh Army troops fought in mountainous regions, far above the "jeep line." To solve its supply problem, one unit organized a pack outfit of four platoons with 168 mules and burros. Immediately, signal outfits borrowed so many animals out of the service trains to pack wire and radios up mountain trails, that a fifth communications platoon of pack mules was added.

At the conclusion of the Sicilian campaign, operations officers of the 3d Infantry Division looked at maps of the Appenines and reasoned: "We'll have to have animals for supplies, why not mounted reconnaissance over the same terrain?"

by Technical Sergeant Robert Geake

Sergeant-reporter, Fifth Army, Italy.



A mortar squad of the 3d Infantry Division's mounted reconnaissance troop crosses a stream near the Fifth Army front in Italy. The rear horse is shown with gun pack and 24 rounds of 60mm ammunition. The ammunition pack horse (fourth from front) is carrying 36 rounds. Mortar can be unloaded, set down and fired in 20 seconds.

Nothing could have been more logical to the 3d Division's commanding general, a former cavalry officer. He provided for the immediate organization of a mounted reconnaissance troop and pack train. To head both activities, the general sent to Algiers for Captain Raymond F. Baker, a cavalryman of 20 years experience who had served with the 3d, 5th and 102d Cavalry Regiments.

Captain Baker's first job was to get some cavalry to organize. He issued a call for both officer and enlisted volunteers and guaranteed that "everyone would earn his spurs in a shooting gallery." From three infantry regiments and artillery, engineer, signal and medical units came four times as many volunteers as were needed. Most of them were homesick farmers and ranchmen. Captain Baker admits that in the eliminations he was inclined to favor men who had ridden a horse!

The animals were assembled on a strictly catch-as-catch-can basis. The majority were Italian army horses that were requisitioned. Many privately owned animals were purchased outright by division headquarters or through AMG.

In similar fashion, the organization assembled its equipment. All of it was Italian except a sufficient

Above: Italian horses of the mounted reconnaissance troop are shown at the picket line in a Fifth Army bivouac area near the front lines. Straw is trucked in from surrounding farms to protect the horses' feet, since almost daily rains keep corrals knee-deep in mud.

Left: A member of the mounted reconnaissance troop makes a last minute adjustment on a machine gun pack as his unit prepares to go on a scouting mission. In the rugged terrain of the Appenine Mountains, horses are a recognized necessity.

number of Phillips Cargo Packs, which were requisitioned through Army headquarters and flown from North Africa. Weapons and ammunition carriers for both light machine guns and mortars were specially designed by the reconnaissance troops and built into the Phillips packs.

Italian saddles—"a light pack saddle with a seat"—were used throughout. They have proved generally inferior to American saddles in design and quality. The more experienced horsemen complain that they sit too high on the animal and that having the cinch in the middle of the saddle is a big disadvantage. Italian pack saddles are smaller and lighter than the Phillips pack and specially designed for Italian mules, which are "smaller, long-barrelled critters" in comparison with the Missouri mule. Consequently, to obtain a greater pay load, these pack saddles have been used on mules for both the service pack train, and an artillery pack unit which was added later.

The men were organized into reconnaissance and heavy weapons platoons, armed with carbines and given as much basic cavalry and reconnaissance instruction as infantrymen could take in one month. Fortunately for the "greenhorns," the horses proved easy to handle. Most of them had worked in mountains all their lives in the Italian army and were so trail-bound that it was difficult to get them out of line for drill formations. The new men picked up reining and riding tricks quickly—often from the horses!

In September, the Fifth Army's mounted troops set out for Italy. In the hold of one LST were 355 head of animals.

They reached the Salerno beachhead one afternoon and by midnight had unloaded. They were transported inland by a shuttle of 80 trucks. Pack artillery went into action at dawn. The following morning, reconnaissance platoons started out on their first mission over a road that had not been cleared of mines. The officers and men figure the mines are still on it.

(EDITOR'S NOTE: One cavalry colonel reported from Sicily that *not a single horse or mule in his unit was lost from mines throughout the Sicilian campaign.* "A horse or mule," he said, "will not step on a mine.")

Since the organization was essentially an experiment, it was first of all flexible. After a continuous month on trail, through and beyond "no man's land," the outfit was completely reorganized in the light of invaluable lessons learned the hard way.

It had been found that individual groups, such as platoons, were top-heavy. Three men had been doing work which two men could do much better. The unit was consequently split into three separate organizations all under one squadron command and directly under division control. These organizations were the pack howitzer unit, the mule pack train, and the provisional reconnaissance troop.

Formed from all artillery battalions in the 3d Division, the howitzer unit includes standard 75 artillery sections and a communications section. As the Fifth Army moved up the Appenine ranges, an increasing emphasis was placed on mountain artillery. It was cavalry country, and the Fifth "needed guns where only mules could put 'em."

From a "mule head," established at the end of the jeep trails, the mule pack train continues to service various forward units. Platoons of 26 mules, with drivers and packers, are assigned to units down to battalions as needed. Pack mules have on occasion been attached to the horse reconnaissance for special missions.

The reconnaissance unit was streamlined into smaller, more efficient platoons. Since the men were doing as much frontline fighting as reconnaissance, they were re-armed with '03's. Basic ammunition loads, always the biggest problem of the outfit, were increased to 10,000 rounds per machine gun, 100 rounds per mortar. A "horse pool" was set up to rest the animals on a rotation system and to take care of the sick, lame, etc.

The officers and men of this mounted reconnaissance troop in Italy never had a good look at friendly territory from the time they landed until they pulled back for a rest late in November. Week after week, they were out on trail in the mountains through rain and mud and bitter weather—infiltrating into German lines, identifying units, steering the infantry. During one period, they ate nothing but C and U rations for an entire month. Liaison patrols of only five or six men were often away from the main unit for 15 hours or longer.

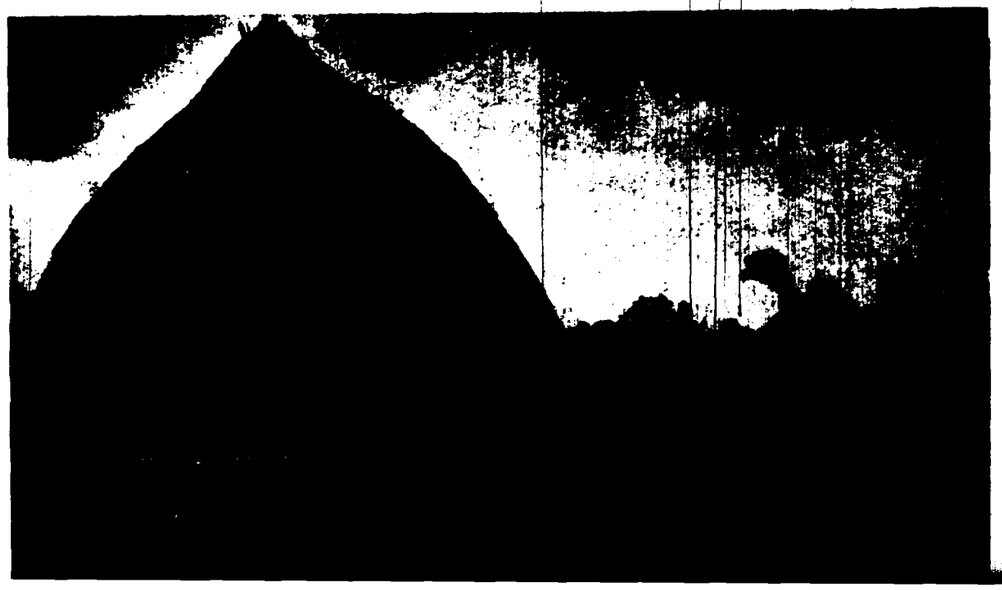
On one occasion, 76 mounted troopers on a hill were attacked by over 300 Germans. The infantrymen, turned horsemen, picketed their mounts and went back into line action. Six hours later they forced the withdrawal of the superior forces which left behind 13 prisoners, three wounded and many dead. From under cover, 19 dead were counted on one section of the hill.

Later, 80 men of the reconnaissance troop attacked a hill where German troops were dug in with machine guns. After a five hour scrap, they killed 11 Nazis and captured the position and one prisoner. Another time, 19 cavalrymen, armed with carbines and one mortar, knocked out two enemy machine gun nests and killed 7 Germans in the process.

If ever a unit was welded together under fire, this improvised cavalry is it. Morale is excellent. And there will be more fire and more welding. Further reorganization will take place as new situations arise. Some day the outfit hopes to have a T/O.

As a flexible experiment in horse cavalry tactics, the Fifth Army's mounted reconnaissance troops have definitely proved that they have a place in today's war.

As one ranking officer summed it up: "We're fighting in cavalry country, and in cavalry country you need cavalry. They'll never change that!"



This GI blacksmith shop behind the Fifth Army front was set up to care for the hundreds of horses and mules being used in the drive on Rome. Mules are used in pack trains to get food and supplies up to front-line troops.

A British cavalry patrol reconnoiters a mountain area in the Appenines.

British Cavalrymen Re-Mount

Back to their old love, members of a now-mechanized British cavalry regiment use horses for reconnaissance in the Italian mountains.

Because of the hilly nature of the surrounding country, wheeled or tracked vehicles find the steep, narrow, twisting lanes impassable. The British officers have borrowed Italian cavalry mounts. Nearly all of the troopers, being formerly cavalrymen, are at home on horseback. November, 1943.

From an advantageous crest, this reconnaissance patrol views an enemy position.

Senior member of the naval party, setting off for a ride through the mountains, uses the only proper leather saddle available for the party's ride.

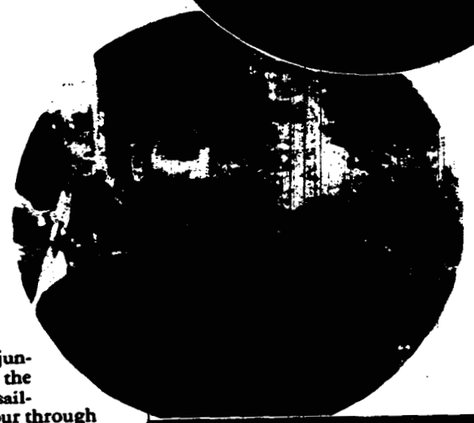
Left: Zaga, a typical Serbian girl of the Partisan Army, has a reputation as a sniper in the mountains.

Below: Two pictures of typical members of the Yugoslav Partisan Army.

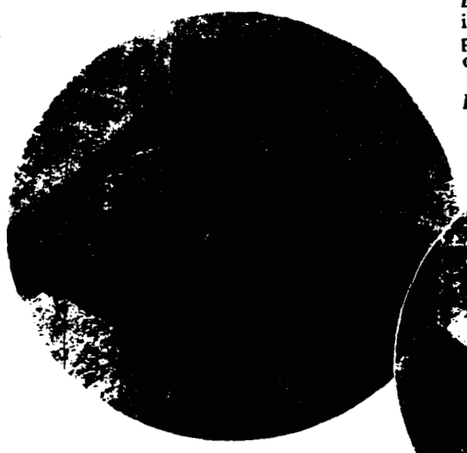
Yugoslav Partisans Fight Hitler

Not long ago, a small party of British sailors spent three days in a Dalmatian port, where they lived as guests of the Yugoslav Partisan Party. The Partisans are in control of nearly all the coastline of Dalmatia. The Germans are powerful only in the larger towns, such as Split, Dubrovnik, and Zara. The naval party were lent horses and taken for a ride through the mountain villages, where they were given a great welcome by the villagers.

Some 25 per cent of the Partisan Army consists of women who act as snipers in the mountains, and perform acts of sabotage. Note that the men pictured are all beyond the normal army age. Yugoslavia's army fell in June, 1941, and most men of army age have since been interned, killed or transported to Germany for slave labor. The determination and character in the faces of those still fighting is self-evident.



Lower right: A junior member of the party of British sailors starts on his tour through the Dalmatian Mountains. **Below:** A partisan salutes with upraised fist.



Zina, famed throughout Croatia for acts of sabotage against the enemy, is an expert grenade thrower.

The Last Days in Tunisia

by Lieutenant Colonel Charles J. Hoy*

IN northern Tunisia, the first nine days of May 1943 presented some very interesting tactical examples of coördinated employment of all arms except horse cavalry. On May 1st, the general situation was as follows:

The American II Corps, composed of three infantry divisions and one armored division with attached units, had completed its march across the lines of communication of the British First Army.

With the infantry divisions shuttling, and the armored division transporting its tanks, this night march of 150 miles was one of the highlights of the entire campaign. The British Traffic Control Section deserves much credit for a job well done. Timing and control were vital. There were only a few roads. Three great columns had had to cross—the supply column of the British First Army running east and west; that of the American II Corps running north; and the reinforcing divisions from the British Eighth Army to the British First Army moving diagonally north to northwest, then north-northeast. The entire movement was made in one week. (See Map 1.)

If the II Corps had had a horse cavalry division, the latter could have made the march with ease. In the 1940 Louisiana maneuvers, the 1st Cavalry Division marched 75 miles in 24 hours and fought several engagements during that period.

Night March

The 81st Reconnaissance Battalion, after leading the breakthrough at El Guettar and making first contact with the British Eighth Army near Gabes, was assembled in the vicinity of Faid Pass. Joining up with the British, the unit marched back through Gafsa to Faid, east through Faid Pass to Kairouan, and then farther east to meet again the Eighth Army at Sousse.

When the 81st was withdrawn from the Kairouan-Sousse area to Faid, preparatory to moving north with the II Corps, it was given a few days in which to do some much needed maintenance work. If replacements arrived in time, the battalion was to take its rightful place in the 1st Armored Division, then being assembled for use as a unit for the first time in the Tunisian Campaign. The contemplated reunion was a great boost to morale. The 1st Armored Division had not been kept together in the past. The tactical situation had not permitted it. But things were to be different now. The 1st Armored Division was to be back intact, and all units were eager to deliver a "Sunday Punch."

During the long night march, the battalion moved just behind Division Headquarters at the head of the armored division. The march was to have been made in two jumps. The first—to the outskirts of Le Kef—was made without incident; but there it was learned from the division commander that, because of a necessary change in traffic control, the battalion would have to move on to Ain-Draham that night.

The moon was up, and the battalion started to roll. With 209 vehicles, it cleared Le Kef in 35 minutes! The British traffic control officer at Le Kef could not believe his figures. He called ahead to Souk el Arba, and the control agency there cleared the battalion in 38 minutes. Camp was made at Ain-Draham before dawn.

Position and Mission

Three days later, the battalion moved up to the Mouse Trap to fill the gap between the 1st Infantry Division on its left and the British 78th Division on its right. As it entered the valley, it came under long-range fire, but continued north for about 4,000 yards before contact was gained, after which it worked to the flanks to establish OP's.

The Mouse Trap is a fertile valley about 5 miles long and 3 miles wide. It is very flat and cut by branches of the Tine Wadi. (See map No. 2, page 11.) The wheat and poppy fields afforded excellent concealment for jeeps. A day later, an armored infantry unit of the 1st Armored Division moved into the hills to the right, between the battalion and the 78th Division.

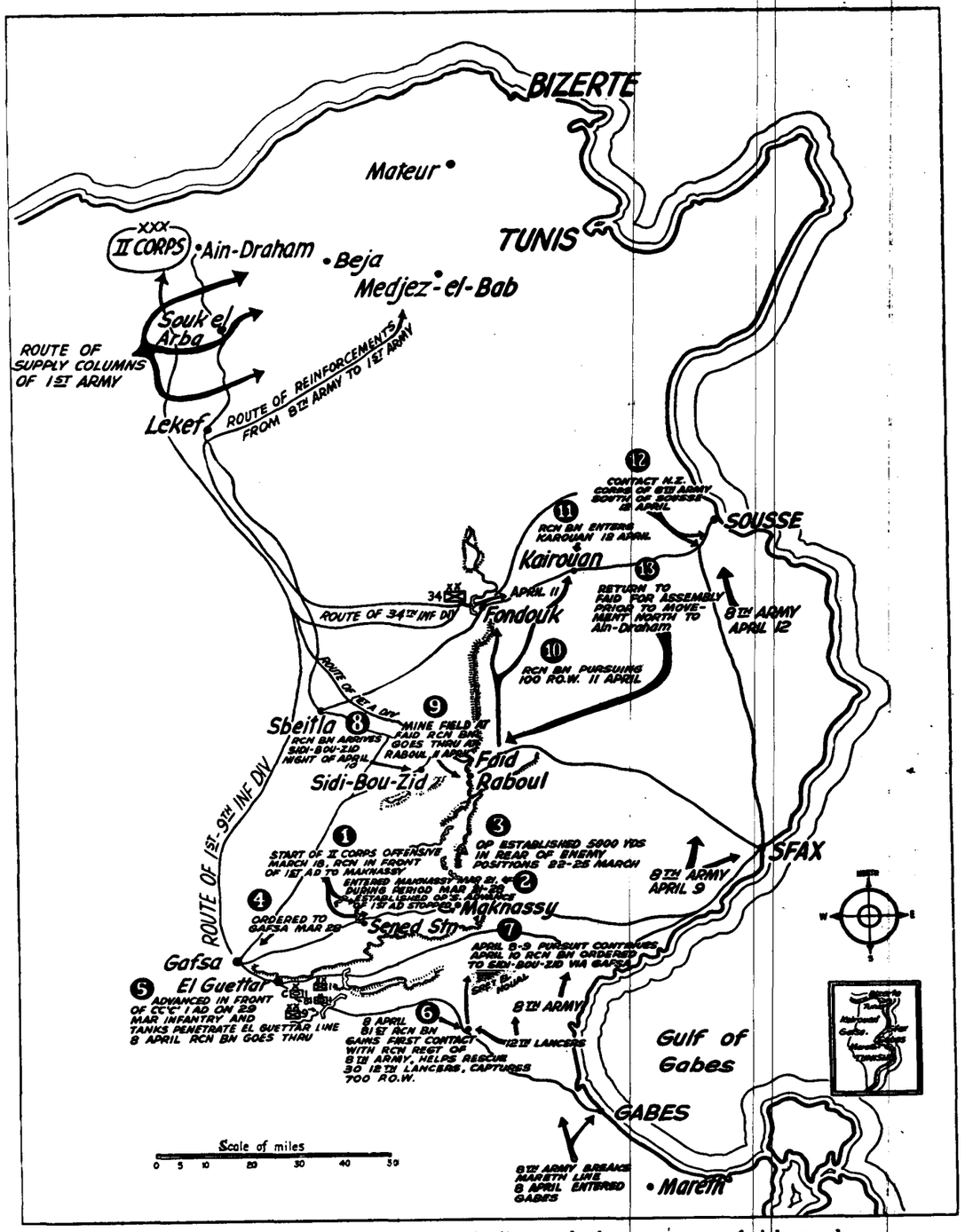
The mission of the 81st was to develop the situation in its particular zone and then to act aggressively. That meant that the reconnaissance battalion was not to assault any position but, at the same time, was to take the initiative away from the enemy. It had to out-patrol the enemy day and night, or it would never be able to maintain its OP's. The OP's had not been gained by stealth. The enemy had seen them move in. The entire corps, however, was on the offensive.

An Amusing Incident

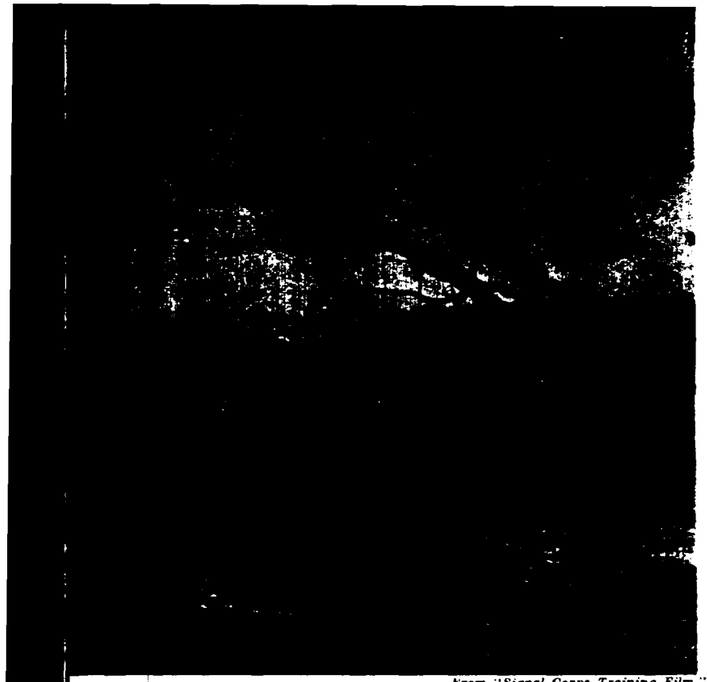
The enemy held the Anserine Farm, and the 81st had an OP within 2,000 yards of it. (This same OP was within 500 yards of enemy-held Djebel Badgar.) In general, the enemy held the two hill ranges on the battalion's flanks and the one to the north. The gap in front was held by antitank guns—exact location, unknown. The German would not fire until it was absolutely necessary. He knew he was being watched through field glasses. Artillery observers directed fire concentrations at even suspected locations.

An amusing incident occurred one day in the Mouse

*Staff Faculty, The Cavalry School. Formerly Commander, 81st Reconnaissance Battalion, Tunisia.



Map No. 1—Allied positions, March 21-April 12, and subsequent routes of night march.



From "Signal Corps Training Film."

A leading car reconnoiters a crossroads in Tunisia before the second car advances. Note concealment by use of shadows and branches.

Top: One of the 1st Armored Division halftrack ambulances came racing up to the crossroads just south of the Anserine Farm, and the driver, with the "valor of ignorance" instead of turning left, kept on straight toward the farm. This road had been used only as far as the crossroads. Dust generally would bring fire, but it was long-range and very inaccurate—never closer than [illegible] yards from a jeep. When fire got that close the driver would detour through the wheat and poppy fields.

As the ambulance rolled on toward the farm, observers kept field glasses on it and held their breath. If the German fired, his exact location would be known. The ambulance stopped at the farmhouse, turned quickly around, and came out a lot faster than it went in. The observers stopped the ambulance, and when the medical officer could talk, he informed them that he thought he had been moving to the rear instead of toward the front; that, as his vehicle approached the farmhouse, a German soldier had stood up beside a well camouflaged antitank gun and asked in English if there were any wounded in the ambulance. The doctor [illegible] recall his answer, but the driver had turned the ambulance around and wheeled it away.

In addition to obeying the Geneva convention, the German apparently knew that if he exposed his gun by firing at anything less than a tank he would catch the hell of an artillery concentration!

Patrols and OP's

Patrolling was continuous day and night. One night a reconnaissance patrol, commanded by Lieutenant Jewett Dix, reconnoitered the North Tine Wadi, and succeeded in getting behind the bridge. It was learned that the bridge was defended, and the wadi unfordable. This was important information, since it meant that as soon as Jerry was driven back across the bridge, he would destroy it, with the consequence that Allied armor would be stopped at the demolished bridge. The action of this patrol also disclosed that antitank guns on the high ground, 400 yards north of the bridge, would command the wadi.

In connection with patrolling, it should be emphasized that night patrols must be thoroughly coördinated and planned, and that routes to and from the objective for the night must be assigned and followed. If two or more night patrols are to operate in a zone, then extreme care must be taken to see that their routes do not cross. Otherwise, if two patrols bump into each other, the chances are that they will start shooting. This is true, especially when two adjacent units send out night patrols. Higher commanders, therefore, must assign night patrolling areas. Under no circumstances should patrols from one unit go into another unit's area.

By the same token, unit commanders must closely coördinate their night patrols and specify or provide some means of identification.

One way to check and identify the opposing unit is to use a flashlight. This method, employed by patrols, appeared to be satisfactory. The challenging signal, for a particular night was a flashlight dot-dash; and the answering signal, two dots. From cover, the man challenging, flashed his signal. If the opposing unit was friendly, the proper answer signal was given. That stopped the fight. When no answering signal was given the fight continued.

Throughout operations of the 81st in Tunisia, it was necessary to hold OP's by force. On one occasion, the enemy attempted to take the OP close to Djebel Badgar with a platoon of infantry. The lieutenant on the OP saw the Germans coming and called over his radio to alert the two light tanks that were back under cover near a farmhouse some 500 yards from him. Guided out by radio, the tanks came up and caught Jerry as he was approaching across an open farm yard. Attacking mainly with canister, the crews of those tanks captured seven of the platoon and killed or drove back the rest. That OP was never bothered again.

Beginning of the Offensive

The II Corps plan in the Mouse Trap Valley, after reconnaissance had developed the situation, was for the infantry to drive the enemy back so that armored troops could seize the high ground north of the wadi. The infantry, after several days and nights of hard, bloody fighting in the hills on the right and left, finally drove the Germans back inch by inch.

Casualties were high. Artillery built roads to follow and support the infantry. Each little hill that had to be taken was bloodier than the last. The enemy had spent months preparing these positions, and when artillery or air pounded a position in preparation for the infantry

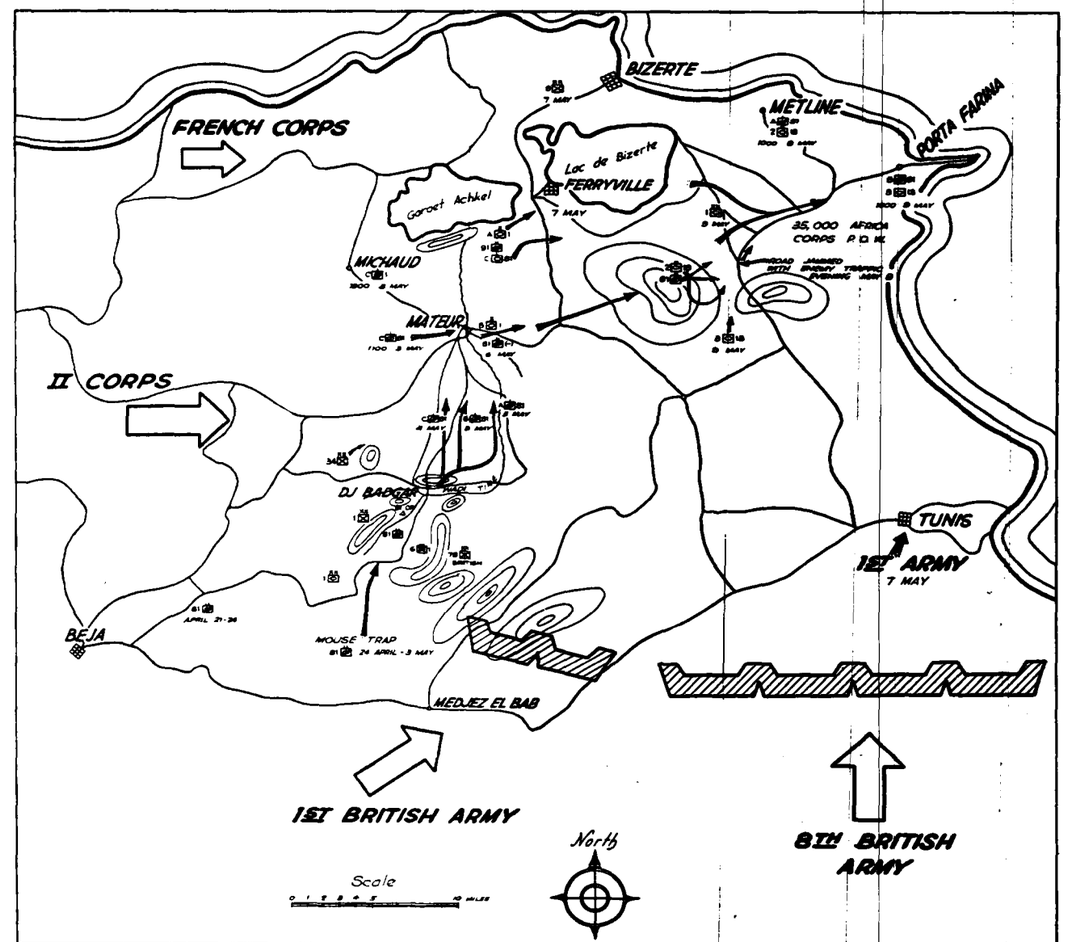
attack, Jerry stayed in his dugout until the artillery fire was raised. Then he remanned his guns and caught the infantry with withering fire in those last few hundred yards.

Each successive assault found the infantry moving closer to its own artillery fire. It is cheaper to take one per cent casualties from your own artillery than ten per cent from the enemy. In one attack, an infantry battalion, knowing that there were so many battalion salvos to be fired, were in on the enemy position before the clouds of dust and smoke caused by the last salvo had cleared. They were within 50 yards of their own artillery fire when it was lifted. The crucial period in the attack begins when the assaulting force closes with the enemy following the lifting of artillery supporting fire. The shorter this period is, the less the casualties.

Finally, on May 3rd, the infantry broke the enemy's position. The 1st Armored Division was alerted to go through the gap towards Mateur and exploit the infantry's success. The 81st Reconnaissance Battalion spearheaded that breakthrough. The wadi was forded to the north in rear of Djebel Badgar, and the pursuit was on.

The Advance

Shortly after dawn I saw one of the 81st scout cars halted on a trail. Going forward in a jeep, I pulled up alongside and started to ask why it was halted, but didn't need to. Under the scout car's front wheel was a wire tied to a stake just a few inches beyond my jeep on the right. The wire running under the front wheels of my jeep ended in an S-mine. Since there was no tension on the wire, two vehicles had crossed it without causing the mine to go off. Jerry had been careless.



Map No. 2—Allied positions during final push—April 21-May 9.

He had been pushed for time by the pursuing infantry, and was getting jittery. He had to be hit while he was reeling.

Soon after reaching the outskirts of Mateur, the battalion found the western bridge blown. Luckily the stream was fordable nearby. The town was entered in the face of light resistance, and about 100 prisoners were taken. Company C moved northwest and Company A moved east.

The eastern bridge was blown as Lieutenant Truman Boyd's platoon approached it. One of the German engineers who blew the bridge was killed; the other, captured. Lieutenant Boyd found a fordable place and crossed his platoon under fire of enemy guns. Casualties were heavy. Jerry, knowing that ford was the only place where the wadi could be crossed had set his guns on the high ground 2,000 yards to the east. Captain Roy Manly, commanding Company A, brought up his three assault guns and assisted Boyd's platoon in crossing. Once across, Boyd pushed on to the high ground 3 miles east of Mateur.

Our engineers were close on our reconnaissance heels and started to work at once on putting a bridge across the wadi. Twenty-four hours later we crossed our first medium tank. That fact is significant.

A horse cavalry division would not have had to change gaits in crossing that wadi at any place along the 3-mile front.

On May 6th, from the high ground initially reached by Lieutenant Boyd's platoon, an assault was launched that broke the enemy's Ferryville-Mateur line. This action was a perfectly coördinated tank-artillery-tank destroyer attack. With the right flank protected by a smoke concentration, the leading wave of tanks moved in under the supporting artillery fire of 3 battalions.

The 81st Reconnaissance Battalion followed to mop up after the tanks had passed over the position. Even though the tanks drove over the enemy position, many of the Germans lay "doggo" in their dugouts and had to be cleaned out by dismounted personnel from the reconnaissance battalion.

Horse cavalry can follow tanks in a breakthrough and perform this mission.

The tank attack moved on until after dark and the enemy position had been pierced in the south at Mateur. The pursuit was again on.

Pursuit

On the morning of May 7th, Combat Command A pierced the enemy position on the north at Ferryville. For the first time in five months I saw 88mm guns in action. I had heard them, but had never before seen them until after they had been damaged and abandoned. That was because they were so well camouflaged. Now, as the enemy was being hard pressed, he did not have time to conceal them properly—and the 88mm is not an easy gun to conceal. A gun seen is a

An armored car advances on the road to Mateur. In the foreground is a wrecked German Mark VI tank.

gun lost. I do not know how many guns the tanks destroyed, but there were many.

When the enemy is cracked and being pursued relentlessly, many ridiculous things happen, such as scout cars overrunning 88mm guns and chasing tanks. Of course, this only happens in a pursuit against a reeling enemy. Pursuit, however, is a vital part of war.

One reconnaissance platoon leader came upon an 88mm sticking out from behind a house, drove around to the rear of it, and machine-gunned the crew. A supporting 88mm across the road was destroyed by its own crew and abandoned. This cracking-up of the enemy did not come about because tanks or reconnaissance units had arrived on the scene. Far from it. It was the cumulative result of a terrific day-and-night pounding by artillery; a dogged pursuit by infantry that never let him rest—but drove him constantly back; a steady pounding by the air forces which at that time had air supremacy; and the relentless drive by armor, exploiting the success of the infantry-tank-artillery team.

On the afternoon of May 8th, Combat Command B of the 1st Armored Division, having been driven off the roads by 88mm's, attempted to by-pass by moving north into the mountains.

From the high ground overlooking the valley, a wonderful sight came into view. In the valley below, over a thousand German vehicles, moving almost bumper to bumper, were trying to get to the beaches. There was also a German airfield with several planes on it.

The vehicles started picking their way down slowly, but each trail led to a bottleneck or a dead end. *Getting down that hill was a slow process. Definitely it was not mechanized terrain.* Each bottleneck was covered by enemy antitank guns, and the unit had outstripped its artillery. The colonel in command put his tanks and tank destroyers in hull defilade, and the battalion's assault guns were put under the command of

one of the artillery observers. Those assault gun men had a field day.

The target was reported back, but no air was sent to bomb it—and rightly so. Air was flying over to keep the enemy, who had reached the beaches, from evacuating. It was not feasible to divert any air for this target. One thing a reconnaissance leader must remember is that, although he sees much of the big picture, he does not see it all and therefore he should not expect to have the artillery shell, or air bomb, every target that he reports. He is out there to give information, not to employ the command.

Horse cavalry could have come down off that plateau without any difficulty as far as the terrain was concerned. True, it would have suffered casualties

Wreckages of German Mark VI tanks put out of battle by Allied bombers. Mateur, 4/26/43.

from enemy fire, but an aggressive cavalry division could have played havoc with the enemy.

Tanks and other vehicles made their way down laboriously during the early dawn after they had been resupplied with gas and ammunition.

After a short tank fight south of Porta Farino, the 1st Armored Division found that it had taken over 35,000 German prisoners. Actually, it is better to say that the Americans had 35,000 prisoners, because they were the cumulative result of the coördinated effort of all arms present on the battlefield.

Conclusion

The greatest proponent of large horse cavalry units today is the battlewise doughboy. He sees crystal clear the need of units with *battlefield mobility* to exploit his successes. He knows that it is a tough, bloody fight to drive a determined enemy out of his strong defensive positions. With the aid of his supporting arms he can do it. He also knows that after he drives the enemy out of a position, the withdrawing enemy is vulnerable. He does not want to see the enemy get away. He wants his hard-earned success fully exploited.

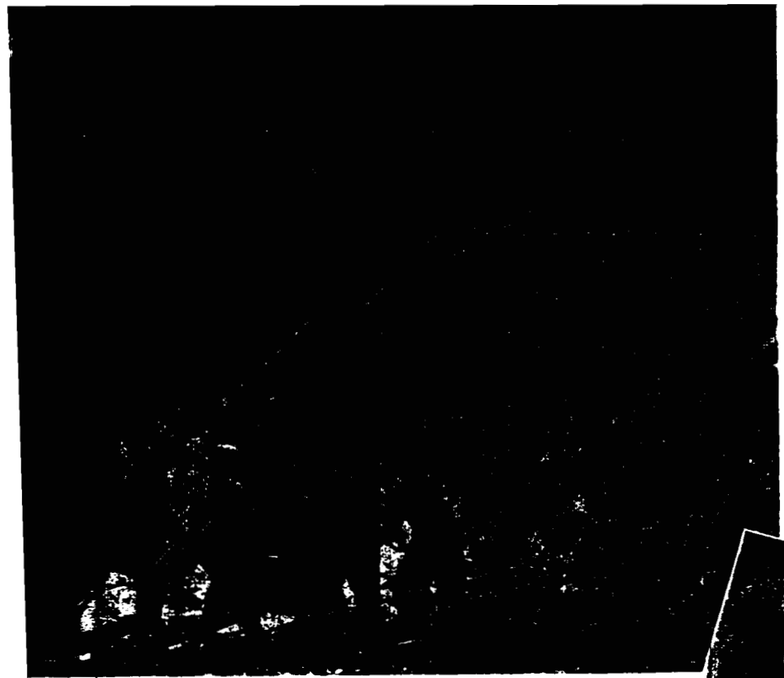
The doughboy is aware of the fact that when the enemy uses mines and blows bridges to stop the tanks, he is thereby enabled to withdraw much of his force to a new stronghold, and the bloody infantry fight starts again. The doughboy is sure that if he had horse cavalry, the tank-cavalry-air team really would hit "pay dirt" in pursuit and exploitation.

The terrifying effect produced by charging Cossacks and Russian tanks is readily understood. We were on the receiving end of the tank attack at Kasserine and Faid Pass. The Germans used tanks to exploit. Had they used horse cavalry in conjunction with those tanks, few, if any of us, would have escaped. Although the country was bare and rocky—very similar to the Fort Bliss area—and offered no concealment and very little cover, it was possible to keep platoons behind and on the flanks of the enemy tanks. This was because the tank is relatively blind. One reconnaissance lieutenant pulled his platoon in behind some "boondocks" and, undetected, watched an entire battalion of tanks go through. Later, he marched past them on their flank and reported their location.

Horse cavalry would have discovered the platoon, and then the tanks would have destroyed it.

This article has made no mention of horse cavalry for use with reconnaissance units. Reconnaissance by horse cavalry units is *unquestionably mandatory* in certain terrain, but *there is a bigger job to be done by horse cavalry. This big job can be done only with horse cavalry divisions, trained primarily for combat to support and exploit infantry successes.*

The speed of the Allied advance to Tunis was so rapid that the Germans had time only to run vehicles and Mark VI tanks to one place and apply the torch. These German prime movers were put in this position and burned.



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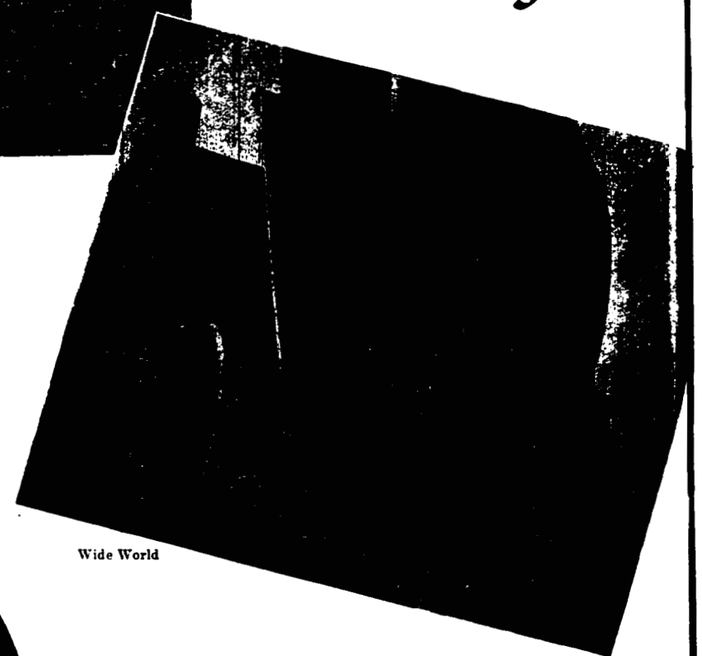
Left: The caption for this picture, received through a neutral source, says it shows "Heavy German anti-aircraft battery in action against attacking American bombers in the Appenine mountains." Note terrain.

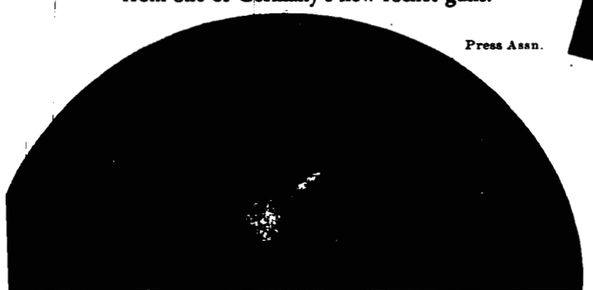
German Defense in Italy

Right: The retreating Germans are now using a special machine for destroying railway tracks in Italy. This machine which weighs about ten tons has a large hook at the rear. While the machine is hauled along the lines, the hook rides under the sleepers and rips them up. At the same time, two-pound charges are dropped down a runway on either side of the machine onto the rails, where they settle with the aid of a clip and explode some seconds later.

Below: According to the German caption on this photo, this is the first of six rockets being fired from one of Germany's new rocket guns.



Wide World



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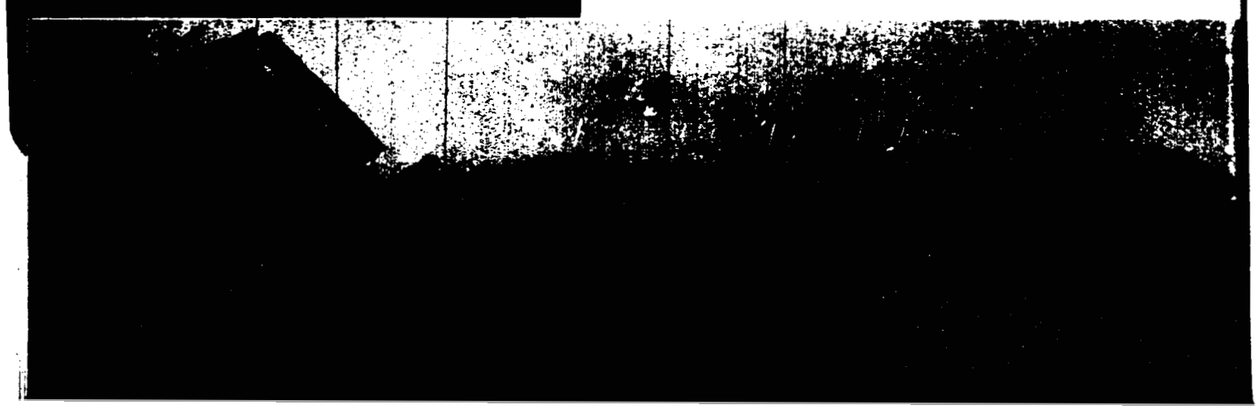
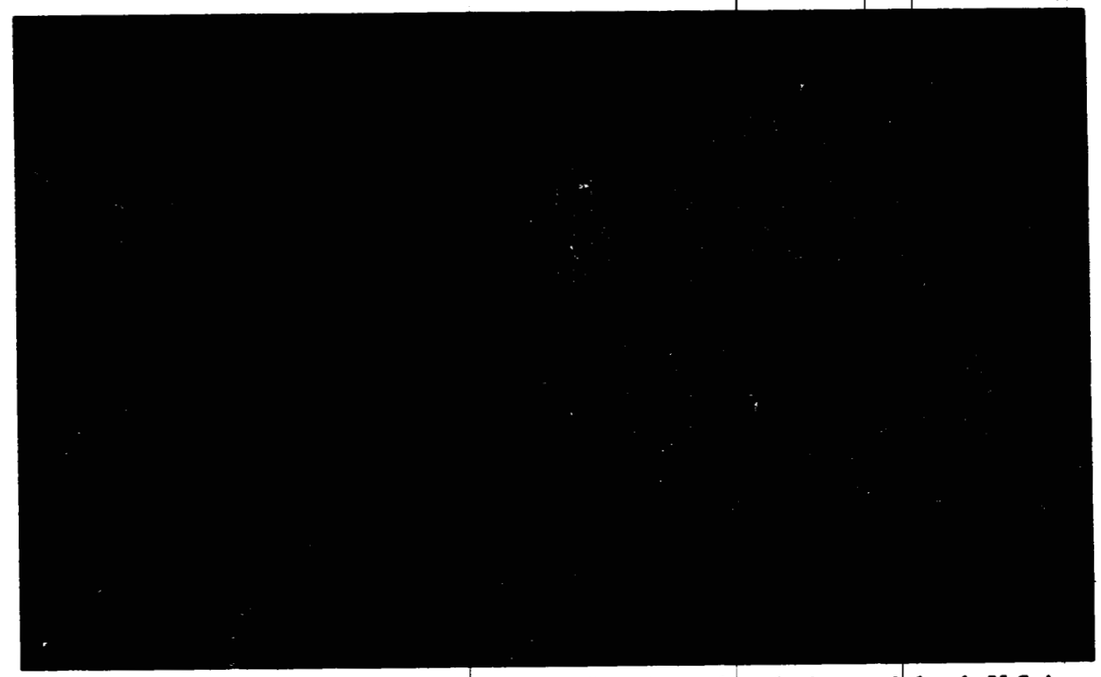
Below: Nazi gun crewmen rush forward to reload after a rocket gun fired. All six rockets have been discharged. In left foreground is a rocket gun awaiting reloading.

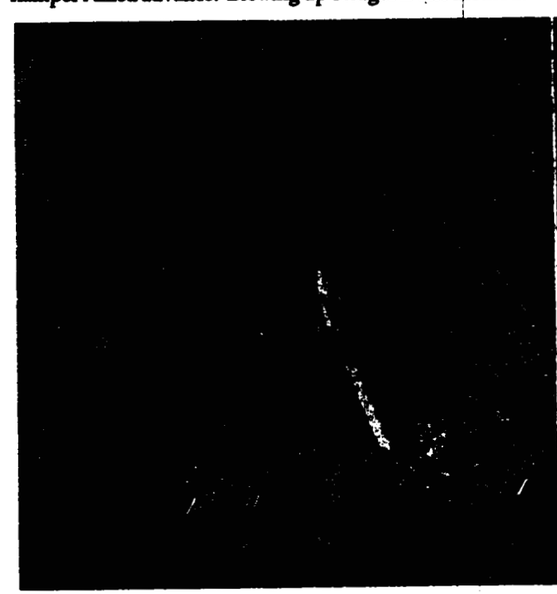


U. S. Engineers follow German Demolitions

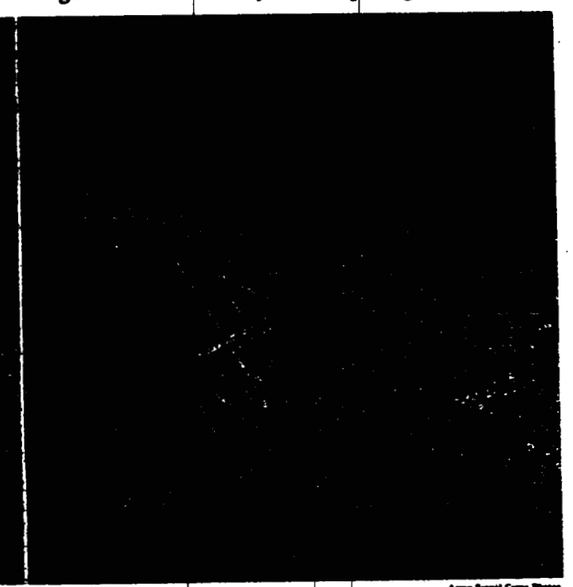


When the Nazis retreat they use every means they know to hamper Allied advance. Blowing up bridges is one method.

These pictures show what happened when the U. S. Army Engineers tackled the job of replacing one in Italy.



Top picture gives an idea of the gap to be crossed. Here the uprights are in place and the spans are being laid.



Army Signal Corps Photos

And this is the completed bridge, only 10 hours after the U. S. Army Engineers went to work on the tough job.

The Tank-Cavalry Team

A Study in Tactical Development

The author, a former captain in the Russian Imperial Army, is an expert military analyst of Red Army tactics and matériel.

The horse-plus-armor team pursues fleeing Germans.

by Nicholas Corotneff

ON November 19, 1942, two powerful Russian striking forces simultaneously broke through the German defenses to the north and to the south of Stalingrad, and started on their wide encircling movement, which four days later formed a ring around the German Sixth Army. This date will go down into history as the turning point of the Russian-German war. But it also has another significance. On this day a new and important tactical development manifested itself for the first time. A new and powerful combat team emerged with startling unexpectedness, and crowned its birthday with one of the most significant and far-reaching successes in this gigantic campaign. For the first time, independent tank and cavalry formations were welded into one unified striking force, which replaced the motorized infantry.

New Tactical Developments

From the very beginning, the Second World War has presented a series of new and often spectacular tactical developments. True, some of them were startling only because the trouble was not taken to foresee them. Some of them proved to be not as revolutionary as they at first seemed, and their antidotes appeared on the scene much more quickly and in greater force than many expected. Such is the famous tank-dive bomber team, which for a time reigned supreme and seemed to be the strategic weapon of this war. Its decadence has been completely proven in the breakdown of the German 1943 summer offensive in Russia.

There was at one time almost a complete consensus of opinion that the best antitank weapon was the tank. That is now disproved. The real solution proved to be an antitank area, a huge infantry-artillery team, with the tanks used largely for administering the *coup de grace* to the exhausted attacker.

In the light of these important and swift changes, it is only natural if nowadays there is an inclination to be wary, and to accept any new and startlingly unexpected tactical development with at least a grain of salt. No wonder, therefore, this new tank-cavalry combat team met a cautious and, in some quarters, a frankly skeptical reception.

More than a year has now passed since its birth, and in the course of this time the new tactical combination again and again has proved its remarkable efficiency and striking power under various sets of conditions. At its initial appearance, opinion was advanced that it might be only a seasonal combination, necessitated by the conditions of the Russian winter. After the latest exploits of the tank-cavalry team at Taganrog, Mariupol, and on the approaches to the Crimea, this impression has been dispelled as completely as the legend of the Russian incapacity for a summer offensive. There is every reason to believe that the new combat team, having proved its vitality, is here to stay. It therefore commands full attention, not only in its present stage of development, but with a view to its potentialities for the future. These seem to be great, and should be of special interest to the United States cavalry—possibly more so than to any other.

In the November-December issue of The Cavalry Journal an article by a Soviet military writer, Colonel Valyushkin, outlines the tactical foundations underlying the new team, and points out some of the varied—almost infinitely varied—combinations and interplays which the tank-cavalry combat team affords. The genesis of the team and appropriate illustrations of applied tactics may prove helpful in arriving at a better understanding of its functions—a résumé, so to speak, of its prenatal influences.

There were two powerful factors that made the emergence of this team inevitable. One was the existence of tactics not only peculiar to the Russian Cossacks for many generations, but peculiar to the extent of being baffling and incomprehensible to the cavalrymen of other European armies. Taken from Mongolian invaders, and ancient in origin, these tactics—in many respects the antithesis of linear tactics—were based on depth, space, and disregard of rigid formations. Essentially opportunistic, shifty and fluid, they evolved from the idea of the decentralized conduct of combat, and a high degree of individual initiative on the part of every combatant. As such, these ancient tactics, sometimes contemptuously dismissed by orthodox military minds, proved after several centuries to be the most modern. They are based on the same principles that constitute the foundations of armored tactics.

The other factor that predetermined the Russian tank-cavalry team was a much younger but equally vigorous influence, which shaped its present most important tactical use—*that of a swift and powerful raiding force slashing deep into the enemy's rear.* This influence, (which during the last half century was in Russia, a carefully nurtured tradition) was to a great extent American in its origin. The new team was a direct result of these two factors.

Origin of Present Russian Tactics

First, the tactics on which a great part of the Russian cavalry, the Cossacks, were brought up for countless generations, since 1912 have been adopted by all Russian cavalry and have undergone continuous growth and constant developments since.

The first appearance of these tactics on the European scene during the Eighteenth Century and the Napoleonic Wars, when European cavalry for the first time experienced the methods of Cossack warfare, produced an impression of baffling incoherence. General Moran, who took part in almost every one of Napoleon's campaigns, commented on Cossacks: "These savage riders have no formations, no alignment, and do not present that precise regularity in movements which is so highly respected in our army. What a beautiful sight our cavalry presented when, glistening in the rays of the summer sunshine, it proudly deployed its slender lines on the shores of Niemn! And how sad it is to think that these masterly evolutions, which tired out the horses, proved to be completely useless against these Cossacks whom everybody despised beforehand, but who, nevertheless, accomplished more than any other cavalry."

And another of Napoleon's veterans, de Braque, says: "Some officers, especially those without battle experience, make a point of speaking about Cossacks contemptuously. Don't believe them. Ask Soult, Gerard; ask any seasoned campaigner. They will tell you that the light cavalry, which surrounds the enemy with an impenetrable veil of vigilance, which exhausts him, which always strikes, and almost invariably evades the counterblow, fulfills every goal that any light cavalry should strive to accomplish."

And then again: "It is extremely difficult to counteract these tactics. If the line is deployed against them, they close in a column and pierce it. When attacked in a column formation, they quickly disperse and envelop the column from all sides."

The newest tactics of the war are ancient in tradition—American by nature.

1. From Russian Cossacks, the modern Soviets learned the lava — that doubling back maneuver to encircle the enemy — that was so successfully employed by the Nazi panzers in their "Wedge and Kessel" days of 1941; also, by Rommel in Africa before the Battle of Alamein.

2. From American cavalry — Confederate and Union—of the American Civil War, the Russians adopted, practiced, and perfected the tactical employment of RAIDS deep into the enemy's rear.

These two tactical principles form the foundation of the newest combination in modern warfare—tanks and cavalry, successfully employed by the conquering Soviet armies.

Another contemporary, practically waxing poetical, said: "They come and break up like a mighty surf; they sting like a flight of hornets; and they disappear like smoke."

These commentaries, which strike a strangely contemporary note, reflect the now familiar picture of the

fulfillment of linear tactics when faced with those based on space, depth, and disregard of dogmas.

This method of tactical action was called in the Cossack cavalry *lava*. Although highly respected, it was not used by the regular cavalry until the present century. The main reason for this was the conviction that only Cossacks trained in the use of horse and weapons from early childhood could develop the degree of independent resourcefulness needed to make a *lava* truly formidable. It was considered almost impossible to impart it to recruits within the comparatively short training period.

Another reason was that many cavalrymen felt the same way as the Napoleonic officers quoted above. They could not relinquish the beautifully aligned formations, working with the precise regularity which had been a tenet for many generations. The arguments about *lava* and its adoption by the regular cavalry formations went on for almost a hundred years. Finally, in the period of military reforms that followed the Russo-Japanese War, the champions of *lava* won, and it was formally adopted by all the Russian cavalry in 1912.

Nature and Tactics of Lava

Here is how the Instruction for the use of *lava*, issued as an annex to the Russian Cavalry Drill Regulations of 1912, define its nature and tactical methods:

"*Lava* does not represent a formation, but a tactical action of cavalry, without any definite form or construction. The troops engaged in *lava* take the order which promises them the most success on that occasion. The success of the action depends wholly on the presence of mind and resourcefulness of the commander and all the men of every rank.

"*Lava* requires the display of independence from each separate combatant. Their actions are united by their seeking to achieve the common aim made distinctly clear to each, and by their keen attention to signals and commands from the leader. For a successful *lava* action, the following is required: excellent individual training of each man in the management of his horse and in the use of arms; the development of resourcefulness, a sense of responsibility, and a keen understanding of the maneuver to be undertaken; and the ability of each man to direct his actions independent of the others, to the achievement of the common goal. In *lava*, formations are applied in accordance with the form of the enemy's action, the object to be achieved, and the condition of the terrain.

"*Lava* is bound neither by definite formations, nor adherence to distances and intervals. Killing independence of groups composing it destroys the very meaning of *lava*, where everything must depend on the circumstances. *Lava* is successful only when it is confusing, and unexpected by the enemy."

It would be hard to give a better general definition of the very essence of armored tactics, or of the tactics of infiltration which proved to be one of the basic

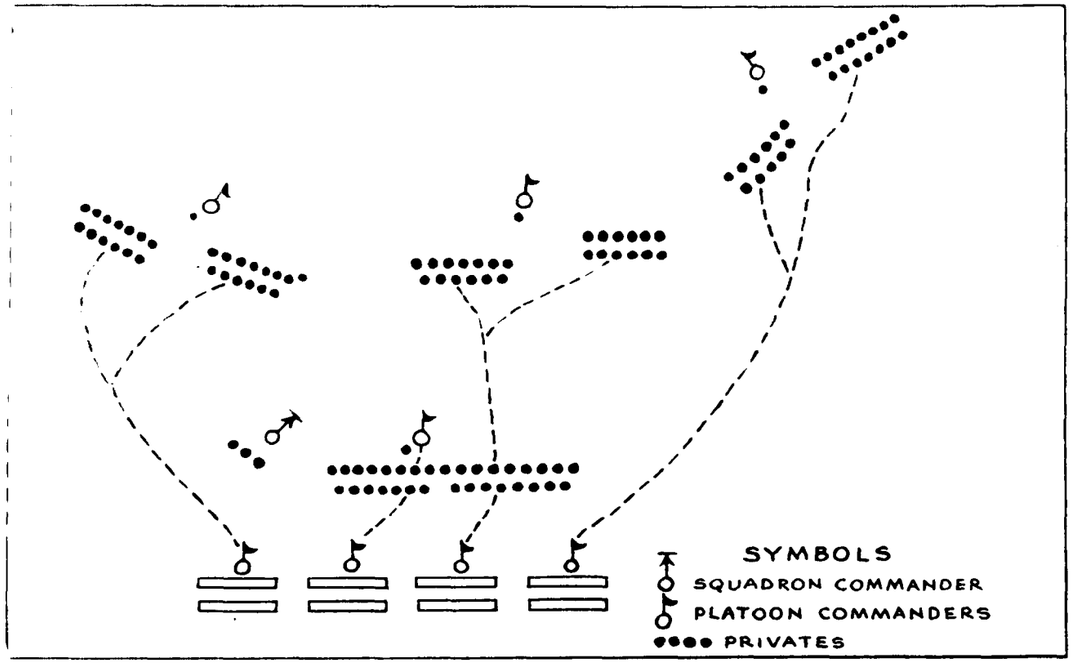


Chart 1.

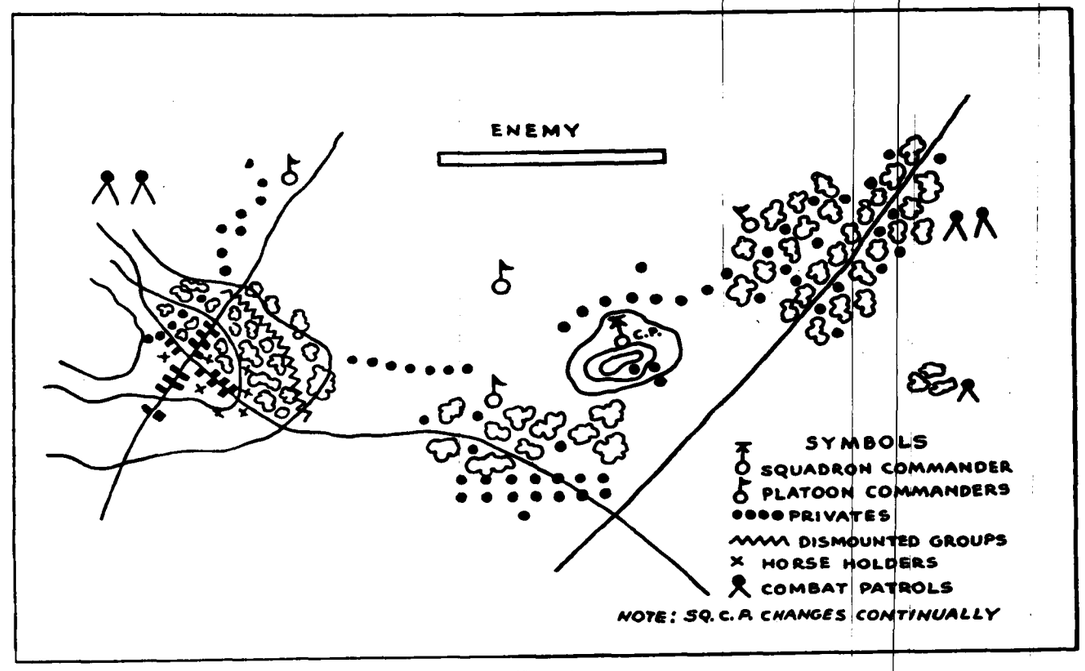


Chart 2.

factors which predicated the development of armored combat.

Outside of that, and general remarks indicating the tactical use of *lava* in defense as well as in offense, the regulations leave the rest to the initiative and resourcefulness of the commanders, who are given complete liberty of embroidering the tactical pattern on this broad canvas. Essentially, *lava* is an extended order of a squadron consisting of an advance line and support. It can be ordered out from any formation, line, or column, including marching columns, and it can be thrown forward to the front and to the flanks, by means of two or three simple commands, and in half the time necessary, for instance, to deploy a marching column or a close battle formation into the regular extended order prescribed by previously used Regulations.

Chart No. 1 gives an idea of the first stage of the deployment in this particular instance from a closed-rank battle formation. Usually three platoons out of four rush forward in diverging directions, next break up in two sections, and then disperse into a line as shown in chart No. 2. The shape of the *lava* when fully deployed is usually a crescent of varying depth, because its ultimate object, in offense as well as in active defense, is to strike at both flanks of the enemy. Most of its evolutions have one goal in mind—to work its way up to good striking positions for double envelopment.

The size and position of the support are also optional with the commander. The practice of leaving one platoon out of four as the support need not be adhered to. The commander may throw all four platoons in *lava* and leave a group of only eight or ten men, who in such a case would act, not as a reserve, but as a rallying point in case of necessity. In Cossack troops, therefore, this support, according to its size, was referred to as "reserve" or just "beacon."

Mounting or dismounting different sections in *lava* is also left to the initiative of the respective small unit commanders. As long as they strive to achieve the goal given to them by the squadron leader, they can use their own judgment entirely. They may dismount all of their group, or any section of it. They may send the horses back of the line with horse holders, or have the dismounted men lead their horses.

In Cossack regiments, horses were always trained to lie down at the command of the rider, so that their riders could use them as support for their rifles, practically as living breastworks. This expedient is resorted to only in cases of emergency, especially in defensive combat against superior forces. In this case "dismounting by circles" is frequently used. The horses of the squadron are made to lay down in a circle, thus forming an "island of resistance." More frequently, however, for such an emergency the groups composing the *lava* form separate circular defenses by the same method, and thus present a series of islands of resistance mutually supported by fire.

"Horses were always trained to lie down at the command of the rider so that their riders could use them as support for their rifles, practically as living breast works."

The most epic example of what such a dismounted *lava* can achieve in defense happened during the Russian invasion of Turkestan in 1864, and became a classic often cited whenever tactics of *lava* are discussed. A Cossack squadron of 98 men, cut off and surrounded by hordes of native cavalry whose numbers ran into thousands, turned its *lava* into several dismounted circles and held off the furious assaults of the enemy for almost three days. During these three days every horse was killed—riddled by bullets. Out of 98 men, 91 were killed or wounded, including all the officers, and the small handful of exhausted survivors were saved at the eleventh hour by the appearance of a relief force.

Lava Used by Squadrons

The applications of *lava* in offensive combat present [illegible] continuous fluid shifts, with a gradual accumulation of striking force on the flanks; in other words, a series of plays and combination of plays as varied as the plays of a well-coached football team.

One of the most frequently used shifts, and therefore the best known, is the so-called "closing on the wings." The instructions for *lava* describe it as follows: "The platoons of the *lava*, in order to gain space to confuse the enemy, begin to retreat on divergent lines. On having thus uncovered the front of the support, they swiftly turn and rush to attack the advancing enemy, always closing on their march." (Chart No. 3.)

Substitute a concentration of antitank weapons instead of a support, and you will get an almost exact description of the famous Rommel tactics by which he lured the whole of the British armored force into an ambush on June 13, 1942, and annihilated 230 out of 300 tanks by the fire of the 88mm guns placed in the depth, and by the ensuing double envelopment attack of his tanks. The result of this defeat was the fall of Tobruk and the consequent retreat to the El Alemein line, which endangered not only Egypt but the Suez Canal. Many a war correspondent described this battle as one more manifestation of Rommel's tactical genius.

As a matter of fact, these tactics, thousands of years old, were used by the Parthians against the Roman legions, by Mongols during their invasion of Russia, and were practiced by the Cossack *lava* for countless generations. The first person to recommend their use in mechanized combat was General Fuller, who described this method in 1932 in his book, *F.S.R. III*, as "offensive counteroffensive."

It is sad to think that the main cause of this disaster, which endangered the life of the British Empire, could have been so easily prevented had exchange of military information between the Allies existed at that time.

Exactly the same tactics were used by the Germans on the Russian front as early as the summer of 1941, and in the fall of that year the famous 88mm dual purpose guns made their initial appearance under exactly the same circumstances. The Russians were victimized in the beginning, but only on a few minor occasions. They quickly recognized and catalogued these tactics because of their long familiarity. Every staff officer with a knowledge of tactics of all arms knew what a *lava* retreating and then closing on the wings could do to a rash adversary.

In the early spring of 1942—that is, four months before the disaster in Libya—a training pamphlet entitled, *What a Red Army Man Should Know About German Battle Tactics*, issued in hundreds of thousands of copies, described this mechanized ambush as follows:

"The German tank tactics show two tendencies. One is to lure our tanks into an ambush. The other

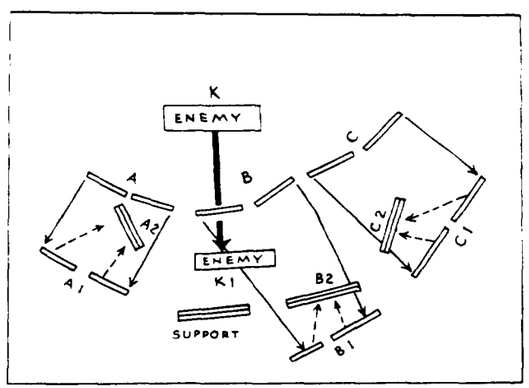


Chart No. 3

Retreat shown by solid arrows.
Closing on the wings—punctuated arrows.
Lava retreats: Group A to A-1, Group B to B-1 and Group C to C-1.
The enemy then advances from K to K-1; and the three groups, closing on the march, envelop his flanks by moving to A-2, B-2 and C-2 respectively.

is to turn and envelop them. The first move—drawing into ambush—is their favorite. It is done usually this way: On a certain section of their front, behind the lines, they mass a great force of artillery, mostly antitank guns. It has been observed that lately the favorite German weapon is the 88mm gun, designed as an antiaircraft gun, which is widely used by the Germans against tanks because the change from the antiaircraft firing position to the antitank position can be made in the space of two or three minutes. These guns, which the Germans call 'Flak Cannon,' made their first appearance on our front in the fall of 1941. They possess a high initial velocity up to 1300 yards a second. Their shells have a great armor-piercing strength, and are also incendiaries.

"Endeavoring to use this powerful antitank weapon to the fullest extent, the Germans constantly try to lure our tanks into ambush, and often stage a fake retreat, hoping that our pursuing tanks will follow into the trap and expose themselves to the 88mm guns. Sometimes this hide-and-seek game, in which only small German tank detachments participate, goes on for days. Avoiding a definite clash with our tanks, the small groups of German machines constantly maneuver in front of our lines, in the hope that some hot-headed tank commander, bored by this constant fencing, will finally succumb to the temptation and rush into headlong attack. They then quickly retreat, and if the reckless commander continues pursuit, his tanks seldom get back.

"These tactics make a thorough, continuous reconnaissance doubly important and necessary. Tank commanders must use all available reconnaissance means which should be carried out by the tank unit themselves; by infantry, aviation and engineers. Small scouting groups should constantly try to infiltrate into the German positions and learn as much as possible about tank and gun concentration behind their forward edge."

Drawing Number 3, taken from *lava* Instructions of 1912 illustrating the outline of *lava* as used by squadrons, adaquately depicts "Rommel Tactics" practiced by Russian cavalry under the name of "closing on the wings."

Lava Used by a Regiment

When it comes to the use of *lava* by a whole regiment, the similarity to the armored combat becomes even more pronounced. At the discretion of the commander, a six squadron regiment throwing from one to five squadrons into the *lava*, could place them in a single advance line extending from one to two miles, or in successive waves. The reserve squadrons were then usually kept in a more or less compact formation, as a powerful striking force which could be shifted to any point behind the *lava* lines. Again Russian cavalry tactics presented a tactical method frequently employed by large tank formations.

As might have been expected, in the First World War, cavalry in general, and the above described tactics in particular, played a rôle nowhere as prominent as in campaigns of earlier times, and *lava* lost its deadly sting. The reason, of course, was that, compared with other arms, *cavalry fell far behind in the strength of fire power*. Whatever fire power cavalry had was almost exclusively used in dismounted combat. To make the old tactics click again, a new combination of fire and movement was needed. And that did not appear until the Russian Civil War of 1918-1920 when machine guns, mounted on carts and ready for instant action, appeared in the cavalry ranks and started the rejuvenation of *lava*. These carts in the cavalry ranks also paved the way for the later inclusion of armored car elements, and thus constituted practically a preview of the tank-cavalry tactics so prominent recently.

American Civil War Cavalry

The second factor, which proved to be a powerful influence in the development of present tank-cavalry tactics was that of great raiding teams operating in the enemy's rear, striking at his nerve centers, and dislocating the resistance in whole areas. The idea of using cavalry not only as a frontal striking force, but as a raiding force as well, of course, always existed in Russia. The Mongolian invasion was the most gigantic cavalry raid the world has ever seen. For centuries the Cossacks defended the borders of Russia by countless series of incursions and forays into the enemy's territory. In 1760 a flying Russian column, operating in the rear of the Prussian army, captured Berlin and held it for a few days. The famous Russian "Partisans"—the guerrillas of the Napoleonic wars—constantly raided the territory of the French armies, although never on a scale large enough to bring any strategic results. Despite all this, the idea of cavalry raids was still rudimentary, and dismissed by many as a weapon mostly fit for guerrilla warfare.

This attitude changed entirely after the American Civil War.

As is well known, not much attention was paid to the American Civil War in Europe for decades after its conclusion, and for a long time it was the least understood war of the Nineteenth Century. The greatest military authority of that time, German Field Marshal von Moltke, contemptuously dismissed it as a "war of one armed mob chasing another—an experience from which nothing of value can be learned." The rest of European military opinion followed suit.

When the United States government issued the official records of the war, one set was thoughtfully presented to every military academy and war college in Europe. For years these volumes gathered dust on the shelves of the libraries—that is, everywhere except in Russia, where the impression created was tremendous. All important developments and trends shown by the war were noted—the passing of permanent fortresses;

the growing strength of field fortifications; and above all, the amazing exploits of the American cavalry and its rôle in the strategy of the war.

Here, the Russians saw the embodiment of all the principles on which the Russian cavalry was brought up, but realized on a scale and with a brilliance never even remotely attained before. As the dean of Russian military historians of that time, General Prince Golitzin, expressed it: "The Americans transmuted into reality the cavalryman's most celestial dreams, and our cavalry is the only one in Europe which can emulate them."

In 1875 a young officer of the General Staff, Colonel Soukhotine,[1] published a monograph on "Raids of American Cavalry in 1861-1865"—a brilliantly written work, and the first one of its kind in Europe which gave a clear and penetrating analysis of American cavalry tactics in the Civil War. They were, as he indicated, a grandiose development of vague and rudimentary Russian concepts on the rôle of cavalry in war. "For a decade now we have waited with impatience to see what the European military minds would say about our great campaign, and what they said amounts to practically nothing. And that probably is the way it must be, as they are organically incapable of understanding the full implications and the meaning of the [illegible] the American cavalry played in this war. It is left to us to carry on this glorious tradition on this side of the ocean. The American campaign is the incarnation and development of concepts and ideas which, though vague and rudimentary, have animated our cavalry for so many years. The American cavalry of the Civil War is the flesh of our flesh, our spiritual offspring, and our next of kin divided from us in time and space." The rôle of Russian cavalry in future wars, he thought was clearly outlined—cavalry finds its consummation in deep raids into the enemy's rear on a strategic scale.

The impact of Soukhotine's work was sensational, and much more than academic. In the following year, during the large fall maneuvers, for the first time in Europe a cavalry raid, carefully fashioned along American lines, was staged. It proved to be entirely successful. After many discussions, the American word "raid" was finally adopted into the military language for lack of an adequate Russian word.

When the Russian-Turkish war broke out a year later, in 1877, several cavalry raids, also entirely American in concept and tactics, were successfully carried out, the most famous of them being the raid on Andrianople, a strongly fortified place which was captured by a force of 1,500 horsemen. These raids became minor classics, but Stuart, Morgan, and Sheridan still remained for every Russian cavalryman magic names and symbols of highest possible achievement.

In the '80's and '90's the American tendencies became so strong that the most influential figure in the Russian Army of this period, and one of the greatest educators that the army has ever had, General Dragomiroff, a military writer of great brilliance,[2] warned against regrettable excesses among the followers of the American school. He pointed out that *a distinction should be made between features that represent manifestations of the American genius, and those which were adopted by them only under the stress of necessity.* It was suggested, for instance, by many that individual training of riders could be almost entirely dispensed with because the horsemen of Stuart and Sheridan never saw the inside of a riding ring. The lack of individual training, Dragomiroff argued, was just a concession to necessity, not a freely arrived at system. "It isn't *that* which we should try to emulate; it is their spirit, and their broad and lofty tactical concepts."

He considered Stuart "an incomparable genius," and analyzing the battle at the Brandy Station, June 9, 1863, wrote: "What a marvelous episode! Stuart is attacked from the front; he is attacked from the rear. The enemy is superior in force; defeat and annihilation stare him in the face. How many commanders would have chosen the cautious, reasonable solution: to retire, to get out while the going is good. But Stuart has only one idea—to dash from one adversary to another, striking at each one in turn. He stays, he fights, and he is crowned with glory."

Two decades later, during the period of the World War, one of the first things taught in the Cavalry School by the professor of military history was that "any over-dressed young fool with guts and luck can become a small Murat, but Davidoffs[3] and Stuarts are born once in a century."

And so we see that this young and powerful American tradition continuously shaped the whole psychology of the Russian cavalryman up to present times. Young cavalry officers in other European armies dreamed of charges in close formation as of the highest consummation of their traditions and training. The Russian thought in terms of raids, break-throughs, and tornado-like rides into the enemy's rear. Why is it that none of these glorious dreams came to life in the Russo-Japanese and the World War campaigns? Reasons were many, but the two main ones were obvious: the lack of understanding of the power of modern small arms—the hopeless mishandling of machine guns, which were used in cavalry exclusively as an infantry weapon—and above all, the tragic dearth of true cavalry leaders.

The Russian Civil War brought the vindication. The cavalry played a most important, often a decisive rôle. The White Cavalry was by far the best and strongest in the first period. The cavalry raids of Wrangel, Mamontoff, and others did much to bring the Red Army to the brink of defeat. Then the pendulum

[1] [illegible] Commandant of General Staff Academy.

[2] Dragomiroff's writings were recently republished by the Soviets, and his memory is highly respected in the Red Army.

[3] A famous "Partisan" of 1812, the originator of guerrilla warfare

swung—the Soviets went to the horse, the Red Cavalry grew with amazing rapidity, and a year later Budenny became a world figure.

And so these two great influences, the tactics of depth imparted by Mongols, and the concepts of great cavalry raids learned from the American cavalry, result today in these tank-cavalry teams which, as the *New York Times* recently reported, "stunned the Germans with their speed and ferocity."

From tireless experimentation there gradually evolved various new tactical combinations for the new combat team. In this respect, the Russian front is practically a huge laboratory where new experiments are constantly being made and the results carefully checked, analyzed, and finally compiled.

An Early Tank-Cavalry Operation

One of the first descriptions of combining independent tank and cavalry forces on a small experimental scale was reported by Colonel N. Moskalik in *Red Star* in August, 1942.

A combined tank-cavalry unit was advancing towards a meeting engagement with a motorized infantry which had just succeeded in pressing back the Soviet infantry, and had occupied several fortified points. The combat team apparently consisted of one cavalry regiment and a tank battalion. The night was used for a concealed approach march, so as to be in readiness to strike at dawn. The marching formation is not described exactly, but is referred to as one which "enabled the tanks to deploy swiftly and to attack the enemy together with the cavalry right off the march."

Reconnaissance showed that the Germans had not had time enough to consolidate their newly won positions. One German battalion occupied the position in front of the railroad and parallel to it. Another battalion occupied the patch of woods on their left flank. Thorough reconnaissance made the whole picture sufficiently clear, and as later evidence proved, quite accurate.

It was decided to strike the main blow at the German right, because here their flank was practically open. Simultaneously with the main attack, one squad-

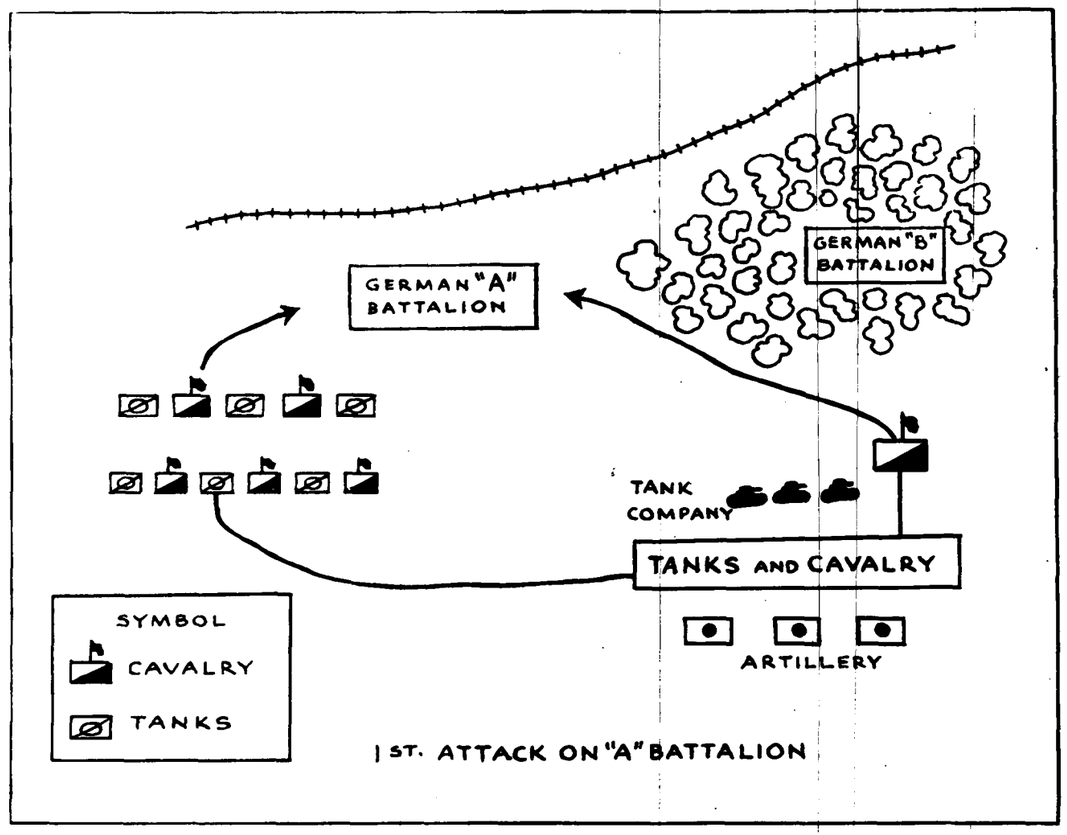


Chart No. 4

ron was assigned to penetrate through the German line at the junction of the two battalions, and strike at the left flank of Battalion A. Inasmuch as this squadron throughout the operation had to be exposed to a strong enemy fire from the woods occupied by the second battalion, it was decided to reinforce the squadron with one tank company. (Chart No. 4.)

The approach march was uneventful, and the prescribed battle order was achieved quickly and smoothly. The main force of tanks and cavalry, after describing a wide encircling arc around the German right, attacked them near the rear. Simultaneously the tank company, strongly supported by the bulk of the detachment's artillery, opened fire on "B" battalion occupying the woods. Thus the squadron advancing into the junction between the two German units was enabled to reach the left flank of "A" battalion almost without casualties.

After a stubborn engagement lasting almost an hour, the Germans broke and started to retreat. A quick regrouping followed, and the whole force attacked "B" battalion in the woods. By that time, it had been considerably softened up by the steady and punishing artillery fire, and gave way almost immediately.

The battle formation of the main force was as follows: The tanks advanced at intervals of twenty to thirty yards. The length of these intervals was calculated with the idea of giving each tank plenty of space for maneuver and change of direction without colliding with the cavalrymen. In these intervals were placed small groups of cavalrymen, five to seven men each. The formation consisted of two echelons; the distance between the assault echelon and the rear one was about half a mile. The account indicates that placing small groups of cavalrymen between the tanks proved to be very effective in cutting down casualties, as the tank armor protected these groups from the flanking fire from machine guns. The formation described is practically nothing but a *lava* with the inclusion of mechanized elements.

When the assault echelon approached within a few hundred yards of the enemy position, the tanks (which suffered only a few casualties) rushed forward to the outer edge of the German defense and began to suppress the enemy's strong points. As soon as the first signs of uncertainty and disruption in the German fire system became manifest, the cavalry began to move up and finally charged in a crescent formation. Their attack seems to have been entirely successful, and more than two hundred German officers and men were cut down. Some of the enemy's strong points suppressed by tanks in the initial stage of the attack came to life again during the cavalry charge, and again were pounced upon by tanks.

The success of this engagement was mainly due to the perfect coördination between tanks and cavalry. The two arms kept abreast of each other, nobody fell behind, and their respective mobility was fully exploited at all stages. Further developing the initial success, the group reached the next German defense boundary, where they were met by an antitank defense of considerable strength. Here the tank casualties were considerably higher, but this boundary was also carried. The impetus of the attack, and the flexibility of the formation were such that the cavalry again was able to attack right after the tanks, and without dismounting.

In conclusion, Colonel Moskalik points out that even the best conceived maneuvers of tank and cavalry may come to grief without full measure of antiaircraft protection, especially in open country. Approach marches should be accomplished preferably at night, and troops should be thoroughly trained to disperse quickly. Measures of concealment and camouflage are especially important, particularly in bivouac periods. It is obvious that a well thought out system of supply, as well as the greatest possible attention to maintenance and repair are also of prime importance. Failure in organization, and especially failure to supply the tank-cavalry force with plenty of antiaircraft weapons and a quickly available support by fighter planes may mean a stalled offensive, and a corresponding loss of maneuvering ability.

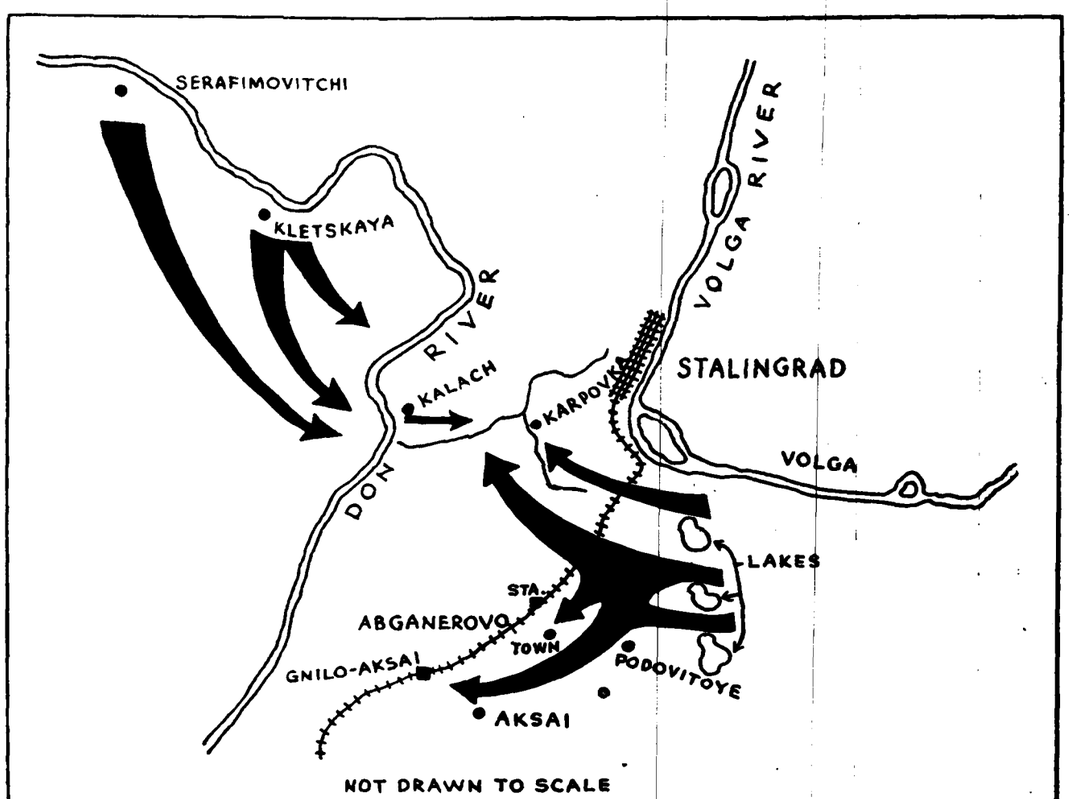
Similar experimental actions in which different possible combinations of tanks and cavalry were tried out, were carried on throughout the summer and autumn of 1942 on all sections of the front.

The Tank Cavalry Team at Stalingrad

Few people know that cavalry took part in the defense of Stalingrad, as well as in the counteroffensive that culminated the operation. Here, unfortunately, as on a great many other occasions, available information at this time is very scanty. One Soviet report says that one cavalry division, the Don Cossack Guards, operated throughout the seige in the southern part of Stalingrad. This district is practically a series of separate suburban and industrial communities strung out along the banks of the Volga, with stretches of open country in between. This whole section of suburbs is crossed with ravines and gulleys. Most of these settlements, some of them large and some of them just small clusters of industrial and private dwellings, changed hands several times.

The only available details concerning the participation of cavalry again indicate the same trend. The account repeatedly stresses the same formations as were used in the action described above. In attack, tanks, in the lead, usually tried to envelop the inhabited center and break into it at several points simultaneously. The cavalry *lava* followed the tanks, sometimes closely, at other times it came into action as much as one or two hours later. That apparently happened when resistance was particularly stubborn, and the German fire system proved to be extensive and well organized.

The account leaves no doubt that in all those combined cavalry actions, the squadrons were in mounted



THE TANK CAVALRY TEAM AT STALINGRAD
MAP TAKEN FROM GENERAL TALENSKY'S SUMMARY

Chart No. 5

formation. After breaking into the settlement, the cavalry combat became mixed, some units dismounting and fighting from block to block.

All those experiments, closely studied and tabulated, finally shaped the structure of the combat team as it appeared on the first day of the Stalingrad counteroffensive, November 19th.

In its general features, the encirclement of the German Sixth Army at Stalingrad has already been described in these pages.[4] Since then, however, an important and authoritative account has thrown new light on the rôle of cavalry in this operation. There are many indications to warrant the impression that for many weeks after the November break-through, the rôle that cavalry played in the encirclement operations was deliberately hushed up in the Soviet military press. For instance, the account describing the actions of the First Guards Tank Corps, written by the corps commander, General Rodin,[5] never mentions the participation of cavalry in this most important operation. The *Red Star*, which reported the Battle of Stalingrad with a wealth of tactical details throughout its duration, also gave practically no information on the rôle of cavalry in the encirclement operations. The reason for this reticence is obvious. It was considered premature to disclose any tactical information concerning the structure and the *modus operandi* of the new combat team. There was every reason to believe that the German High Command would show an immediate and intense interest in the workings of this new combination. That is exactly what happened.

The first account, disclosing the structure of the two

[4] "Encirclement of Stalingrad," Cavalry Journal July-August 1943.

[5] Published in Cavalry Journal January-February 1943.

great pincers that closed on the German army, appeared in May, six months after the operation. It belongs to the pen of the editor of *Red Star* and official Soviet military historian, General Talensky, who usually summarizes the most important operations, and their strategic and tactical outlines.[6]

Here is what the account says: "The main blow was struck from the north from Serafimovitchi by the troops constituting the left flank of the southwestern front, and some troops of the Don front. The main maneuvering force on this wing was a mobile group consisting of three tank corps and two cavalry corps. The main blow on the left flank was struck by the southern group of the Stalingrad front. Here the striking mobile force was represented by two tank corps and one cavalry corps. The rest of our forces of the Don and Stalingrad front alike conducted aggressive actions of an auxiliary nature—holding operations designed to tie down the German forces to their respective sectors, and to dislocate their attempts to maneuver their reserves or to evade the blows of our flanking troops."

The account goes on to state: "On the morning of November 19th [illegible] the German front was broken through, and the mobile groups dashed into the enemy's rear. The southern striking force, annihilating several enemy divisions, reached the objective, the southern bank of the Karpovka River, on November 22nd. The northern group seized the Kalach bridgehead on November 23rd, and effected the junction with the southern group. The ring around the German army was thus closed."

There is little available information concerning the actions of cavalry of the northern group. The few sketchy accounts concerning the cavalry groups of the southern group, and the way its action was coördinated with those of the two tank corps composing the striking force, can be summarized as follows:

The strongly fortified German positions on the southern flank of the Stalingrad sector ran along the line of lakes in an almost straight north-south line.

The key to the whole position was two important heights behind the lakes. Both heights, as well as smaller hills adjoining them, were heavily fortified, and the defiles between the lakes (one, 8½ miles—the other, 4 miles wide) extensively mined.

Usual painstaking preparations took place before the attack. These included final war games in all units down to battalion commands. Cavalry commands down to squadron leaders participated in the war games at the tank corps headquarters, as well as in those played by staffs of different units.

A heavy fog hung over the battlefield when the artillery preparation started at dawn. It was very thick, and the visibility was much reduced when the attacking infantry, heavily supported by tanks, started the advance along the two defiles. The fog grounded the aviation completely.

After several hours of most stubborn fighting, the main zone was broken through, and shortly after 12 o'clock midday the tank corps went into the gap, with the cavalry following immediately.

After the collapse of their main defense zone, the Germans retreated steadily all day, while suffering heavy casualties under the relentless Russian pressure.

The first organized resistance was met at the large village of Plodovitove, which the tank corps reached soon after darkness. The battle for this strongly fortified point lasted for several hours. Finally, the village was enveloped by two tank columns, while the third column attacked it frontally. By 11:00 p.m. the defenses were broken, and the mechanized columns entered the village.

Here the Soviet account stresses the fact that, after breaking into the village, the tanks lost no time there, and made no attempt to carry the fight to the finish. Their task was to disrupt and disorganize the defense; then leave the rest to the cavalry. It is easy to see how much the speed and impetus of the break-through were increased by these tactics. The tanks practically streamed through the village, and continued their advance on the important German base of Abganerovo. In their wake, cavalry swept into Plodovitoye from two sides, apparently with all squadrons in mounted formation. Many Germans were cut down, and 3500 prisoners and considerable booty taken.

The same tactics were repeated at Abganerovo, a few hours later, shortly before daybreak. Two pincers closed around it, from north and south, at the same time that a frontal tank attack was being launched. This time, each pincer had two arms—one consisting of cavalry; the other of tanks (see map).

Again, tanks demoralized the defense and went on their way, while cavalry converged on the station and the town from all sides. Here many Germans were cut down by cavalry sabers, and several hundred were captured. The encirclement, however, was not complete.

[6] Summary of the Stalingrad Battle (August 1942-February 1943) by [illegible] Talensky in Issue Number [illegible] of The [illegible]

Battle scene from official war film "City That Stopped Hitler" shows cavalry in action south of Stalingrad, where it was used with tanks to form the southern pincer.

A part of the garrison (consisting of one infantry regiment, strongly reinforced with artillery) escaped along the two roads leading west.

Several squadrons of cavalry were immediately ordered to overtake the retreating column and cut it off. This was successfully carried out, and the whole column surrendered.

The tank corps in the meanwhile, advanced along the railroad to the station Gnilo-Aksayskaya, which was taken in the morning.

The station of Abganerovo yielded a rich booty—several hundred railroad cars and trucks loaded with supplies, over 100 guns of all caliber, and several ammunition dumps. The total number of prisoners taken in these operations ran over 8000. Three German divisions were completely smashed.

This is as much as has been released about the initial operations of the tank-cavalry team. The results, however, are known to the entire world. The debut of the new "constellation," in view of the strategic results achieved by this operation, can be classified as a complete and unqualified success.

German Emulation

The impression produced by the new combat team on the German High Command was instantaneous and profound; of this there could be no doubt. It became an object of immediate study, and their first attempt to reconstruct and duplicate the new tactics followed within a month.

In the middle of December, the Germans began to prepare the counterblow designed to relieve the encircled Sixth Army. The relieving force, under the command of Field-Marshall von Mannstein, was concentrated in the district of Kotelnikovo. The same official Soviet account of General Talensky gives the composition of the German striking force as follows: Two panzer divisions, two cavalry divisions, four infantry divisions, and special reinforcement groups. The structure of this shock group, which was given this strategically most important assignment, tells the story clearly.

It is the first known instance in the history of this war where the Germans used two cavalry divisions massed in one force, and the proportion of tanks and cavalry shows an obvious attempt to reincarnate the tank-cavalry teams which caused the initial disaster of the Sixth Army. They were, as is known, unsuccessful, and the von Mannstein group, after a considerable initial advance, was first stopped by Russian counter-attacks and finally completely smashed and thrown back to Rostov.

Almost simultaneously, other reports from different sectors of the huge front indicated similar German attempts to duplicate the new combat team. One of them, and a particularly stubborn one, was made under circumstances similar to those just described. In the latter part of December, trying to break through the Russian ring encircling Velikie-Louki and relieve the hopeless situation of that besieged garrison, the Germans used for the first time on this sector the combination of independent tank and cavalry units, although on a comparatively small scale. The Soviet account written by the well known tank expert, Major Slessareff, states: "A strong German break-through attempt was made southwest of Velikie-Louki. . . . Here they repeatedly used tank units combined with several squadrons of cavalry. These attacks designed so as to combine surprise and speed, followed in waves, and these combined formations were thrown into attack, sometimes several times a day. They were broken up by our powerful concentration of artillery and trench mortar fire."

There could be little doubt that the comparatively limited and so far unsuccessful German attempts to recreate the Russian tank-cavalry tactics were handicapped by an insurmountable weakness—*the lack of horse cavalry*. The significance of the new tactical development was apparently grasped by the German High Command immediately, but to develop their own combat teams of this nature proved to be impossible, as one of the two elements was woefully inadequate.

The other conclusion which also seems to be proven beyond a shadow of doubt is that this powerful new team should be studied and scrutinized as closely as possible. The results seem to be well worth while, and new proofs are accumulating daily. As brought out earlier, the United States cavalry, more than any other, has a vital interest in these developments. History, as it was often said, repeats itself. It also sometimes reverses itself. No one has more right than the United States cavalry to greet the new constellation on the tactical horizon with the same words as, three generations ago, were used by General Soukhotine: "They are the flesh of our flesh, our spiritual offspring, and our next of kin, divided from us in time and space!"

NAZIS SEEK CAVALRY RECRUITS

Stockholm, Jan. 2, 1944 (AP).—A dispatch today said members of the Hitler youth organization were being urged to join the German army as volunteers, indicating anew the Reich's need for recruits. The dispatch said it was learned that 15-year-old members of the Jugend (youth organization) were being trained in cavalry units for front line service when they become 16.

Germany is reorganizing her cavalry, a move which apparently reflects the Russian's effective use of mounted troops on the Eastern Front.

When Naval Guns Support the Army

by Commander J. H. Unwin, D.S.C., R.N.*

ONE of the striking features of World War II, which has seen the development and use of amphibious warfare on the largest scale, has been the greatly increased use and efficiency of British naval gunfire in support of the Army ashore. In World War I, naval gunfire was used in support of the Gallipoli landings and in bombardments of the Belgian coast, but the whole technical development was still in its infancy, and amazing strides have since been made.

Naval Characteristics

Guns. Naval guns differ from Army guns in that they are of high velocity and low trajectory, which make them less accurate on a pin-point target. To a certain extent, this has been overcome by the introduction of smaller charges known as bombardment charges, which give the trajectory more of a "howitzer" effect and considerably reduce the wear of the gun.

Ammunition. Further, the ammunition which a ship can carry is necessarily limited. Warships obviously carry normally a high proportion of anti-ship shell and only a small proportion of the H. E. shell suitable for use against shore targets. For specific operations, where interference from enemy surface forces is unlikely, a much higher proportion of H. E. shell can, of course, be carried. The type of shell to be used depends on the type of target to be engaged. Normally, for the larger caliber guns H.E. will be the best, but in special circumstances armor-piercing shell will provide the best answer.

In the bombardment of Tripoli early in 1941, *Warspite* and *Barham*, which were engaging buildings, used 15-inch H.E. shell. *Valiant*, firing on underground oil fuel tanks and the underground shelters of the Italian Naval Headquarters, used 15-inch armor-piercing shell. A satisfactory fire, billowing up as the fleet steamed away, testified to the accuracy and efficacy of this fire against the oil fuel tanks, and it is interesting to meditate on the feelings of the Italian Naval Staff in their shelters, on the unexpected arrival of a 15-inch shell.

Navigation. The control of naval gunfire against shore targets is complicated by the fact that, because of submarine and air menace, it is rarely, if ever, possible for the bombarding ship to anchor or remain stopped; she must be under way. When the target engaged cannot be seen from the ship (and most targets are of this type), arrangements must be made for the guns to be trained initially on a bearing worked out by the navigator. This bearing and training of the guns must be kept continually corrected by the change of bearing caused by the ship's movement. Similarly, the range must be calculated and kept up to date.

Coordination With Land Warfare

Air Observation. Although modern scientific aids have increased the accuracy of navigation, the ship's observed positions alone can rarely be relied on to give the requisite accuracy to hit a target some miles inland. Observation of fire is also necessary. In the early stages of a British seaborne assault, when enemy positions on shore are bombarded before friendly troops have landed, this observation must be done from the air. Once one's own troops have got ashore, observation of fire can be carried out by army officers ashore, known as forward observation officers.

In both these types of observation of fire, great strides have been made. Air observation has, up to date, normally been carried out by the Fleet Air Arm, using either carrier-borne or ship-borne aircraft—the *Swordfish* and the *Walrus*. Where strong fighter opposition may be expected, however, spotting will have to be carried out from faster planes than these.

The Forward Observer. Observation by forward observation officer (F.O.O.) parties ashore has been greatly developed. An organization has been set up in Britain, under the control of Combined Operations Headquarters, whereby army Royal Artillery officers are trained as F.O.O.'s for the observation ashore of naval gunfire and as bombardment liaison officers (B.L.O.'s), for artillery liaison on board bombarding ships. This organization has already been used in all major seaborne assaults, including Madagascar, the North African landings, Sicily and Italy, and has worked well.

Liaison. Each bombardment unit has a small headquarters staff commanded by a lieutenant colonel, Royal Artillery, who is the chief bombardment liaison officer (C.B.L.O.). The troops, each of which is designed to provide observation of fire on a divisional front, consist of about seven bombardment liaison officers and seven F.O.O. parties.

In Sicilian and Italian operations, where, after the initial landing, the advance was along a coast line, naval bombardment has been extensively used in support of the army advance, and the need has arisen for transport for these F.O.O. parties. In the early days of the Sicilian operation this had to be improvised, and several cases occurred of F.O.O. parties going forward mounted on donkeys borrowed from the local population. Vehicles are now being supplied for all F.O.O. parties.

*On Naval Staff of Combined Operations H.Q., London. Gunnery officer of the battleship *Valiant* from outbreak of war to April, 1942, with a short spell in the cruiser *Dido* in Spring, 1942. Service in the Norwegian campaign. Awarded D.S.C. for action at Cape Matapan. Took part in bombardments of Bardia, Tripoli, Valona and Rhodes.

The support provided by naval gunfire on land can be divided broadly into three classes:

1. Bombardment of enemy shore positions where no friendly troops are ashore.
2. Bombardment in support of a seaborne assault.
3. Bombardment in support of an army advance along a coast line.

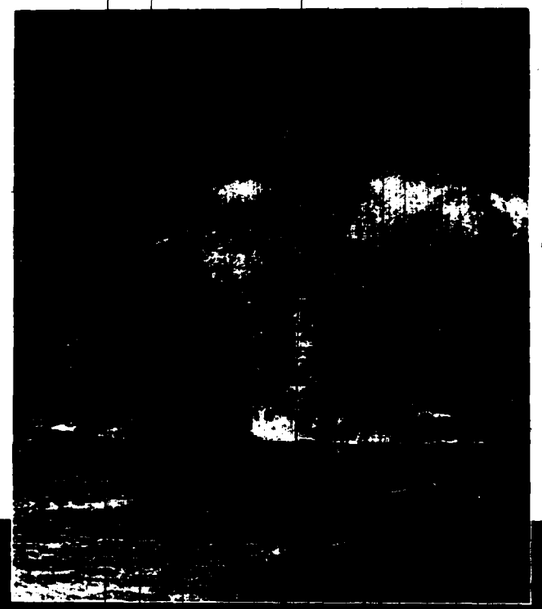
1. Where No Friendly Troops are Ashore

The first of these three types is a straightforward application of shore bombardment with air observation.

Examples of this type of fire come mainly from the Mediterranean. One typical case was the bombardment of Tripoli, already quoted. General Wavell, because of the diversion of a large part of his available forces to Greece early in 1941, was having to retire from the forward places he had captured during his first victorious advances, and the object of naval bombardment was to cause as much destruction as possible to this main North African enemy supply port.

Another such example was the bombardment of Rhodes by the 15th Cruiser Squadron early in 1942. This action was designed principally as a diversion from the main land battle in North Africa. Here the 15th Cruiser Squadron and destroyers bombarded a flour mill and other targets on the island in a night bombardment carried out by using flare illumination and direct and aircraft spotting.

A third example was the bombardment of Valona by the battleships *Warspite*, *Barham* and *Valiant* at the end of 1940. Valona was then one of the two main Albanian ports used for supplying the Italian forces fighting in northern Greece. The battle fleet, carrying out an indirect night bombardment of the port, fired at a range of about 26,000 yards over a 3,000 foot moun-

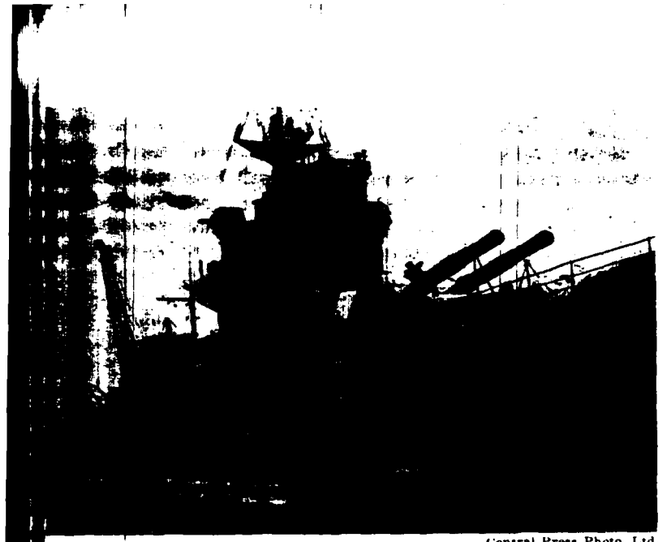


Having escorted the Allied landing forces to Salerno Bay, British and U. S. Warships put up a terrific supporting bombardment against the well established German shore batteries and entrenchments. This naval bombardment continued throughout the bitter fighting that followed the landings.

Right: The 33,950-ton British battleship, H.M.S. *Nelson*, fires her 16-inch guns.

Below: British warships bombard enemy positions on the beaches of Salerno, where German tanks were engaged with "good success."

British Official Photos



Central Press Photo, Ltd.

The great guns and armored superstructure of H.M.S. *Warspite*, now one of the most powerful warships afloat.

[illegible] an island covering the bay. Because of bad weather, aircraft spotting was not possible. A predicted [illegible] based on an observed position obtained from land [illegible] was therefore carried out.

2. Supporting a Landing

Naval bombardment in support of a seaborne assault may be divided into three phases:

a. The period immediately preceding the first assault landing.
b. Support of the landing and the advance up to the capture of the initial covering position.
c. Support of the advance inland, or of the fight to retain the covering position.

Before the Landing. In the first of these periods—that immediately preceding the first assault landing—there will be two main tasks, the neutralization of all enemy batteries covering the seaward approaches and the beaches, and the neutralization or destruction of all enemy defenses on or covering the beaches.

The first of these tasks will have to be carried out mostly by indirect fire with air observation, either under cover of darkness with flare illumination, or by day from outside the range of the enemy shore batteries, or with the bombarding ship screened by smoke. Anything in the nature of a duel between the bombarding ship and the shore battery must be avoided. History has shown that because of the very small size of the shore targets, the low accuracy of Naval guns against pin-point targets, and the large relative size of the ship as a target, the odds in such a duel are in favor of the shore battery.

There have been many instances of the successful neutralization of enemy shore batteries by warships: notably, by *Bermuda* of the C Matifou Battery during the assault on Algiers; by *Rodney* of the du Santon Battery during the assault on Oran; by *Nelson* and *Rodney* of the Regio Batteries overlooking the Straits of Messina (these batteries were outside the range of cruisers' guns); and by *Abercrombie*, a 15-inch monitor, during the assault on Gela, Sicily. In this last case a British monitor, supporting an American landing, was using American F.O.O.'s and American F.O.O. procedure. In certain cases, too, batteries have been neutralized by direct fire by destroyers steaming close inshore.

The second task—the neutralization or destruction of enemy defenses on or covering the beach—can be carried out either by specially armed guncraft close inshore; by destroyers close inshore; or by larger ships, either by direct fire on the flanks or by indirect fire over the heads of the infantry in their assaulting craft.

Landing and Initial Advance. During the second of these three main periods in support of a seaborne assault—the landing and advance up to the capture of the initial covering position—the nature of naval support fire changes to engagement of the inland targets by indirect fire. Great care is necessary to avoid endangering one's own troops. F.O.O.'s will be established ashore as soon as possible. Until this, all observation must be from the air, but once F.O.O.'s are ashore, the quality of Naval supporting can be expected to improve. Targets will be mainly of the nature of direct fire on the flanks, counter battery, and harassing fire on inland areas known to contain concentrations of enemy vehicles or personnel.

Advance Inland. During the third period—support of the advance inland or of the fight to retain the covering position—naval gunfire, using F.O.O. spotting, will tend in the main to engage inland area targets in indirect fire. If the fight for the covering position is protracted and violent, however, more aggressive fire will be necessary, and naval gunfire can be of infinite value.

Good examples of this can be seen in Mediterranean operations: notably, in the engagement by the U.S.S. *Savannah* and other cruisers and destroyers off Gela

This German mobile flak gun, used in action against Allied landing craft, was knocked out by Naval gunners supporting a landing in Italy, September, 1943.

British Official Ph

in Sicily, when German tanks broke right through to the beaches and were stopped and routed by 6-inch fire from the cruisers; and by naval gunfire, in support of the Salerno landing, which culminated in the bombardment close inshore by the battleships *Warspite* and *Valiant*. In Sicily, during the advance inland from Scoglitti, a U.S. destroyer, providing supporting indirect fire, engaged two tank targets in quick succession. Three salvos were fired at each target, the third of which hit in each case. F.O.O. reports were: first target, "Very nice"; second target, "Many tanks destroyed."

Diversion. The other type of fire in support of a seaborne assault which has not yet been mentioned is fire on some area well away from the scene of a main landing, designed as a diversion so as to confuse the enemy of the attackers' intentions and to delay him committing his reserves. Such an operation was carried out by the battleships *Howe* and *King George V* when they bombarded Trapani at the western end of Sicily in the early stages of the Sicilian landings.

3. Advance Along a Coast Line

Naval support of an army advance along a coast line may take many forms, and is usually a combination of the types of fire already discussed. This fire may take the form of direct support of advancing troops, (i.e., neutralization or destruction of enemy strong points or defended areas holding them up); alternatively, it may be direct or indirect bombardment of his lines of communication, or of his reinforcements or of his retreating troops, or of dumps and supply bases. All types of fire will probably be required. Indirect bombardment with F.O.O. spotting will be used for targets close to the attackers' own lines. Indirect bombardment with air observation may be required for targets farther afield. Other cases may occur where direct fire close inshore may be possible.

In December, 1940, during General Wavell's first advance into Cyrenaica, Bardia had been by-passed and invested with two or three Italian divisions inside. When the assault was mounted, the plan of attack was for the spearhead to force the defenses and drive straight to the town in the south of the defended area. Up to two Italian divisions were encamped in the northern half of the defended area, and any formed attack on the flank of the British spearhead as it drove forward to the town might have had disastrous effects.

Admiral Sir Andrew Cunningham, Commander in Chief of the Mediterranean Fleet, at once proposed the intervention of the British Battle Fleet. In consequence, as the land assault developed, the *Warspite, Barham* and *Valiant*—the "great ships" as Mr. Winston Churchill likes to call the battleships—opened fire with their 15-inch guns on the northern area. The effect was tremendous. The Italian divisions were at that time beginning to form up for the counterattack. When the naval gunfire started, they at once went to ground and appeared only the next day to surrender.

The landing (at Gela) 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.

—*"U. S. Seventh Army in Sicily"*—The Cavalry Journal, September-October, 1943.

Again during General Wavell's first advance into Cyrenaica, the retreating Italians had to pass along a single road close to the shore immediately before reaching Sollum. This road was kept under almost continual bombardment by destroyers and old Yangtse River gunboats lying close inshore, and heavy casualties were inflicted. When the gunboat *Aphis* was bombarding, she was so close inshore that even the stokers off watch came up armed with rifles to join in the fun.

Before Bardia was captured early in 1941 the small port was continually bombarded to ensure that no enemy escaped by sea. At one time, the gunboat *Ladybird* went so close inshore that the Italians could not depress the coast defense guns far enough to hit her. In the words of the Admiral in Command, who was lying outside, "From the noise and explosions heard it was obvious that *Ladybird* was having a good time."

Again in the North African campaign, naval bombardment was used on this narrow coast road to hold up advancing panzer divisions, and great destruction was wreaked among the tanks. At one particularly vital time, the German advance was completely held up for 24 hours. Great execution was also done among tank "laagers" and dumps at night by cruisers using indirect fire. From spotting, provided by naval aircraft, the targets were found and illuminated.

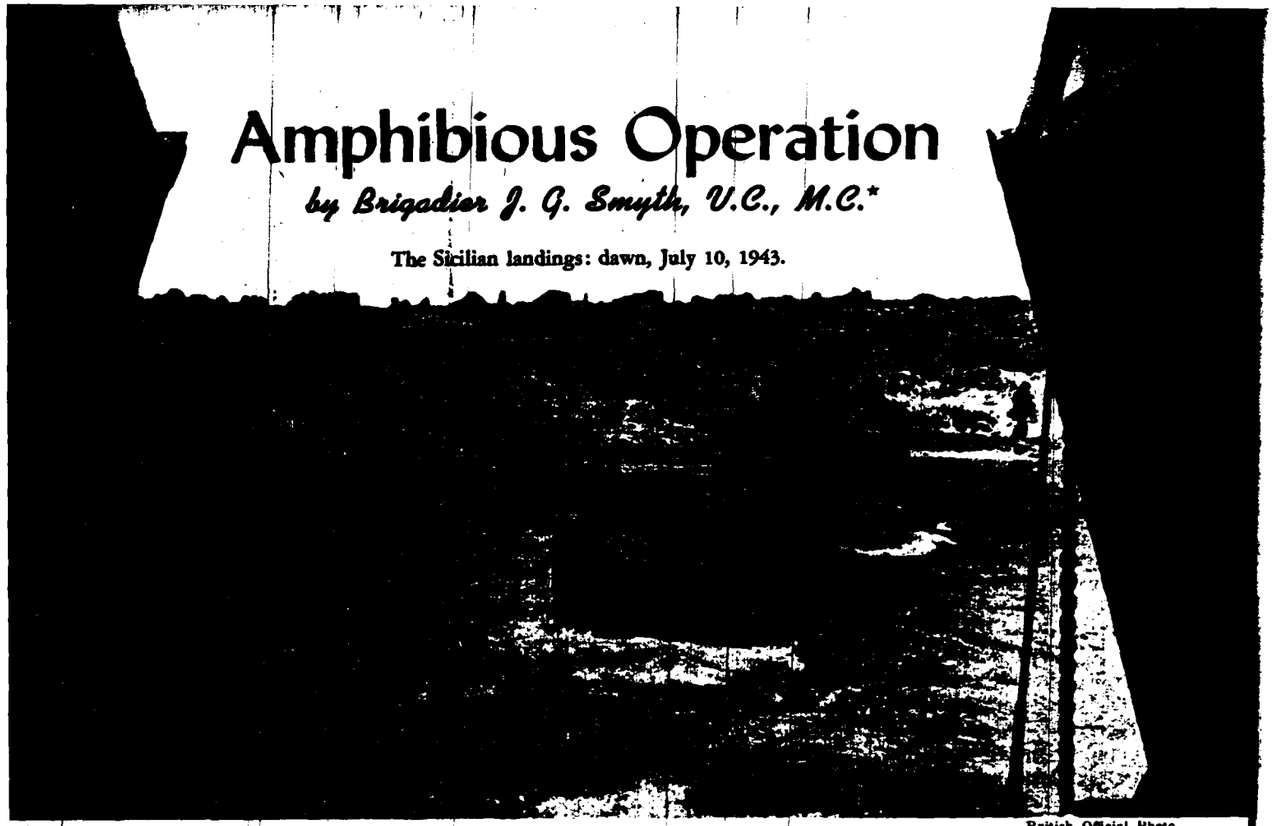
During the Sicilian campaign, fire by the *Roberts*, a 15-inch monitor, blocked the railroad and coast road at Taormina by causing a landslide.

Fine examples of this type of bombardment have occurred in the Aleutians, where battleships, cruisers and destroyers were used, and in the Solomons, where, because of the deep jungle, most bombardments were carried out in direct fire at close range. In the Solomons, U.S. Marines had captured Gavutu Island, and were attempting to capture Tanambogo Island, connected to it by a causeway, but were being held up by heavy machine gun fire. A destroyer closed Tanambogo Island and opened heavy fire at close range. The machine gun fire ceased, and the Marines, advancing over the causeway, captured the island.

Amphibious Operation

*by Brigadier J. G. Smyth, V.C., M.C.**

The Sicilian landings: dawn, July 10, 1943.



British Official Photo.

THERE is no operation of war that requires more careful planning and thorough preparation than a combined, or amphibious, operation.

The reason is not difficult to find. An amphibious operation involves the close coöperation and coördination of all three services—the Navy, Army and Air Force. Moreover, it is always a hazardous undertaking. There are so many ways in which it may go wrong, any one of which may result in entire failure.

A land operation may fail in several places, and yet succeed if a successful breakthrough is effected in one place. An amphibious operation against a hostile shore can succeed only with detailed planning, some element of surprise, and well trained troops.

The Japanese made great use of sea landings in their conquest of Malaya and Singapore in the present war. The troops taking part had undergone at least a year's special training at Formosa and Hainan before they undertook these landings.

Preparation and Equipment

The first requirements for a successful amphibious operation are sufficient shipping and specially designed self-propelled landing craft to put troops, tanks, guns and equipment ashore in adequate numbers to overcome the beach defenses and establish themselves firmly in sufficient depth inland.

Naval supremacy must be assured at least in the actual area of operations. Air cover must be given to the ships in transit and to the troops at the difficult time of disembarkation on the beaches. It must be continued during the following period, when all surprise is at an end and a mass of shipping is standing offshore ready to land reinforcements and heavy equipment.

The landing area must be chosen carefully. It must contain beaches at which landings are possible but which are not too obvious. It must certainly contain two or more ports at which heavy equipment and supplies can be landed after the beach landings have been made good. These ports will almost certainly have been put out of action by the enemy and it will take some days to get them going again. Most of the dock facilities will probably have been destroyed beyond repair and will have to be replaced.

All the above points have to be considered and allowed for in making the plan.

Troop Training and Assembly

It is assumed that the objective has been decided upon, that the necessary shipping is available, that landing craft of the necessary type and in sufficient quantities have been constructed and that the essential sea and air supremacy in the area of the operation can be assured.

*Brigadier Smyth was for four years in the Training Directorate at G. H. Q. India, and for three years an Instructor at the Camberley Staff College before the war. During the war he has commanded a brigade at Dunkirk, a division in India, and a division in Burma at the time of the Japanese invasion.

The next step is to provide troops for the operation and to put them through an intensive course of training. There are now highly trained Naval officers and ratings whose special task it is to train the troops in the use of boat and barges and in embarking and disembarking.

It is always difficult to keep such training secret and not give away the fact that a big seaborne expedition is impending.

The expedition then has to be assembled at ports within striking distance of the selected objective. The nearer these ports are to this objective the better, both from the point of view of fighter cover and the length of the sea voyage. In the invasion of Sicily, fighters based on Malta and Pantellaria could cover most of the island.

A short sea voyage is advantageous from many points of view. In certain cases it may even be possible to take the troops across the whole distance in their landing craft. For this, however, a short sea voyage and a calm sea are necessary. Usually the troops will have to start in transports and tranship to their landing craft at a later stage.

If the voyage from the assembly ports to the objective is so long that it cannot be completed within the hours of darkness of one night, then it is almost certain that the expedition will be spotted and all further surprise will be lost.

Sea and Air Mastery

The next step is to gain sea and air mastery over the area in which the operation is to take place. In the case of Sicily the Allied fleets had established a complete naval supremacy in the Mediterranean. This supremacy was so complete that the Italian fleet never dared to issue out to dispute it.

The Allied Air Forces then set about gaining air superiority. This they did by concentrated air attacks on all the Sicilian airfields. At the same time, they kept up a degree of surprise by bombarding other targets. Their methods were so successful that the enormous convoy of some 3,000 ships made the voyage practically unmolested and undetected.

Success was due to the observance of that old principle of war, *concentration of superior numbers at the decisive point*, and to *the close coöperation of all three Services—Navy, Army and Air Force.*

Needless to say, a deep study has to be made of tides and weather and of every navigational problem that may arise. A slight miscalculation may throw out the whole plan.

Airborne Troops

The next point that must be considered is the use to be made of airborne troops and how and when they are to be landed. It will be remembered that the Germans captured Crete with airborne troops alone, but they suffered heavy casualties, even with no fighter opposition against them.

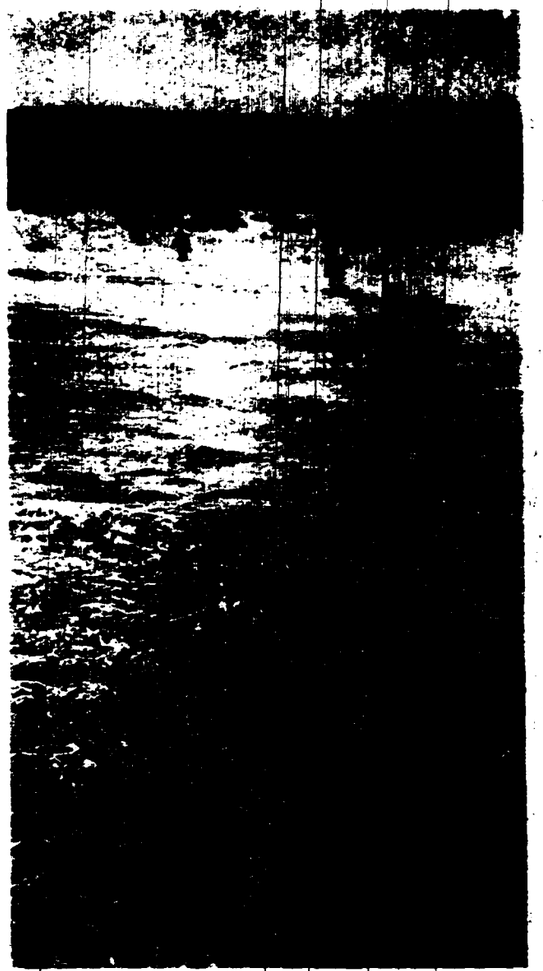
In Sicily, parachute and gliderborne troops landed under cover of darkness before the main sea convoy. Their task was to capture vital points behind the beach defenses and to hamper the movement of reserves.

Embarkation and Naval Protection

The troops embark on their transports with their landing craft loaded in the same ships. The question of loading ships for an amphibious operation is an extremely important one. Cases have been known in the past where heavy stores were loaded on top of the lifting gear, without which they could not be unloaded. The ships have then had to return to the port of embarkation for re-loading.

At the given time, under cover of darkness, the expedition sets sail.

British infantry wading ashore from landing craft at a Sicilian beach. Note guide rope.



British Official Photo.

The next phase is entirely a Naval one. It consists of the assembly, protection and navigation of the convoy. The larger the number of ships, the more difficult these problems become, and this limits the size of the force that can be employed.

The transports arrive off their objectives early in the morning while it is still dark. The landing craft have to be got into the water; then the men embark. Unless the troops are very highly trained, this is a difficult business at any time; unless the weather is good and the sea calm, it is a difficult business for any troops.

Establishing the Beachhead

Under cover of intense sea and air bombardment the landing craft approach the beaches. This is the first critical point in an amphibious operation—getting the first flight of the infantry landed successfully. It only needs unexpected obstacles, covered by unlocated machine guns, to cause such heavy losses among the landing craft that the troops either cannot land at all, or they land in such bad shape and such small numbers that they are unable to advance inland.

Pioneers and Royal engineers wade ashore in Sicily, July, 1943.

British Official Photo.

It will be remembered that there were several such instances in the Gallipoli campaign. In Sicily, however, the Italian troops responsible for beach defense put up so little resistance that all the landings were carried out successfully with little opposition.

After landing, the leading troops must advance inland as quickly as possible and form a bridgehead, under protection of which weapons, supplies and the remainder of the force can be landed.

By this time it will, of course, be full daylight. The Air Force turns its attention to strafing all communications leading to the beaches and to keeping as complete as possible an air umbrella over the attacking troops. The captured beaches are organized by previously detailed beach parties; and tanks, guns, ammunition, etc., are got ashore as soon as possible.

Captured ports have to be examined and immediate steps taken to put them into working order, as it is impossible to land the heavy stores, heavy guns and equipment, which a modern army requires, on open beaches.

Here again, in Sicily, the Italians failed to sabotage the port installations before they withdrew.

Enemy Reserves

Now comes the second critical period in an amphibious operation. The enemy reserves, complete with all their equipment and weapons, move forward to counterattack.

The invaders still will be without most of their supporting weapons and will be operating in country unknown to them but well known to the defense.

As the advance progresses still further inland, it will become essential to capture and establish airfields. Otherwise the bombers will be out of range of fighter cover and will be at a disadvantage as compared to the defending Air Force.

Conclusion

From this brief survey of the main problems attendant on any amphibious operation, the immense complexities of this form of warfare can be realized.

The invasion of Sicily was to date, the biggest amphibious operation of all time. It was a triumph of careful planning and closely coördinated execution which was all the more creditable, since the forces of three nations were concerned.

It must be remembered, however, that the Italian troops did not contest the landings nor did they put up serious opposition inland. Had the beach defenses been manned by German troops the difficulties might have been greatly increased.

The Suppression of Cavalry

As the fateful year, 1944, begins for the world, the people of the United States are looking forward optimistically to victory within the year. The naval and military successes in the islands of the South Pacific, during the last sixteen months, and the successful land operations in North Africa, Sicily and Italy, have brought about much of this optimism.

Particularly, the following three operations have set afire the hopes of the United Nations for victory over the Axis Powers.

First, the remarkable success in winning the Battle of the Atlantic over the German U-Boats.

Second, the operations in the air which have gained for Great Britain and the United States a marked supremacy over Germany and Japan in aerial warfare. This supremacy has actuated the devastating bombing against German cities and production plants, which has led many people to believe that the war can be finished up against Germany by that means alone.

Third, but not least, the amazing success of the Russian army in repulsing the attacking German army in Russia, and the subsequent Russian victories which have resulted in driving the German armies back for hundreds of miles and almost completely off of Russian soil.

Although all of these operations have together raised Allied hopes to the point where certain victory over Germany is being predicted for 1944, and subsequently over Japan, it is really the successes of the Russian armies that have justified these hopes most reasonably. Without this success, just where could there be found a real reason for any hopes of victory in 1944, or indeed in any subsequent years? Fortunately, it is not necessary to speculate on that question.

Conceding, then, that it is the Russian army that has done the most fighting and won the most successes so far for the Allied cause, without deprecating in the least the great sacrifices made by the armed forces of Great Britain and China, and indeed our own, it is interesting and instructive to inquire into the technical methods by means of which Russia has conducted this fighting and won these successes.

This task has already been accomplished in some measure by The Cavalry Journal through its published articles written by important officers of the Russian army during the past two years. This material has been available for the benefit of military leaders if they so much as take the trouble to read and reflect upon it. It is true that not the whole but only a part of the tactical technique of the Russian army has been covered in these articles. The Cavalry Journal has confined itself to that in which it is particularly interested, namely, the technique of armored forces and of cavalry.

In these Notes, published in every issue of The Cavalry Journal for nearly seven years, an effort has been made to evaluate the work of armored forces and cavalry, both in the Russian army and elsewhere. Believing, with the Russians, that the advent of armored forces did not substitute a new arm for the cavalry but simply provided an added arm for the prosecution of warfare, I have attempted to show that the missions of cavalry have not been taken over by armored forces to that degree that should diminish the value of cavalry for most of its very important rôles as previously established.

Germany, while preparing her army for this war, unfortunately for herself, decided to throw all her eggs in one basket and to rely on winning a quick war against unprepared opponents largely through the means of armored troops. In doing this, she did not make the mistake of neglecting her infantry and artillery, but nevertheless counted on her armored forces as the spearheads of her attacks and the principal means of her new mobility. She, therefore, suppressed her cavalry to a large extent, but not so much as those of her opponents who slavishly imitated her methods. Since her opponents did not have any armored forces to speak of, or any troops specially armed and trained to oppose her armored forces, this scheme worked very well in 1940.

When the Germans attacked Russia, however, this weakness was made manifest. The Russians had not suppressed their cavalry but had enlarged it. Furthermore, the Russians were in the process of enlarging their armored forces and their antitank forces. The Germans were superior in the air, and, for a few months, in their armored forces. At the beginning, therefore, it was only in their cavalry that the Russians were superior. But this sufficed until they could catch up with Germany in regard to the new arms—armored force and airforce. When this was done, Russia was superior as a whole, because of her added strength in cavalry. That they made good use of this advantage is patent to all who choose to read.

Despite our successes on land and sea, and despite our overwhelming and terrible attacks upon Germany from the air, it is now being acknowledged that Germany cannot be beaten to her knees until the German army is defeated and made to surrender. Although Russia continues at this writing to succeed against the German armies, the Russians insist that the British

and American armies must assist her by invasion of Europe.

When the British and American armies invade Europe, they will be opposed by strong German armies. Our armies, therefore, should be equipped with every available means of land warfare. It would be well to learn from the Russians as much as possible about their successful operations against the Germans. Nothing should be neglected. The Russians have made and are still making extensive use of cavalry. Cavalry in western and southern Europe can be made as useful as it has been in Russia—perhaps more so.

Are the United States and Great Britain going to send armies into this theater of operations without a numerous cavalry despite the example set by the Russians?

The answer to this question seems already to have been made. Great Britain and the United States appear to have suppressed their cavalry. Cavalry officers have been transferred to other branches and duties or remain in cavalry regiments that have been mechanized and virtually changed into armored forces. It must be assumed that our military leaders have considered this question carefully and have made this decision, right or wrong, based on certain conditions which prevail in this war. Probably, the most important factor in arriving at this decision was the fact that the fighting is overseas and not on this continent or this hemisphere. Had it been otherwise, it must be assumed that a different decision would have been made, although, as will appear later, there are some officers in our army who have, wrongly we think, lost their faith in cavalry altogether.

Good cavalry is not easy to make. It would take considerable time to produce and train a large force. This country is no longer a country of horsemen. All young men drive motor vehicles and understand gasoline engines and their upkeep. Their training for armored force, therefore, is less difficult than for cavalry. Those difficulties, however, can be overcome, as has been shown in the regular cavalry. Had the necessary steps been taken in 1940 or even 1941 to increase our cavalry, a large and formidable force would now be available. The real reason for not doing this was the difficulty of transportation overseas. In 1940 and 1941, shipping was in a critical condition. Ships were being lost faster than they were being built. Although, at this writing, that situation has changed, at that time the outcome could not be foreseen. The difficulty of getting cavalry overseas was therefore considered insurmountable. Our leaders may have been right.

Nevertheless, there are many officers in our army who were very ready to see those difficulties because of their erroneous disbelief in cavalry. What the effect of our disuse of cavalry in this war will have on the future and whether cavalry will ever again be maintained in our army even for possible military use on this continent, is hard to say.

In nearly all of my Notes I have been protesting against the suppression of cavalry in the British and American armies. My efforts, right or wrong, have fallen on barren ground.

In the history of American and British military campaigns, we can find many examples of the failure of military leaders to provide their armies with numerous and up-to-date cavalry.

During our War for Independence, sometimes improperly called The American Revolution, General Washington was strangely blind to the importance of an American type of cavalry which could easily have been formed from the many horsemen and horses in the Colonies and supplied with abundance of forage to be found almost everywhere. The truth is that Washington as a general, during the campaigns of 1776 and 1777, displayed a strategical and tactical dullness that was exceeded only by that of his opponents, Sir William Howe and Sir Henry Clinton.*

*"Washington and Cavalry," *Studies Military and Diplomatic*, by Charles Frances Adams, published by The Macmillan Company, 1911.

"Washington and Cavalry"

Summarizing the campaign of 1777. . . . Trevelyan says that if Washington had begun the campaign with a respectable force of cavalry, numerous enough to cover his own front and watch the movements of the enemy, his advance guard need never have been surprised at Paoli and even Brandywine might have told another tale." He then adds that Washington, during the Valley Forge winter, gave much of both time and thought to the creation of such a force. The organization of what was subsequently known as "Lee's Legion" resulted. . . . Yet that very corps . . . emphasizes forcibly Washington's limitations as a cavalry leader, and his failure to grasp in a large way the part which a sufficient and effective mounted service, both might and should have played in the general field of the operations which it devolved on him to conduct. . . .

In view of what subsequently took place during the War of Secession in this country . . . it is useless to say that this (cavalry) was impracticable; and the question next presents itself—Who was responsible for this strategic and military shortcoming? . . . The obvious objection will, of course, next be advanced that the keep of horses is costly, and Washington, when not wholly destitute, was always short of funds. This hardly merits attention. The Connecticut cavalry were dismissed and sent home on the specific ground that horses were thought to be of no use in the operations then in hand. The riders were invited to serve on foot. Yet only a month later, because of the lack of even a pretence of a mounted service, Washington's advanced line was flanked, and the very flower of his army needlessly sacrificed. . . . In the next place, Washington did not then, nor afterwards, cry aloud for eyes and ears for his army, and have them denied him on the score of cost. . . . Finally, later on, the item of cost did not, in 1780 to 1782, prove an insuperable obstacle in the way of the development of a most effective mounted service in the Southern Department; though compared with Greene's, Washington's camp chest was a purse of fortunates. . . .

—CHARLES FRANCES ADAMS,
"Studies Military and Diplomatic."

It was not only the failure in regard to cavalry that was so distressing. In the campaign that was enacted in and about what are now the cities of New York and Brooklyn during the months of August, September and October, 1766—and particularly during the days of August 26-29, when the Battle of Long Island was fought—Washington displayed such errors of judgment that he involved his army in almost certain disaster and disgrace, and the American cause, from every reasonable standpoint, should then and there have perished. But luck intervened. Washington and the patriot army were saved by the extraordinary procrastination, hesitation and incompetence of the British army and navy leaders.

Interrupted by wholly inconsistent and contradictory flashes of brilliance, the whole campaign of 1776 and 1777 was fought in the same dull way. The saving grace was that whatever were the mistakes or failures of Washington they were invariably compensated for and exceeded by those of his opponent, Major General William Howe. It would probably be not far from the mark to say that Washington owed his final success, not to his superior generalship, but to his lofty and noble character, his integrity of mind, his high sense of duty and his fearlessness in expressing his views to his countrymen. In point of character, he was very superior to his British opponents.

Washington's conception of the rôle of cavalry was undoubtedly derived from his reading of the campaigns of Frederick The Great. In fact, the whole training and conduct of the Continental Army was so unfortunately influenced by Prussian officers that this alone nearly wrecked the cause of independence. The American army should have fought according to its own genius, its own conceptions, its own terrain and the characteristics of its own people, rather than to have tried to imitate the methods of the Prussians in Europe.

A large cavalry arm should have been formed. But it should have been American in its training and tactical conceptions and not Prussian. Washington rejected the whole idea of cavalry because his only idea of cavalry was that of the Prussian cavalry. Indeed, the Prussian cavalry was not suited to the tasks that would have been imposed upon it in the American War of Independence. So far, Washington was right. He failed, however, to appreciate the great advantages that he would have enjoyed if he had formed a numerous corps of American cavalry to be used as he saw fit and not according to any preconceived or European ideas.

The lack of cavalry in Washington's campaigns exposed his army to frequent surprises and near disasters. Without cavalry, he used infantry detachments for reconnaissance in force, for delaying actions, or for striking suddenly and with surprise at the sensitive spot of his enemy's line in the midst of battle—all cavalry missions. And consequently, he suffered disasters which, as at the Brandywine and at Peoli, nearly cost him the destruction of his army.

The cavalry which Washington needed was an irregular cavalry such as finally came into being under Daniel Morgan in the latter part of the War of Independence in the Carolinas. The irregular mounted troops of the Boers in South Africa in the years 1900-01 would have served the purpose well.

Washington was practically without cavalry, though not totally so. Late in the year 1777, the Polish officer Count Casinoir Pulaski, commonly credited as the first Chief of Cavalry in the Army of the United States, was appointed a brigadier general in command of the cavalry that Congress had authorized to be formed. Pulaski was a dashing and brilliant soldier, but he was not fitted to command American troops. His efforts were frustrated not entirely by his own failures but largely by the indifference of Washington to his proposals to form a large and effective cavalry corps. No such corps was ever formed, and Pulaski resigned his nebulous command in March, 1778. He attempted to raise an independent force to operate in the south; and met some success until he was mortally wounded, Oct. 9, 1779, in front of Savannah, Georgia.

Although Washington's Continental Army had to operate without cavalry, the British army under General Howe did have a small force of dragoons. Fortunately for the patriot army, it was trained according to European principles and accomplished very little in America.

While the Continental Army did without cavalry, it is pertinent to remark that in the operations in the Carolinas from May, 1780, to September, 1782, the patriot irregular cavalry under such men as Light Horse Harry Lee and Daniel Morgan were largely responsible for the failure of the British campaign, even though the brilliant Tarleton used mounted troops for the British cause in that campaign quite as effectively as did his American opponents. But had Tarleton's mounted troops not been compensated for by American irregular cavalry, the southern campaign would certainly have been lost to the Americans.

Another example of the stubbornness of ignorance is the attitude taken by the commander of the American forces in the Philippine Insurrection in the year 1899. When it became obvious that the insurrection could not be averted, or shortly after it began in February, 1899, the War Department offered to send several large cavalry regiments to Manila. Major General Otis, in command, with about ten thousand troops, volunteers and regulars, without any cavalry except a half regiment of the 4th Cavalry, dismounted and acting as infantry, was confronted by a Filipino army of some thirty thousand men under Aguinaldo, ill-equipped and poorly trained. There was no question in the minds of our men that we could defend Manila from any attack by the Filipinos. But, if we wished to attack and destroy Aguinaldo's army while it was all assembled in the vicinity of Manila, and thus prevent it from scattering throughout Luzon and turning the whole campaign into a guerilla war, so very difficult and tedious to over-

come, cavalry was necessary. General Otis rejected the offer of the War Department with the statement that cavalry could not operate in the country of Luzon and would be of no use to him.

This extraordinary statement, so utterly refuted in the later months of that year when it was too late to catch the Filipino army assembled in one locality, must have been induced only by ignorance and prejudice. Three regiments of cavalry boldly led in coöperation with our other troops could have destroyed the Filipino's resistance in a few weeks. Instead of that, the Filipino army, when attacked by our forces, separated into detachments of various strength and maintained a guerilla warfare for nearly three years.

In the War of 1812, we suffered again from the lack of cavalry of an American quality.

In the Mexican War we had neither a sufficient number of cavalry nor skill in the proper use of what we had.

In our Civil War, ignorance on the part of our leaders as to the proper use of cavalry, contrasted with brilliant cavalry exploits in the Confederate army during the first two years of the war, gave the Confederates a decided advantage in that early period.

With certain remarkable exceptions (such as the Confederate cavalry in the first two years of the American Civil War and Federal cavalry during the last two years), the whole history of cavalry since the time of Napoleon has shown lack of progress and skill in the science of its employment. This has by no means been due only to the failure of those of our military leaders who came from other branches of the service. It has been due largely to the failure of our cavalry leaders themselves. It is true that the example set by Washington in his non-appreciation of cavalry set a traditional indifference in our army to the value and even necessity for large numbers of cavalry. But lack of leadership in this regard in the cavalry itself is also responsible. The Civil War developed on both sides some very fine cavalry leaders. After that, however, the cavalry slumped down into an attitude of complacent self-satisfaction and non-progression until a few years before the present war commenced.

This same charge can be made against our infantry which, as late as 1917, was using the battle line, as prescribed in the 1911 Infantry Drill Regulations, of one man per yard, and the absurd advances by rushes without taking advantage of cover, and sometimes deliberately across ground that afforded no cover. Thus, our tactical developments never kept abreast of the improvements in firearms.

It must be acknowledged also that the absurd jealousy, or rivalry, between the infantry and the cavalry has worked to stultify scientific progress in the theory of coöperation between the two arms, and particularly the earnest study of the employment of cavalry.

There is little wonder, therefore, that when armored forces gradually developed, many officers of all branches thought that this new arm could take over the whole rôle of cavalry.

Despite the lessons from Spain, where Franco's forces had finally to use considerable cavalry numbers in order to win, we tumbled headlong into the error, committed by both Germany and Great Britain, but avoided by Russia, of suppressing our cavalry instead of increasing it.

When one tries to explain to the opponents of cavalry the value of this arm in modern warfare, he is confronted with certain stereotyped phrases such as the following: "The machine does not get tired, the horse does"; or, when one speaks of the value of a combination of armored forces with cavalry, the reply is: "The cavalry cannot keep up with armored vehicles." Without any further consideration the whole subject is dismissed.

Of course it should be unnecessary to explain here why these statements are so utterly misleading. One might as well say that since the machine does not get tired and the foot soldier does, there is no use for infantry. The idea that cavalry cannot keep up with armored forces is refuted by the frequent combinations of cavalry and armored forces in Russia. When in contact or near contact with the enemy no tanks or armored vehicles of any kind are going to travel on roads at thirty or forty miles an hour in the direction of the enemy. In wide encircling movements, cavalry can often be assembled beforehand in a convenient adjacent area or moved on interior lines across country. When cavalry and armored forces cannot be kept close together, the cavalry can be given a separate mission and moved on interior lines to connect the large infantry formations with the armored forces, thus acting as a link.

The various ways in which our modern cavalry could help our infantry, support our armored forces, or undertake separate but coöperative missions, have been recited frequently in these Notes or other articles printed in The CAVALRY JOURNAL. If England had not decided to suppress cavalry five or six or more years ago she could have had plenty of it now in England ready for any great operations on the continent. Whether the British cavalry, had it been maintained, would have been of the type necessary for success in modern war, by which is meant a more or less irregular cavalry operating in great numbers but dispersed into small units, is open to question.

As it is, it is certain now that, right or wrong, wise or unwise, any large British and American armies that may invade Europe presumably will do so without the benefit of any adequate force of cavalry. We hope they may succeed without it. Washington won his seven year campaign against the British without it. But it is now obvious to any intelligent military student that the lack of cavalry exposed his army to defeat and almost to disaster on many occasions, and that although he eventually won, the lack of a cavalry peculiar to America cost many lives and prolonged the war by several years.

On Foot and Horseback

The following editorial from the November 15th issue of *The Stars and Stripes* in London, was received too late for the last issue of The CAVALRY JOURNAL. Although the editorial is now two months old, it still warrants re-publication. In fact, current news dispatches of more recent Russian successes are replete with Cossack cavalry actions against the faltering German lines:

> In the days before war, advocates of air power and mechanization held the center of the stage.
>
> Then came the fall of Poland, the Battle of France and the Battle of Britain. Tanks and air power were mentioned in screaming headlines. Irresistible was the word used by those in high places, and irresistible they seemed to be.
>
> Then came North Africa, and the foot soldier came back into the headlines. With a bazooka gun on his shoulder, he proved his need and his worth. Artillery again gave him full support.
>
> Now the Cossacks are back in the news, and exactly a week after the break-through at Kiev, three divisions of Cossacks stormed into the key rail junction of Zhitomir, 80 miles to the west. This is the second great victory won by horse cavalry on the Russian front in the past two weeks. After the break-through at Melitopol, when the German army was moving hastily westwards towards Kherson and the Dnieper, the Russians pursued them, not with armored forces which might become isolated from the Russian infantry to the rear, but with cavalry—with large formations of highly trained, heavily armed cavalry. And these Cossacks not only succeeded in harrying and cutting to pieces the rearward units of the retreating German forces, but they were also directly responsible for the fall of the Perekop Isthmus. Arriving at the isthmus two days before the German defenders expected them, they captured 6,000 Germans and the gateway to the Crimea.
>
> Of course this doesn't mean that infantry, artillery and horse cavalry will now take over from the tanks and the planes; but it does mean that the best arm should be used for each job, and intelligent leadership will always see to it that the right arm is in position to be used when the opportunity for its use is at hand. In central Russia today, cavalry is being properly used. Cars and tanks are no substitute, because cars cannot go over the open country and tanks are far too cumbersome. In Italy the Apennine barrier limits the use of tanks; so the Queen of Services is carrying the brunt of battle.
>
> In 1939 some of the experts predicted that the war we are now fighting would start where the last one ended and end where the last one began. History is proving there was some truth in that statement.

* * *

Cossacks Cutting German Escape

London (Saturday), Jan. 15 (AP). Mozyr and Kalinkovichi, 12 miles apart, were captured on the fourth day of an offensive that tore through a heavily defended area.

The Moscow radio reported Cossack cavalry were speeding over the snow-covered ground well west of both towns, cutting off the escape route of Germans fleeing from the bastion cities.

Kalinkovichi is particularly important as a junction on the Moscow-Warsaw railway and the Leningrad-Odessa line. Its capture, with Mozyr, cleared another sector on the north-south route between Zhlobin and Berdichev, which the Russians need for communication between their White Russian and Ukrainian forces.

* * *

On the Air

The CAVALRY JOURNAL is doing its utmost to keep its readers up to date on information of cavalry actions in the present war. It is gratifying to hear radio commentators quoting the JOURNAL over the air. It helps to keep an uninformed public informed.

* * *

The Real Meaning of "Permissible Speeds"

Unit commanders who make sure their drivers have seen the "Caution" plates on automotive equipment and memorized the "permissible speeds" will avoid many maintenance woes. In some instances, they will escape the personal disgrace of motors needlessly but hopelessly wrecked.

Beside the instrument panel (or nearby, on the dash) all cars and trucks carry a table of the maximum permissible road speeds for the various gear positions. Of course, it is important that the operator observe these posted speeds at all times, but it is no less than vitally imperative that he does so *when descending a long hill in second gear*. There are literally scores of instances where the motors of army trucks have been reduced to broken, smoking junk while going down mountains in second, although the road speed of the vehicle at no time exceeded 35 miles an hour.

For example, as long as an army truck with a permissible speed of 11 miles an hour in second gear, holds to 11 miles an hour, its engine turns over at 2750

R.P.M. That is a safe number of revolutions and will do the motor no harm.

But suppose the driver, with his gear in second for a downhill run, wants to keep up with some lighter vehicle ahead of him. He may never have heard about "permissible speeds," and thinks he is above criticism if he stays under a road speed of 35 miles an hour. It happens, unfortunately, that at 35 miles an hour his engine will be turning over at 8200 R.P.M. If he maintains this conservative road speed for no more than a relatively short distance, it will mean scored pistons and cylinder walls, stretched or broken connecting rods, ruined bearings, probably damage to the shaft, and, generally speaking, one veritable mess. Among other things, the moulded materials in the clutch driving disk may explode if 5600 R.P.M. are passed.

To emphasize the damage that can occur in a truck motor turning over at 8200 R.P.M., it can be pointed out that this motor speed, if applied through high gear instead of second, would drive the truck 105 miles an hour.

The convoy leader takes on a big responsibility as he pushes his jeep over the crest and begins the run downhill. If the grade is steep enough to call for a shift of gear, he should never exceed the lowest permissible road speed for any truck behind him.

Cavalry Journal Material

A tabulation of comments on material published in 1943, as taken from recent "proxy cards," produces an interesting comparison with a similar tabulation for the preceding year.

As usual, the majority of proxy cards gave no answer to the query, "What article did you like best?" Also, it must be remembered that a large proportion of members of the Cavalry Association are out of the country, and, as specified in the Constitution and By-laws, proxy cards were mailed only to those members "within the continental limits of the United States."

	1942	1943
Current War and Accounts of Personal Combat Experience	134	87
Cavalry (with a large proportion for 1943 emphasizing Russian tactics)	120	172
Tank and Mechanized Warfare	107	67
Reconnaissance	57	147
"All Good"	41	29
Training methods, small unit tactics, and weapons	24	5
Air-Tank-Horse in Reconnaissance	10	..
Tank-Cavalry Coöperation	..	9
Miscellaneous	44	45
Total	539	561

Every effort has been and is being made to obtain as much material as possible of combat experience—especially of U. S. troops. This should become increasingly available as U. S. forces participate ever more actively in the prosecution of the war.

Current editorial policy is to publish all available material on cavalry action in the present war; reconnaissance; armored warfare (tank, antitank and mechanized); interesting accounts of campaigns or battle experience, particularly those that show the development of new tactics; and instructional articles from the training centers.

A Book On Reconnaissance

The urgent need for trained reconnaissance personnel is one of the vital lessons learned from the Tunisian Campaign. For the past year and a half, The CAVALRY JOURNAL has published at least one good reconnaissance article in each issue, but to date there is not a single authoritative book on the subject.

In view of the tremendous demand from officers and units for information on this subject, the best of the material published in recent issues of The CAVALRY JOURNAL has been collected and will soon be published in inexpensive book form of convenient size.

Many of these articles are based upon personal combat experience. All of them contain valuable information and training data for reconnaissance units. They include training material for the squadron, troop, company and platoon; reconnaissance methods for the infantry division, the armored units, and the T-D battalions; reconnaissance peculiar to the desert, the jungle, and street fighting; aerial reconnaissance and photographic reconnaissance.

Authors will include such well known officers as Major General C. L. Scott, Brigadier General Hamilton S. Hawkins, Colonel Peter C. Hains, III, Lt. Colonel Charles J. Hoy, Lt. Colonel Harry W. Candler, Lt. Colonel Allen D. Hulse, Lt. Colonel Brainard S. Cook, Lt. Colonel R. G. Fergusson, Lt. Colonel Bruce Palmer, Major James W. Bellah, Major Willard O. Foster, and others.

Announcement will be made as soon as publication date and price are known. Have your copy reserved now.

Your Cavalry Journal Address

Enrollment in the Cavalry Association has increased three times as much during 1943 as it did during 1942. This has more than doubled the circulation of The CAVALRY JOURNAL since this country declared war in December, 1941.

If your JOURNAL is not reaching you, if you have borrowed a friend's or are reading this at the Club, or if your copy has been forwarded one or more times before it has reached you—then tear out the change-of-address card in this issue and send in your correct address. The change will be made at once, and the chances are that the next issue will reach you promptly.

The Language of the Leader

by Lieutenant Vernon Pizer

FROM a corporal of infantry to a colonel of the medical corps, from the Alcan Highway to Guadalcanal, the one constant unchanging factor is language. The language of the military leader is the same whether it is expressed in Russian, Polish, or English. Battle commands, basic instruction, military law, administration—all are dependent upon language. An army could not exist, much less function well, without it. War serves to swell the importance of language.

The leader must be, first of all, positive and decisive in his speech. He must not vacillate or sit on a fence. He must banish *maybe, perhaps, I don't think so,* and similar words and phrases. He must be a yes-man and a no-man. Rather than say, "I don't believe you can fix the truck, corporal, but you may try," the leader says, "Go ahead and fix the truck, corporal. I know you can do it." The chances are the truck will be fixed in the latter case. At any rate, the corporal feels that he is regarded as competent and reliable, and will strive diligently to maintain that impression. Instead of saying, "I don't know whether or not we can give you a furlough, Jones; I'll have to think it over," the leader says, "I can't give you a furlough now, Jones, because it will put us over the allowable 15 per cent. I will give you a 10-day furlough commencing February 15th."

In the second place, leaders never "talk down." The leader doesn't flounder around for one syllable words with which to express himself to his men. He credits them with sufficient intelligence to understand language of average difficulty. Men sense "talking down," and they resent it. No one need be told that resentment in an organization plays havoc with morale. On the other hand, leaders don't lend themselves to flights of bombast. They don't take refuge behind a barrage of six-bit words. They don't use big words to impress their superiority and education upon their men.

The leader uses such expressions as "bunk fatigue," "gig," etc., instead of using less expressive, stilted terms. Why tell a man to "depress the accelerator" when you might just as easily tell him to "step on the gas"? Familiar army slang is generally a lot more expressive of the situation than stereotyped phrases, and if your men ordinarily use it, why try to be pedagogical?

The leader does not, however, use vulgar expressions. The idea that a good officer is one who can cuss along with his men is more fancy than fact. Swearing a blue streak will not make your men think you are tough and virile. It will make them lose respect for you, and respect is a big tough vertebra along the backbone of discipline.

The third point to be made is that language, particularly in military correspondence, should be terse, pithy, and unambiguous. All statements can be made in more than one way. There is, though, only *one* best way. Back in 1757, Marshal Maurice De Saxe said in *My Reverie Upon the Art of War,* "His (the general's) orders should be short and simple. . . ."

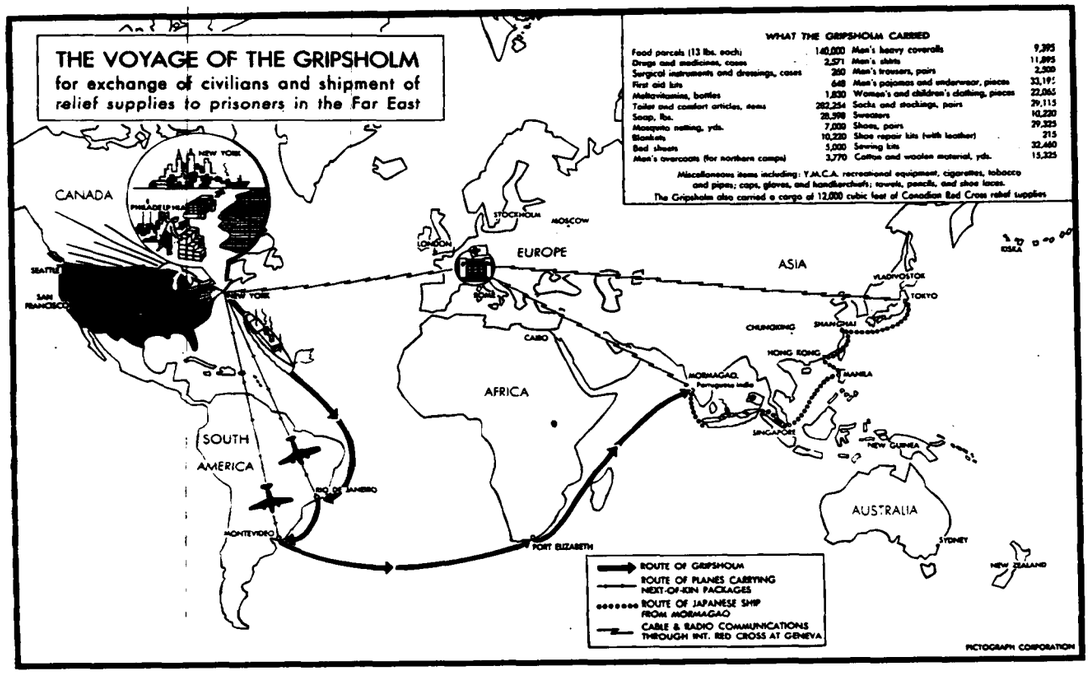
If you were a busy officer in the theater of operations, would you prefer to receive a communication reading, "It is requested that the undersigned soldier be granted permission to proceed in advance of the unit for the purpose of conducting reconnaissance"; or would you prefer to read, "Request permission to reconnoiter in advance of units"? The shorter statement gives all of the information contained in the clumsy, longer statement. In addition, the second wording has the advantages of brevity and clarity. It comes right to the point without beating around the bush.

It must be borne in mind, however, that brevity can be overdone and that it may result in ambiguity. Attempts at achieving the so-called telegraphic style, particularly in orders and field messages, may result in obscuring the intended meaning. Western Union may make an additional charge if you add *a,* or *an,* or *the* to a personal message; but field messages impose no such economic restrictions. What is the meaning of, "C.O. — Infantry, assembled troops in bivouac area and fortified sector"? Did the C.O. fortify *the* bivouac area, or did he assemble troops in the bivouac area and *the* fortified sector? The addition of *the* to the original message would have made the meaning clear and would not have permitted variations of the interpretation.

The final and most subtle point is that the leader uses words which convey to the listener or the reader the meaning that is intended. He does not use vague terms, or words that have several definitions. Instead of saying that a regimental review is "good," he says it is "precisely-executed" or "colorful." Otherwise, one of his listeners may picture the review as being precisely executed, while the other thinks of it as being colorful, with the result that each goes his way thinking that something different has been said.

Most people will say that an officer, to be efficient, must be a man of vision; yet the most inept recruit, if he is not blind, has vision. Leaders do not speak in generalities; they use specific language. Military instructors who choose their words indiscriminately or use them loosely will have poorly taught and perhaps actually mistaught soldiers. Orders containing terms that permit varied definitions may be misinterpreted, and misinterpreted orders can lose battles—have, in fact, lost battles.

Words are tools that should be used with craftsmanship. They cannot be avoided; they must be used; therefore, use them well.



U. S. Prisoners of War

Gripsholm Cargo Distributed

Washington, D. C., December 23—Word has just been received in the United States that American prisoners in the Philippines began receiving during the first half of December, the food parcels and other relief supplies trans-shipped from the exchange ship, *Gripsholm*.

A cable has been received by the American Red Cross from Geneva stating that the International Red Cross delegate in Japan, Dr. Fritz Paravicini, was making every effort to dispatch in time for Christmas one food parcel for each United Nations military prisoner of war and civilian internee detained in Japan proper, and in Korea, Taiwan and Manchuria.

In Europe, American prisoners of war and civilian internees were sent 10,000 special Christmas packages containing the "makings" of a holiday feast: chicken, cheese, fruit cake, candy, jam, nuts, coffee and cigarettes. Christmas candles and two handkerchiefs were also included. To supplement regular food packages, received weekly through the International Red Cross Committee, 10,000 morale gifts—ocarinas and puzzles—were sent by the Junior Red Cross.

(The letters from which the following extracts were taken have been furnished to the American Red Cross by relatives. All prisoner of war mail is censored by the Detaining Power.)

Zentsuji War Prison Camp (Japan)
January 23, 1943

"This is my first opportunity of writing, other than my radio message in February 1942 and printed card after arrival at (censored). I was active in the organization of the 121st Regiment and in the defense of the Mountain Province. We had several encounters with the Japanese but were forced in May to evacuate Bontoc for the higher mountain region in Ifugao territory. With the earlier fall of Bataan and Corregidor, orders were issued by General Wainwright to cease all hostilities and for the immediate surrender of the forces of the Mountain Province under Colonel Horan and of General Sharp in Mindanao. Our surrender was effected on June 3rd at Talubin near Bontoc, and consequent internment in Luzon Prison Camps. Most of my

thoughts are with you folks and I am anxious for the time when I shall be back with you."

Stalag Luft III (Germany)
July 2, 1943

"This has to be a joint letter because we are allowed to write only three letters a month, but can receive any amount, so hope you will all write. I was shot down over France on May 29. Consider myself lucky to have escaped injury—only had a sore jaw and leg from the parachute jump, but all right now. . . . Thank God for the Red Cross—don't know what we'd do without their food parcels. Never realized I would be on the receiving end of that dollar R. C. subscription, which will be a lot more when I go home again."

Stalag Luft III (Germany)
June 9

"As our evening meal has appeared before me since I decided to write this letter, I'll tell you what we have had tonight. Corned beef, fried potatoes and pudding. This is an average evening meal based on the contents of Red Cross parcels. For lunch we generally have 'Reich Soup' made from dehydrated turnips, beans, or peas. For breakfast we have bread and coffee. So while we have enough for the present, we will some day appreciate ham and eggs, or hamburger and fresh vegetables. I am studying philosophy, as well as German. Now I am reading Lin Yutang's *The Importance of Living*. This is an important subject for indefinitely confined prisoners of war."

Osaka Prison Camp No. 1 (Japan)
March 4, 1943

"We have been permitted to write an 80-word letter, so don't be disappointed. I have received one letter from you and one from Ed which were very much appreciated. I am in good health and am working. I am looking forward when the war will be over so I can see you all again."

Stalag VII A (Germany)

"I was captured in Tunisia on February 17. Since that time I have endured many things seemingly impossible. My treatment here is very good; food is fairly plentiful; the scenery is nice, and the Red Cross is doing a good job in helping us boys."

Zentsuji War Prison Camp (Japan)
February, 1943

"Our forces surrendered in Bataan, you remember, in April 1942, and we remained in the Philippines quite a while before coming here, and feel that here health conditions will be better."

Zentsuji War Prison Camp (Japan)
November 2, 1942

This is the second time that I've had a chance to write, and this letter, the same as the first, must be considered as being for all of you and Libby. There has just arrived here in camp a shipment of Red Cross materials for prisoners of war. . . . My time during the day is spent in studying Spanish and in reviewing French and shorthand. And I've managed to improve my bridge game a little. . . . (*Zentsuji is among the best of the Japanese camps.*—Ed.)

Camp Life Souvenir

The War Prisoners Aid of the YMCA has recently sent to the camps a notebook entitled "War-Time Log" in sufficient number so that one can be distributed to every American prisoner of war and civilian internee in Europe. The "log" has a stout binding and contains several hundred pages of blank notepaper of good quality. A note enclosed tells the prisoners that it is a "special remembrance from the folks at home," and that it is "intended to be kept as a permanent souvenir of the present unpleasantness."

In it the prisoner can keep a regular diary, write stories, make sketches or caricatures, write poetry, or even put on paper for later use letters that could not be mailed now. Many other possible uses are suggested, all with the primary object of the "log" serving as a visible link between the prisoner and the people at home.

Can Openers

Letters from American prisoners of war to their families occasionally ask for can openers to be included in next-of-kin packages. Every fourth package now being made up in the Red Cross Packaging Centers at Philadelphia, New York, Chicago, and St. Louis contains a small can opener so that in due course a regular and ample supply will be reaching the European camps. Can openers were also included in the special Far East food packages shipped on the recent voyage of the *Gripsholm*.

Prisoner of War Fund

Organizations:

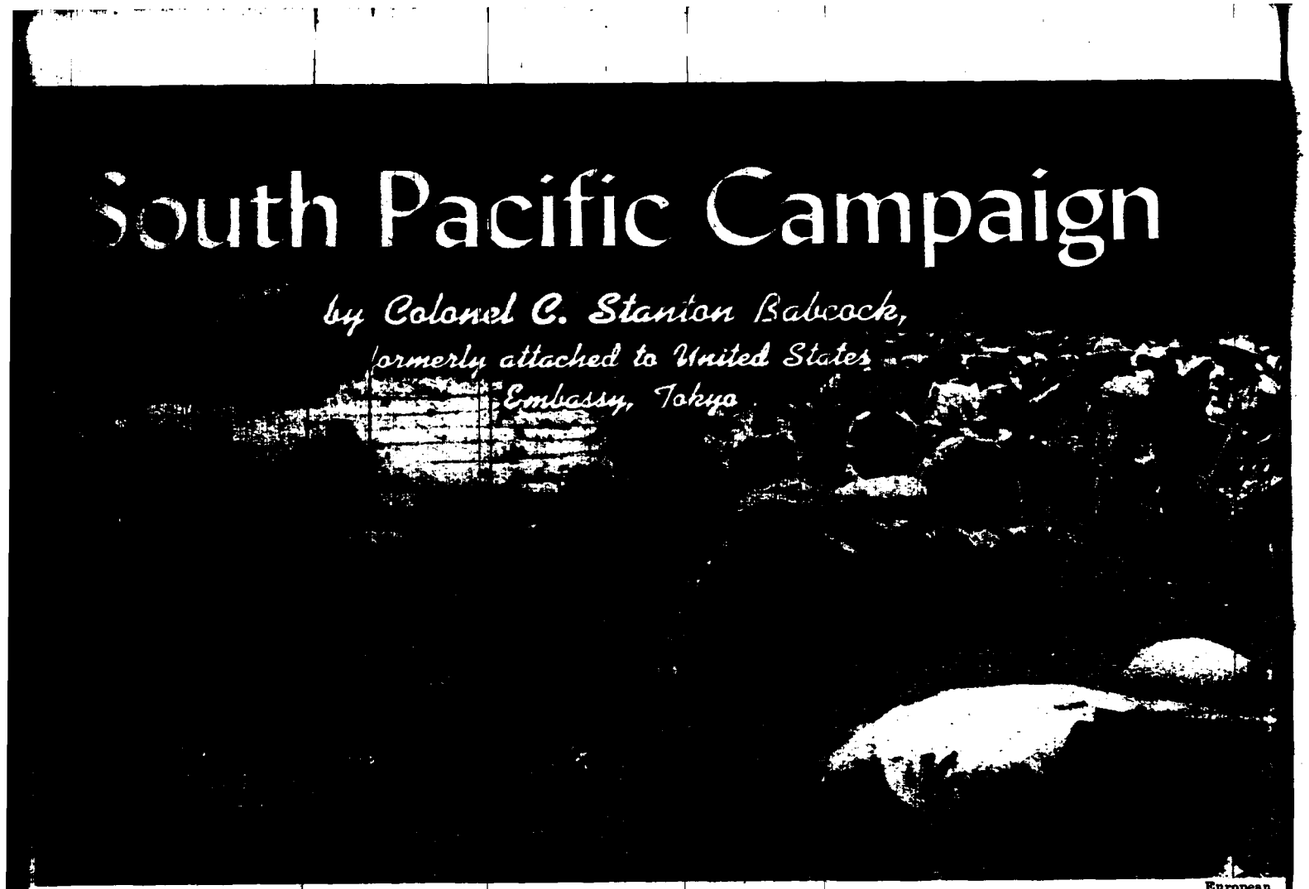
3d Cavalry (Mecz)	$197.19
317th Cavalry (inactive)	100.00
Individual Donations	115.00
	$412.19

Help our prisoners of war, by helping this fund to grow. Send your contribution direct to:

The Cavalry Journal
1719 K Street, N.W. WASHINGTON 6, D. C.

South Pacific Campaign

by Colonel C. Stanton Babcock,
formerly attached to United States Embassy, Tokyo



European

Jap planes fire Allied oil dump during early phase of New Guinea campaign.

Preparations

On the 11th of January, 1942, Imperial Headquarters in Tokyo announced that, "Because of the hostile attitude of the Netherlands Government in aiding the enemies of Japan since the outbreak of the War of Greater East Asia, the Imperial Government is compelled, against its wishes, to treat the Netherlands East Indies as an enemy, and Imperial units are now engaged in attacking certain bases in Dutch Borneo and the Celebes."

The implication was that until after the outbreak of the war, Japan had had no intention of attacking the Netherlands East Indies, in spite of the fact that Holland declared war at the same time as the British Empire and the United States. The conduct of the campaign itself, however, as well as a number of speeches and announcements by military and naval spokesmen, indicates that not only had Japan been planning the conquest of that region for many years, but that its naval construction program had actually provided for a large number of ships of the type that would be needed to carry out such a plan.

The tremendous extent of the area of the field of operations presented many difficulties. At the same time, that very extensiveness facilitated the operations of an invading power. The Japanese made full use of all factors in their own favor, and so organized their expeditions as to minimize those factors that would benefit their enemies. The long distances involved meant that the Japanese had to maintain extended lines of communication and organize a number of expeditions to strike simultaneously at widely separated points.

Those same distances required the Dutch to defend almost equally long lines of communication and maintain garrisons at a number of different points, none of which was capable of rapid reinforcement once the campaign got under way. The small army, of some 80,000 men, available for the defense of the Netherlands East Indies had to be kept in Java, except for a few troops which were necessary for the protection and operation of outlying submarine and air bases.

In spite of the tremendous size of the South Pacific region, complete control could be obtained by the occupation of some ten key points, none of which was defended by a large garrison. Because the Japanese were on the offensive, they had the initiative and could select the time and place of attack. By concentrating

an overwhelming force they could then reduce any one point long before reinforcements could arrive from Java. The Japanese knew full well that the only thing which could have prevented the success of their campaign would have been a large air force which could attack convoys on the way to their landings, and could bomb captured bases after their occupation, and so prevent the Japanese from using them in preparation for a move to the next point.

Coördination With Other Campaigns

The High Command had divided the conquest of this area into three phases, two of which were very carefully coördinated with the concurrent campaigns in the Philippines and Malaya. The first phase, which included the capture of the American islands of Guam and Wake and the occupation of British North Borneo, had to be completed in the earliest stages of the war. The capture of Guam and Wake would effectually cut the American line of communications between Pearl Harbor and the Philippines and so prevent the troops in the Philippines from being reinforced. It was also necessary for the protection of Japan Proper, and of her communication lines to the Mandated Islands and to the eastern part of the Netherlands East Indies, where her troops would soon be in action. The occupation of British Borneo would remove submarine and air bases which could have been used to attack convoys supplying Japanese troops in the Malay peninsula.

The second phase was the occupation of outlying bases in the Netherlands, of New Guinea, and of the Bismarck Archipelago, which would put the Japanese in position to attack the islands of Java and Sumatra and to assault the mainland of Australia. These operations had to be completed by the time that Singapore fell, so that the troops which had reduced the Malay peninsula could proceed to their next objective, the capture of Sumatra and Java, without unnecessary delay. The first two phases of this campaign, then, were the responsibility of the Navy. The third phase, the taking of the main islands of the Netherlands and of Australia, was to be carried out by the Army with the coöperation of its sister service.

The execution of the first phase required a limited number of men and ships and could be accomplished at the same time that the Navy was busy escorting expeditionary forces to the Malay peninsula and attacking British air bases there to facilitate the landing of army troops. The second phase, however, could not be undertaken until the Army was well established in the Malay peninsula and the planes and aircraft-carriers used in that campaign could be released for other duties. It is for this reason, then, that the Japanese ignored the Dutch declaration of war on December 10, and chose to maintain the fiction that they had no intention of invading the Netherlands. As soon as their troops were well established in Malaya and the fall of Singapore seemed assured, the Navy organized a number of special attack squadrons, and in a few short weeks had reduced all the outlying bases and was ready to attack the combined Allied fleet and to escort the Army in the final phase of the campaign.

The First Phase

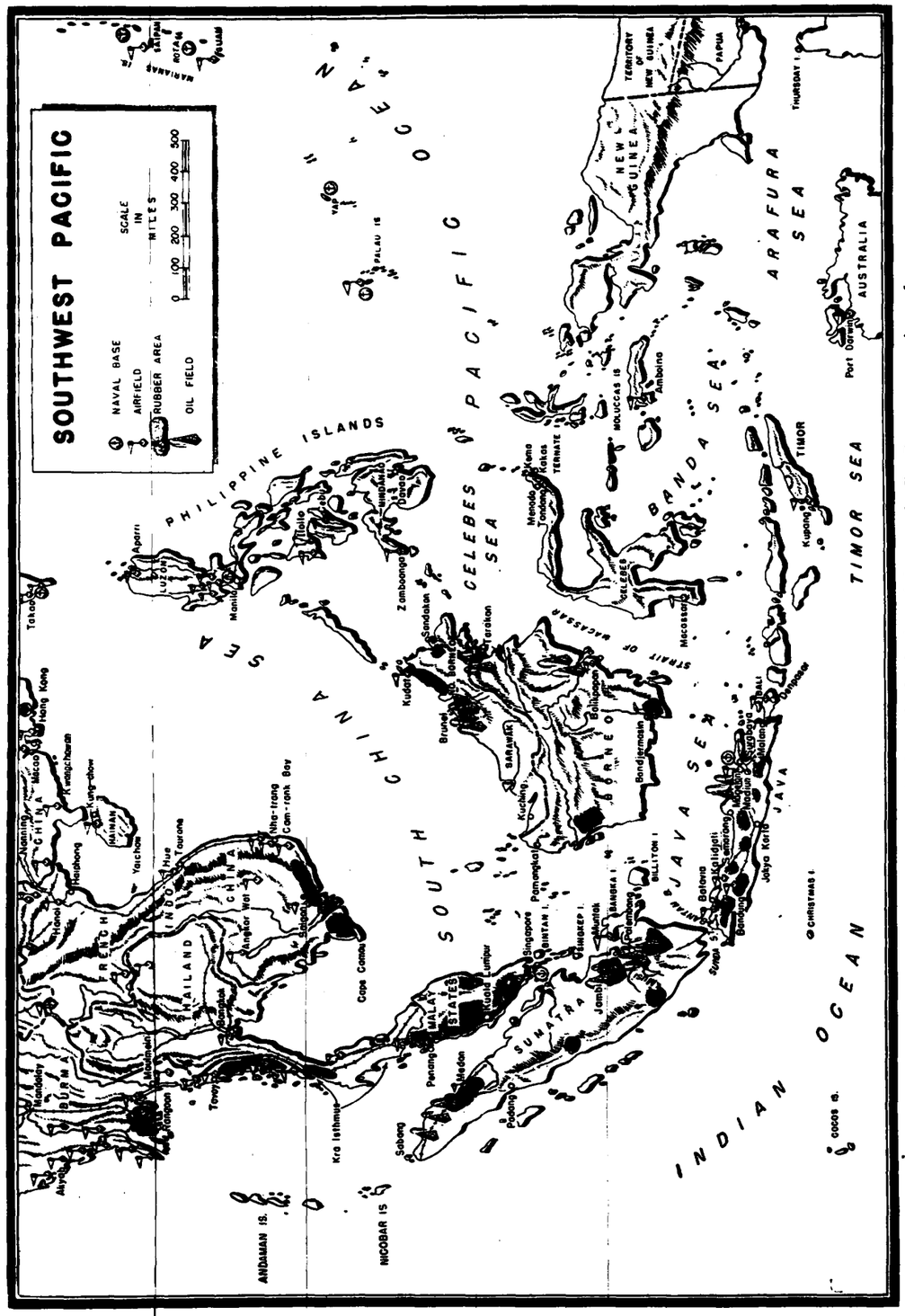
The Japanese brought overwhelming forces to bear against both Guam and Wake, and there is little of interest to record of their occupation of those unfortified outposts. The garrisons of both islands fought gallantly in spite of the hopeless odds, and the troops at Wake defended the place successfully for six hours, sunk a Japanese cruiser and a destroyer, and caused the invaders unexpectedly heavy casualties.

Japanese accounts are loud in their praise of the way in which the Americans handled the two six-inch guns, mounted near the beach, whose installation was far from complete. According to the report of the commander of the Japanese landing party, the fire control apparatus for the shore defense battery had not yet been set up, and during the action the guns were trained by opening the breech and sighting down the bore. The destruction of two enemy war vessels and the damaging of a transport by two guns fired in this slow and awkward manner excited the admiration of the Japanese officers, and all of the personal experience stories referred to this extraordinary feat in terms of glowing praise. It is interesting to note, however, that later accounts published by the Japanese Propaganda Ministry belittled the efforts of the defenders, characterized the defense of the island as negligible, and made every

The Conquest of the South Pacific from the Japanese point of view.

Like the "Philippine Campaign," the "Hong Kong Campaign," and the "Malaya Campaign," written by Colonel Babcock, this account of operations in the Southwest Pacific 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."



"In almost exactly three months from the beginning of the war the Far Eastern possessions of the United States, of the British Empire, and of the Netherlands, had fallen to the Japanese."

effort to convince the Japanese public that the Americans had behaved in a cowardly manner.

On the 24th of December two small Japanese expeditions landed at Kuching and Brunei in British Borneo, and in a campaign which lasted a little more than a week overcame the few British police forces and obtained control of the entire province of Sarawak. Besides denying the British the use of bases in this region, the Japanese thus came into possession of a fine air field which was to prove invaluable to them some weeks later when they started their drive against the outlying bases of the Netherlands East Indies.

The Second Phase

That drive began on January 11, the date of the Imperial Headquarters announcement. The first attack was directed against Menado and was followed by a succession of landings at Balik Papan, Macassar, Amboina, Kavieng, and Rabaul. The landings were carried out by groups which were similarly organized and varied only slightly in strength. A description of each engagement would be repetitious and would not contribute to the value of this report. Typical of the actions, and the most interesting from a military point of view, was the short campaign in the Celebes which began with the attack on Menado.

The Dutch garrison at Menado consisted of about 1200 men and comprised troops of all arms and services. All but 150 were native troops. The strength of the force which the Japanese organized to attack this point is one more example of the policy which they have followed throughout the war—namely, to bring an overwhelming force to bear against every point of attack. The expedition consisted of a naval landing party of 8000 men in three small transports, several cruisers and destroyers, and an aircraft-carrier. In addition, a battalion of about 400 navy parachute troops took off from the captured airdrome near Brunei and were dropped on the Dutch positions an hour or two before the landing party came ashore.

The first indication that the Dutch had of an impending attack was a furious bombardment by thirty dive bombers from the aircraft carrier accompanying the convoy. This bombing attack, just after dawn, was directed against the barracks of the Dutch garrison and the air field at Kakas, and was followed in less than an hour by the arrival of more than twenty transport planes carrying the parachute battalion.

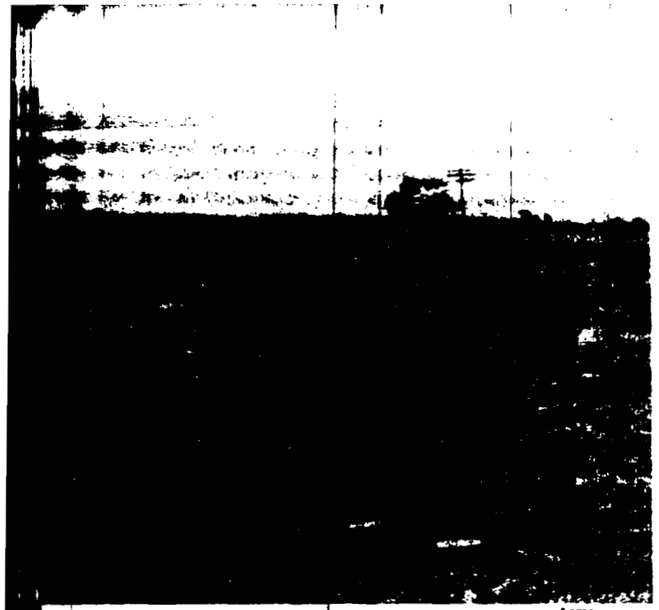
That was the first time that parachute troops had ever been used by the Japanese, and apparently the manner in which the maneuver was carried out left a good deal to be desired. Instead of coming in, as the Germans do, three or four hundred feet over the objective on which their troops are to land, so that the men of a squad will all hit the ground within a short distance of their assembly point, these planes came over at an altitude of more than fifteen hundred feet. As a fairly strong wind was blowing, the men became badly scattered and alighted at widely separated points, away from their leaders and far from the equipment bags which had been dropped at the same time. Some of the men were blown out to sea; others landed in a thick jungle and were unable to join their unit in time to take part in the fight. The mission of this parachute unit was to attack the beach defenses from the rear and to secure their possession prior to the arrival of the convoy. But because the personnel were so badly scattered, they were never able to organize into units large enough to execute an attack. The action did succeed, however, in throwing the Dutch into confusion, and caused them to divert to the task of rounding up the parachute troops, a part of their force which should have been employed in resisting the attack on the beach.

The convoy arrived off shore at eight o'clock in the morning, and the now familiar assault teams immediately left the first transport and raced for the beach under the protective fire of the accompanying naval vessels. The Dutch troops fought bravely, but the extent of shoreline which they had to defend was too great for the number of troops available, and they had erected practically no fortifications for the protection of their men. Their machine guns and artillery kept up a brisk fire until the leading wave of Japanese boats was about eight hundred meters from shore. Then a well-timed attack by a second squadron of dive bombers completely took the heart out of the native troops, and they broke and fled into the jungle.

The Japanese knew that what they had most to fear in all these landing operations was an air attack

Mountain artillery of the Royal Netherlands East Indies Army march to the front against Jap invaders on Java. The small Dutch garrison stationed on the islands had little chance against overwhelming enemy superiority.

Wide World Photo



Acme

Field artillery of the Royal Netherlands East Indies Army practice during maneuvers shortly before the Japanese invasion of the island of Java.

launched from other bases in the islands, rather than the ground troops with which they were immediately engaged, and they realized that it was vital to get men and matériel ashore as rapidly as possible before word of their arrival could get to the nearest Dutch air base at Balik Papan.

The commander of the expedition directed the initial landing party to maintain contact with the Dutch as they retreated towards Tondano and the air field at Kakas, and employed the bulk of his force in unloading the transports and getting supplies and equipment safely ashore. The men worked feverishly in their race against time. By the middle of the afternoon, more than half of the impedimenta had been landed, and the Japanese were in high hopes that their unloading operations might be completed and their ships gotten away before the Dutch bombers came. Their antiaircraft batteries had been set up on shore, and fighter patrols from the aircraft-carrier were constantly circling overhead, so they felt quite sure that they would not be surprised by a sudden and unexpected attack.

About four o'clock in the afternoon, eleven big bombers came in over the hills to the west of the town, and, flying with the sun directly at their backs, were over the harbor and dropping their bombs on the transports below before the Japanese knew what had happened. As the gunners looked up at the planes roaring overhead they saw painted on the wings, not the Dutch insignia, but the circle and star of the American air force and, as a young officer in one of the antiaircraft batteries said, they realized for the first time that American reinforcements had arrived in the Far East.

The Japanese admit the loss of two out of the three transports, but make their usual assertion that all personnel were ashore and that there was no loss of life. In this case, their claims are probably justified, for the ships had arrived in the harbor in the early morning and the attack did not come until late in the afternoon. But personal experience accounts by junior officers present at the time refute official statements to the effect that the American planes were driven off at once, and tell of how they circled over the beaches where equipment was piled up and dropped bomb after bomb on the crowded mass of men and matériel. Five of the attacking planes were shot down; and the Japanese claim that the damage they inflicted so demoralized the American squadron that the attack was never renewed.

The Japanese acted promptly after this bombing, and during the night sent the aircraft-carrier down the coast with instructions to raid the air field at Balik Papan in an effort to destroy the bomber strength located there. According to their version, the raid was a great success. They destroyed four more American planes on the ground, and left hangars, shops, and other facilities a mass of blazing ruin. Whether or not they did in fact accomplish as much damage as they assert, they were not molested again by any planes operating from that base.

Early the next morning, the 12th, the ground troops pushed eastward across the narrow part of the island and pursued the retreating Dutch towards Tondano. On the same day, another small expedition landed at Kema on the east coast of the island about nine miles north of Tondano, and the combined operations of these two columns succeeded in eliminating all Dutch resistance by the end of the day and gave the Japanese possession of the air field at Kakas. Their plans for the occupation of this area and for its use in future operations had obviously been well worked out, and were executed with remarkable dispatch.

On the 14th, a squadron of heavy bombers flew over from Brunei air field and landed at Kakas, where ground crews set to work at once to put the field in shape for use against Dutch air bases to the south. The Japanese now felt more secure, for they were able to counter any Dutch air attacks with land-based planes instead of having to depend on the comparatively few planes borne by their aircraft-carrier.

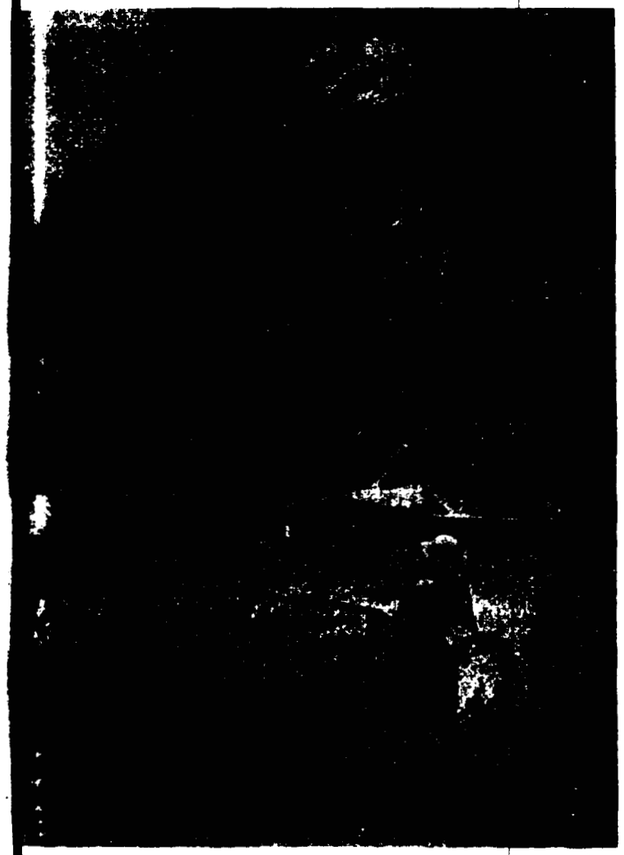
The operations from that time until the end of February consisted of a succession of attacks by naval landing parties against the key points in this region, which gradually extended Japanese control south towards Java and southeast towards Australia.

The Japanese received only one setback during this period, when the Allied fleet, coöperating with American bombers, encountered a convoy headed south through the Straits of Macassar and caused so much damage that it was forced to return to its port of departure. In this action the Japanese admit the loss of four fully loaded transports, but refute claims made by Allied headquarters of more serious damage and the loss of warships. From the accounts available, it is evident that the losses suffered were severe; but the setback proved to be only temporary and failed to halt the steady march southward.

By January 25, the Japanese had taken Balik Papan, with its air field, and were making preparations to move south towards Macassar and Banjermassin, the last of the outlying bases which protected Java. In the extreme east, landings at Rabaul in the Bismarck Archipelago and at Kavieng on New Ireland put them in position to extend their operations towards New Guinea and the mainland of Australia.

Shortly after the occupation of Rabaul and Kavieng, the Japanese landed a strong force at Salamaua on the northern shore of New Guinea in the hope of marching overland and capturing the important city of Port Moresby. This operation is the only one in the entire campaign which failed. In June, 1942, the troops were still one hundred miles from their objective, and from all accounts were on the defensive and having considerable difficulty in maintaining their position. The Japanese consistently bombed the harbor of Port Moresby in an attempt to prevent the landing of American and Australian reinforcements there, but those efforts failed to meet with success.

Burning oil tanks and oil cars greeted the Japanese when they occupied the former Dutch-held Tandjong in Java. Note Japanese soldier in foreground. This Japanese photo reached the U. S. via Brazil.



Acme

The Third Phase

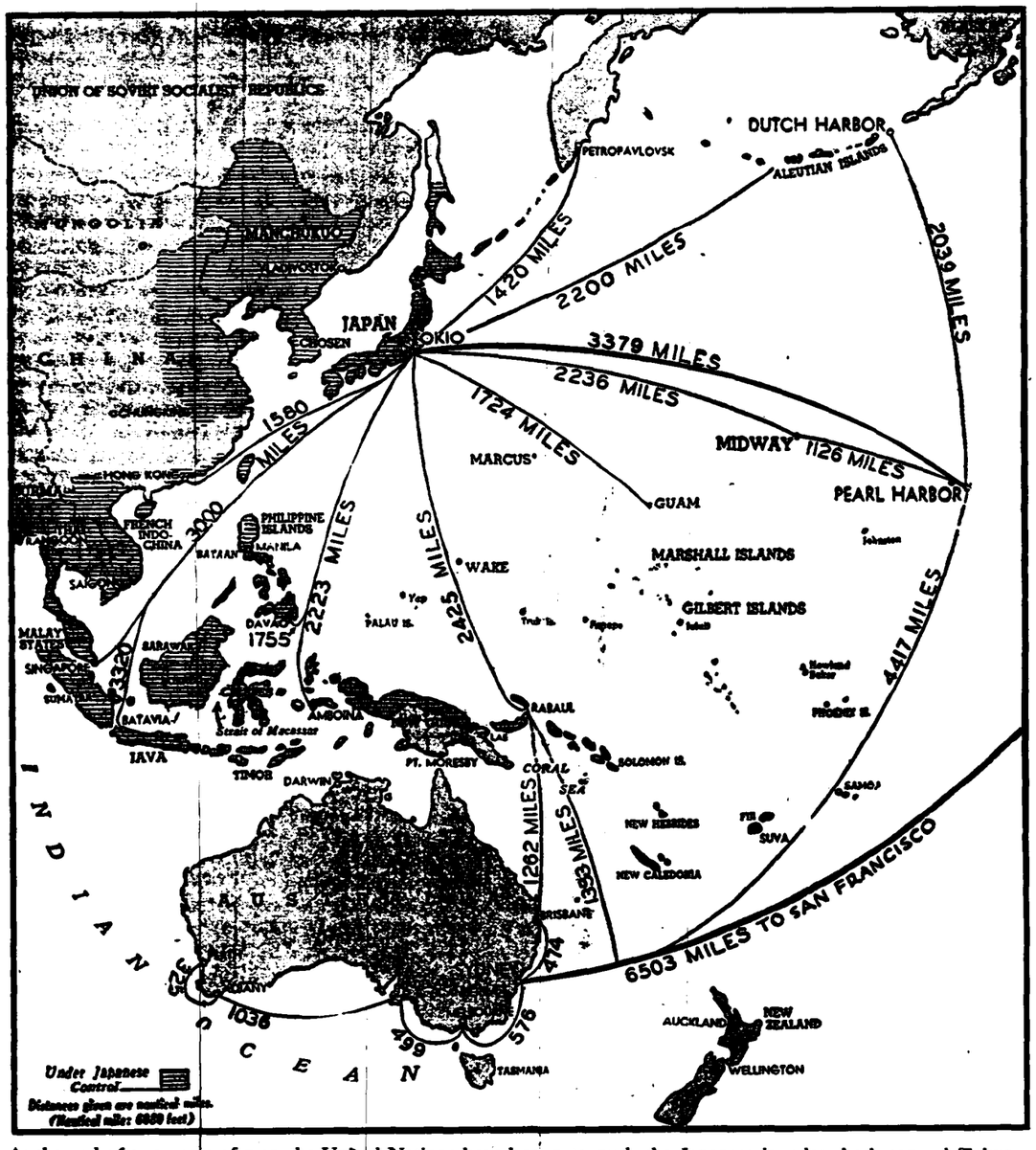
By February 2, Macassar had been taken, and a Japanese column which had landed at Pamangkat on the west coast of Borneo had pushed overland and occupied Banjermassin, which is within easy bombing range of Java. When, shortly afterwards, Amboina in the Moluccas fell, the Japanese were able to concentrate their entire naval air strength against the air bases of Java to prepare the way for the great naval and land battles which were to culminate in the reduction of that island.

Every day for two weeks, squadrons of navy bombers coming from the air fields of southern Borneo, and escorted by fighter planes operating from carriers in the Java Sea, flew over the air fields at Surabaya, Malang, Madiun, and Magetan, fought off the attacks of Dutch and American fighters, and destroyed planes and establishments on the ground. The first few attacks met the severest kind of opposition, and Japanese losses, particularly in bombers, were extremely heavy. But as the bombings went on, and a limited Allied air force had to go up day after day to fight fresh squadrons of Japanese planes, the resistance grew gradually weaker. By the middle of February, the Japanese were able to announce that the defenders' air strength had been crushed and that their own air force was now free to attack harbors and military establishments throughout the island.

Even before the fall of Singapore, the Japanese Army had joined in the campaign. On February 14, a regiment of parachute troops was dropped on the air field at Palembang in southern Sumatra. This field had been previously bombed twice, and the Dutch air force based there had been either destroyed or driven away. The mission of the parachute regiment was to seize the air field, and to take possession of the oil wells and refineries in the vicinity before the Dutch could destroy them. The first part of its mission was accomplished after a fight which lasted all day. The native troops which comprised the local garrison were badly confused by the necessity of fighting in small groups and against an enemy who came at them from all directions.

From all accounts, the Japanese appear to have been equally bewildered, and it was a long time before they could organize their scattered units sufficiently to drive the defenders away from the air field. By the time they had done this and moved on toward the city to take possession of the oil wells and refineries, the Dutch had done their work, and fires raged everywhere throughout the area.

The next day, a battalion or so of air-borne troops was flown in from Malaya to reinforce the parachute regiment, and for the next nine days these troops maintained themselves without any support except what came to them by air.



At the end of two years of war, the United Nations have begun to push the Japanese invaders back toward Tokyo—still roughly 3,000 miles away. Above map shows the distances to be covered on the "return trip."

As soon as Singapore fell, on February 16, the Japanese organized an expedition to proceed to their relief and to complete the conquest of southern Sumatra. So well were they organized and so rapidly did they work, that eight days after the fall of the British fortress, the expedition, composed of troops which had taken part in the Malayan campaign, set sail, and on the 24th a part of it landed on Banka and Billiton islands, and took possession of the rich tin mines there. The rest proceeded to Sumatra, moved up the Musi river, and landed at the city of Palembang, which was occupied without opposition.

With the arrival of these large Japanese reinforcements, the Dutch abandoned all hope of further resistance, retreated to the southern tip of Sumatra, and fled across the Sunda Straits to join their main army in Java. By the end of the month, the entire southern half of the island of Sumatra was under the control of the Japanese Army.

In the meantime, another Japanese expedition appeared off Bali, and on February 19 landed at Den Pasar on the southern tip of the island. The troops met with virtually no resistance, but that night, while they were still debarking, the few Allied bombers remaining in Java, together with three or four submarines, attacked the convoy as it lay in the bay. The loss of ships, men, and matériel was so serious that the Japanese were not able to proceed with the occupation of Bali but were forced to take up a defensive position around the beachhead in order to save what was left of their troops. The force was not relieved until some three weeks later when the collapse of resistance of the main army in Java caused the Dutch troops in its front to surrender. This attack on their convoy by an air force, which the Japanese confidently believed had been destroyed, alarmed them to such an extent that they renewed the bombardment of the Java air fields. For four days they subjected the air fields to a series of devastating attacks which left them such a shambles that no Allied plane ever rose from them again.

The time had now come for the Navy to clear the waters around Java of the Allied squadron and so permit the army expeditions poised at Singapore to land on the island. In a series of engagements lasting from February 27 to March 1, which the Japanese refer to as the Battle of the Java Sea, the Allied squadron was completely destroyed. A large battle fleet, supported by swarms of bombers and torpedo planes, ranged through the waters of the Java Sea and hunted down the Allied cruisers and destroyers, which had been split up into small groups to protect the vulnerable points along the coast. The last fight, on the night of February 28, was at Bantam Bay, where the American cruiser *Houston* and two destroyers were sunk by the navy escort which was protecting the large Japanese convoy then steaming into the Sunda Straits.

With complete control of the air and of the sea, the Japanese had little difficulty in effecting three landings on the island, and in the entire operation lost only four transports, one of which ran onto a reef in the darkness. The main force landed at Bantam Bay on the night of February 28-March 1, and in spite of the fact that the main strength of the Dutch army had been concentrated in that part of the island, the Japanese advanced 6 miles inland on the way to Batavia and established a strong beachhead before dark.

Other expeditions landed at Samarang, in the center of the north coast, and at a point on the eastern tip of the north coast about 16 miles east of Surabaya. This last detachment had a very difficult time getting ashore and never succeeded in advancing inland at all. It was barely able to maintain its position on the beach until the surrender came a week later.

The units which landed at Samarang overcame the very slight resistance which they met after landing, cut straight south until they came to the town of Madiun, where they too were held until the final surrender. The rapid advance of this force, however, to the point it did reach succeeded in splitting the Dutch army and cutting communications between the forces in the west around Batavia and those defending Surabaya.

There was little fighting after the initial landing on the west coast. On March 2, Batavia surrendered without a struggle, and the Government moved to Bandung in the mountains, while the Dutch army fought delaying actions against the advancing Japanese who were pressing up the road toward this mountain resort. By the 7th of March the Dutch had been forced back into a pocket in the hills surrounding the temporary capital, and Japanese artillery was shelling the town.

On the evening of the 8th, the Japanese announced that they were ready to launch a general attack against the remnants of the Dutch army, and demanded the unconditional surrender of all the forces in the Netherlands East Indies. The demand was accepted, and the next morning all the troops surrounding Bandung laid down their arms and the Dutch commander issued instructions by radio to his forces around Surabaya to capitulate also.

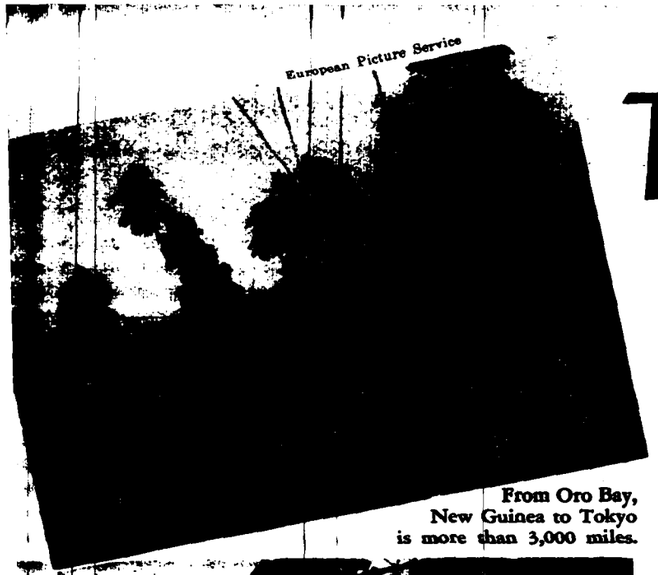
In almost exactly three months from the beginning of the war the Far Eastern possessions of the United States, of the British Empire, and of the Netherlands, had fallen to the Japanese.

Recent photograph received from Dutch East Indies via neutral Sweden claims to show natives who are being trained by Japanese officers to form part of an army which is supposed to fight the Allies once they have begun the reconquest of the Dutch East Indies.

European

The Road Back in the South Pacific

*by Edward T. Folliard**



European Picture Service

From Oro Bay, New Guinea to Tokyo is more than 3,000 miles.

The Japanese arrived off Rabaul on January 22, 1942, six weeks after Pearl Harbor. They came in warships and troop transports, and the handful of Australian troops in Rabaul wisely took to the hills. The Japs moved in next day without firing a shot.

The Japs then poured southward, down the coast of New Guinea and through the Solomons.

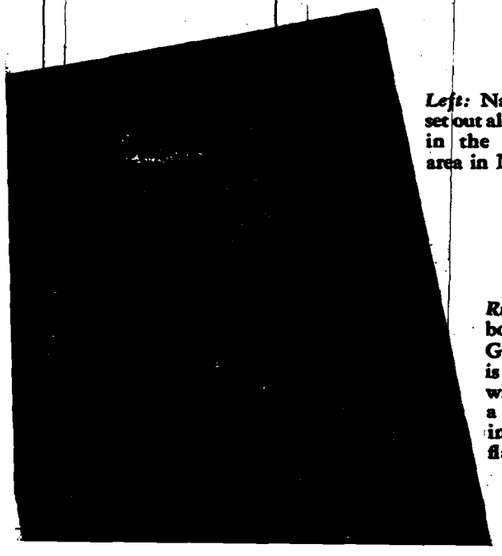
It was all fairly easy, a part of the whirlwind drive that made Japan look so good in the first six months of the war.

General MacArthur got out of Bataan and flew to Australia on St. Patrick's Day, March 17, 1942. The situation was very critical, and there was much talk of an invasion of Australia. MacArthur, however, was offensive-minded and he began flying troops and equipment to Port Moresby in nearby New Guinea.

*From *Washington Post*, Sunday, December 19, 1943.

European

Above: Allied supplies are brought ashore at a disembarkation point six miles from Finschhafen, New Guinea.



Left: Native carriers set out along the track in the Wau-Mubo area in New Guinea.

European

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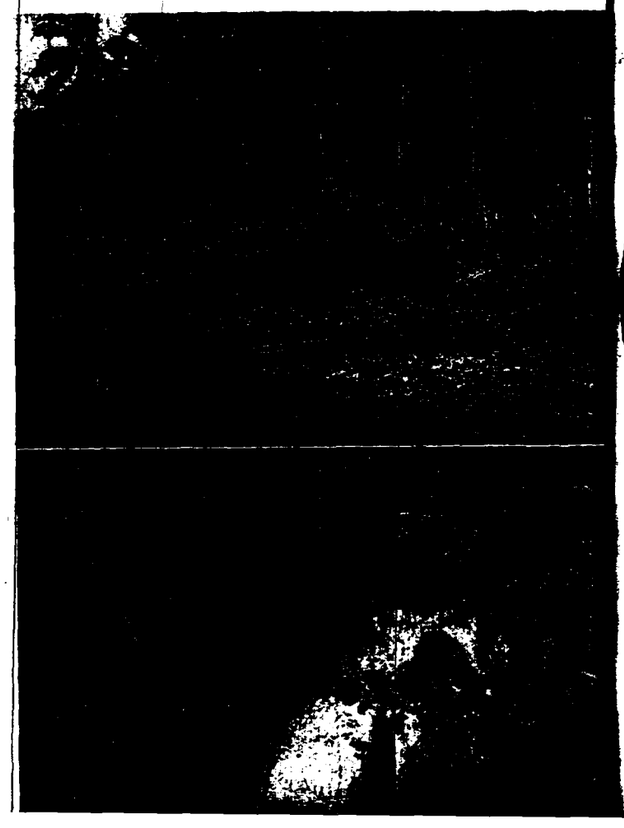
Right: Jap pillbox on the New Georgia Island is being sprayed with flame from a U. S. Army infantryman's flame-thrower.

Acme

Below: U. S. Marines pause on the beach of Guadalcanal Island in the Solomons before advancing inland against the Japanese, August, 1942. Press Assn.



The Japs meantime were storming down the coast of New Guinea, bent on taking Port Moresby.

The first real setback, the first bloody nose for the Japs, came early in May, 1942. They had concentrated a large force of warships, transports and cargo ships at Tulagi Harbor in the lower Solomons. On May 4, dive bombers and torpedo planes from American carriers swooped down on Tulagi and sank seven Jap warships and any number of the merchant vessels. That was the Battle of the Coral Sea.

The much more important Battle of Midway came in the following month.

This was a great victory for the United States, the turning point in the War of the Pacific, since it robbed Japan of the bulk of her aircraft carriers. Still, from the American standpoint, this was a defensive battle, waged to keep the enemy away from Hawaii.

The first large-scale American offensive was the invasion of Guadalcanal early in August, 1942. The remark of a Navy officer, made while he was giving out a communiqué on Guadalcanal here in Washington, comes back now, a year and four months later.

"The Japs have had the ball long enough," he said. "Now it's our ball, and we are going to see how far we can carry it."

The Army and the Navy, between them, and with the help of Australian and New Zealand allies, have indeed carried the ball a long way.

The turn of the tide in the Southwest Pacific, however, came slowly. While the battle was still raging on Guadalcanal, the Japs were moving down the New Guinea coast and drawing closer to Port Moresby. In mid-September they were only 32 miles away.

In the meantime, MacArthur was massing more men and supplies at Moresby, and on September 29 he started his counteroffensive in New Guinea.

The northward surge of the Allies has been irresistible ever since. In New Guinea, they moved up through Buna, Salamaua, Lae and Finschhafen, and then made the spectacular jump to New Britain.

Below: A pair of Marines, camouflaged to blend with foliage, search for a Jap sniper on Bougainville.

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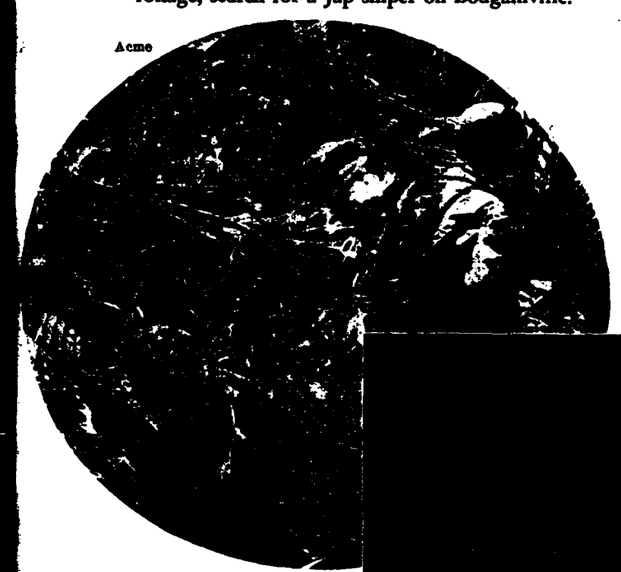
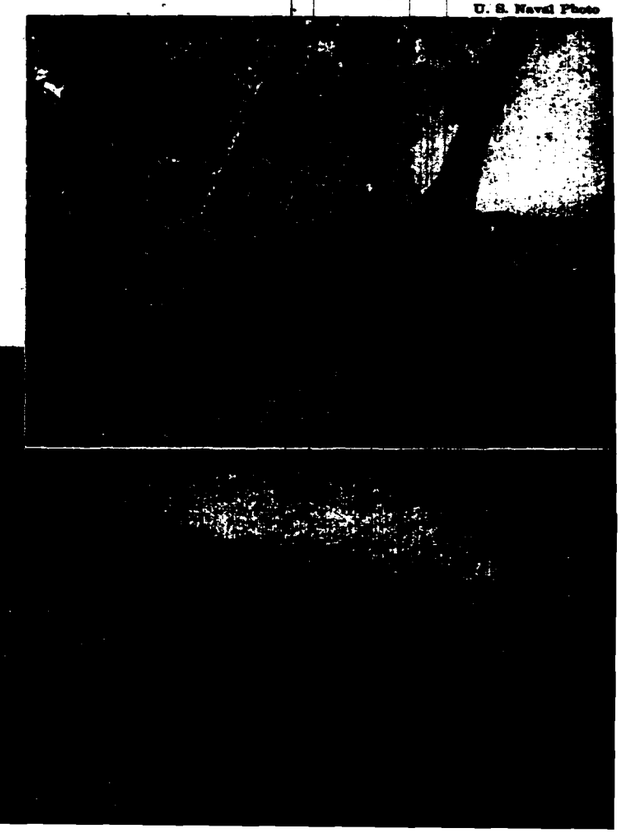


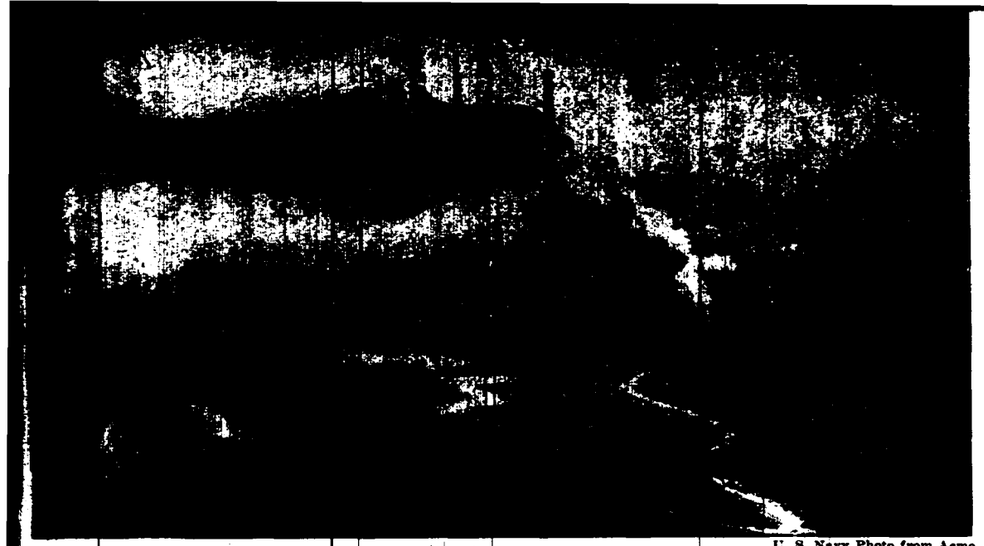
Right: Hundreds of paratroopers jumped down to Markham Valley, west of Lae, New Guinea, to block the escape of 20,000 Jap troops. A smokescreen conceals their action. September 15, 1943.

U. S. Army Air Forces Photo from Acme

Below: The first wave of soldiers storms ashore on Rendova Island. U. S. Forces took Rendova, June 30, 1943.

U. S. Naval Photo





Striking on October 6, 1943, a U. S. carrier task force thundered death and ruin on Jap-held Wake Island, once so gallantly defended by a handful of Marines.

U. S. Navy Photo from Acme

The climb up the ladder of the Solomons kept pace with the drive in New Guinea, until the northernmost of the islands, Bougainville, was invaded. Now Bougainville is a claw in the Allied pincers reaching out for Rabaul.

Farther north, the forces under Admiral Chester Nimitz now hold Tarawa and the other Gilbert Islands, and are preparing to storm the Marshalls to the northwest.

All of this, the occupation of New Britain, of the Solomons and the Gilberts, is part of one grand offensive, an offensive which has for its goal the staving in of an outer Japanese barricade and a break-through to victory.

Secretary of War Stimson, in a recent war review, called attention to two successful raids carried out by long-range Army bombers in the Pacific. The targets were Balikpapan in Borneo and Makassa in Celebes.

Balikpapan and Makassa—they haven't figured in the news for a long time now. But once they were sharing the headlines with Singapore, Sumatra, Java and Timor. It was at the time when the Japanese were moving through the Pacific like a typhoon, sweeping all before them, and causing some people to wonder if they would ever be stopped.

The raids on Balikpapan and Makassa . . . are eloquent proof that we are on our way back.

General Douglas MacArthur has now landed his first big pay-off blow—an invasion of New Britain Island, on the tip of which perches the great Japanese base of Rabaul.

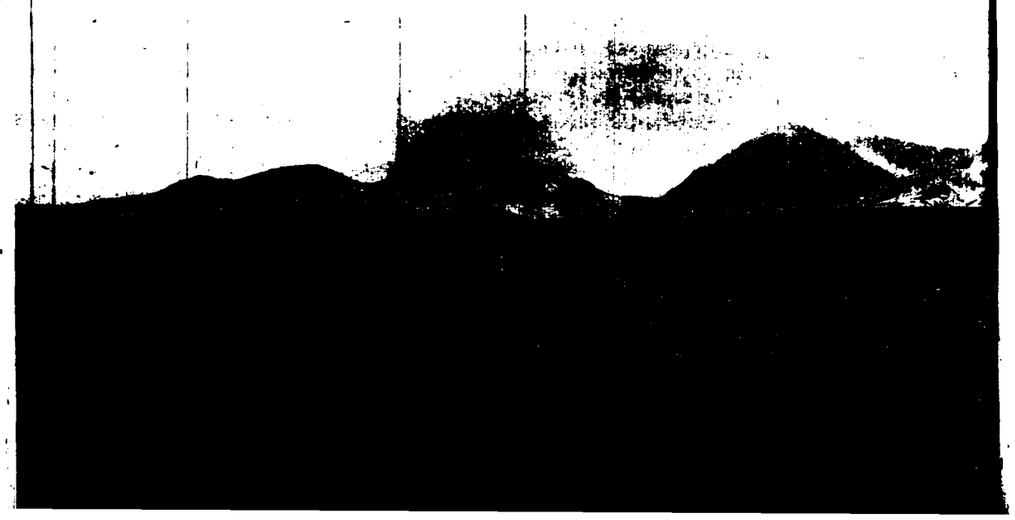
All that has gone before in the Southwest Pacific—the invasion of Guadalcanal and the climb up the ladder of the Solomons, the drive from Port Moresby to the tip of New Guinea, the great sea and air battles—has been prologue.

Now the American forces are hot after the No. 1 prize in the Southwest Pacific—Rabaul itself.

If Rabaul falls, we will have knocked a great 1,000-mile chunk out of Japan's outer defense system.

That in turn would expose Japan's inner defenses—Truk, her so-called "Pearl Harbor"; Palau, and other strongholds in the Central Pacific.

And beyond those lie the Philippines, the coast of China, and the final drive on Japan proper.



These troops on Attu were not connected with the main landing on Massacre Bay, but constituted a flanking movement from a tiny unnamed beach where the drive started that culminated in the seizure of the East and West arms of Holtz Bay. All Jap forces have now been driven from the Aleutians.

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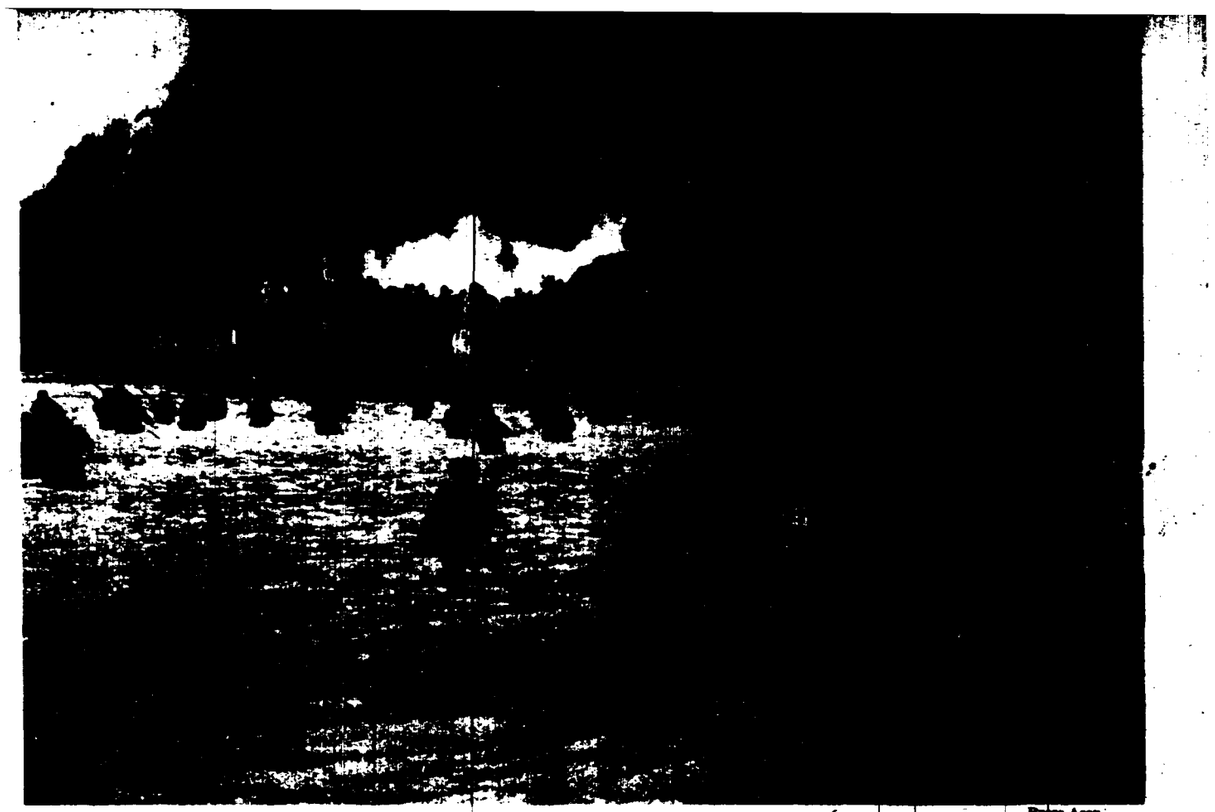


Press Assn.

Troops advance on Butaritari Beach, Makin Atoll, which already was blazing from the Naval bombardment of November 20th.

As real estate, the Gilbert Islands aren't much to look at. Actually, they might better be described as a group of atolls. Tarawa, for example, consists of nine principal islands and a number of smaller ones. Makin is two large islands and some islets. Abemama is a patch a dozen miles long and five wide. Betio, the member of the Tarawa atoll where the heaviest fighting occurred, is a scant square mile in area and nowhere more than 10 feet above sea level.

In strategic value, however, these bits of coral, sand and palm rank high. For the Japs, they constituted an extreme eastern flank shielding the major nerve centers of their western Pacific naval sphere, and a threat to American communication lines. In American hands, they represent an important new dent in the Japanese defensive perimeter and a springboard for operations in a number of directions which the continuing Pacific offensive must take.

The Gilberts were taken at a heavy price. Probably not since the stonewall at Fredericksburg or Pickett's charge at Gettysburg have American fighting men taken such concentrated punishment. Old hands who had seen the fighting on Guadalcanal said that nothing there had been as bloody as the battle for Betio. Some, with a professional knowledge of such things, held that there never before had been such a call for courage and a willingness to sacrifice.

The casualty list tells the story. At Tarawa, 1,026 died and 2,557 were wounded. On Makin, where the 27th Division made its landing, the contest was bitter in spots, but less gruelling. Sixty-five died there and 121 were wounded. Abemama, where the Marines went ashore after the main fighting had begun on the two atolls farther north, cost but one dead and two wounded.

Artillery preparation began at 0500, November 20th, west longitude date. The sky was abruptly alight with the muzzle blast from the guns of battleships, cruisers and destroyers. The landing force had the support of the mightiest fleet ever gathered in the Pacific.

Softening by aerial bombardment had begun a week earlier, when the 7th USAAF's Liberators began a series of raids. Their last one took place the morning of the attack, with the naval shells bursting under them and carrier-borne aircraft hurtling down past the formations of heavies to bomb and strafe. Altogether Betio got about 1,000 tons of bombs.

It was a staggering concentration of explosives, but it did little toward knocking out the Jap defenses. They were good. Close-in cannon fire, bangalore torpedoes, grenades and flame throwers were needed to finish them off, and they exacted a prodigious toll among the attackers.

What happened between the beginning of the bombardment and the final Americanization of Betio 76 hours later, as told here, is derived from a variety of dispatches written by several correspondents who went

Press Assn.

Marines found very little protection on Tarawa, but these managed to take advantage of what little cover there was behind a bank on the edge of a lagoon. Note the wrecked amphibious tractors lining the shore in the background.

in with the waves of Marines, and others who stayed at Pearl Harbor to do the over-all picture.

Getting Ashore at Betio

The Marines were scheduled to hit the beach at 8:30 a.m. At first, going in toward Betio, it was easy and quiet. There was even talk that it was going to be another Kiska, with the Japs gone and only demolitions to show where they had been. The remarks about another Kiska stopped when the boats were about 1,500 yards off shore. Land batteries opened heavily against the Higgins boats, already heading in, and against the transports down whose nets the later waves were clambering to their landing craft.

Rough seas and geysers thrown up by shells drenched the Marines, and then the boats began to strand. The coral shelf around the island was not giving them the anticipated draft. The lucky ones got to within 150 yards of the beach. Many became fast 500 and even 600 yards off shore. Smaller craft with shallower draft began ferrying in all they could. Plenty waded—neck deep, chest deep, knee deep. There were not enough of the shallow-draft boats, and those available could not afford to take chances. The best they could do was to bring men in for a shorter wade.

One of the small boat skippers explained that to the Marines piling out of a stranded Higgins boat into his craft.

"It's hell in there," he told them. "They've already knocked out a lot of boats, and there are a lot of wounded men lying on the beach from the first wave. They need men bad. I can't take you all the way in, because we've got to get back out here safely and get some more men in there quick. But I'll let you out where you can wade in."

It was neck deep where that particular group began its wading.

William Hipple, of the Associated Press, told about the wading part in his story:

"About 400 yards from the beach our boat apparently was out of control. The colonel ordered us out and to head in.

"Just before we climbed over the side the colonel shouted at me and grinned:

"'I guess you got a story. It looks like the Japs want a scrap.' A few minutes later the colonel was killed. Meanwhile, I hit the water waist deep; cut off my Mae West life jacket with a knife. I couldn't buckle it. I followed the colonel and the men splashing ahead. We were caught in a crossfire from the right and left—machine guns, rifles and occasionally heavy caliber automatic weapons. The bullets hissed in the water alongside all of us. As the water was now shallower, most of us got down on our hands and knees.

This was a typical battle scene on Tarawa, where unseen snipers hung in trees, and enemy pillboxes were impregnable to all but direct attack.

"We made spurts upright. My head was knocked back slightly. I felt the top of my steel helmet, and it was red-hot where a bullet had creased it. I dived completely under water, as I did many times afterward, and tried to swim submerged as far as possible. The colonel in the lead went down suddenly and never came up again. One of our radio operators also was killed. An officer groaned and went under the water. By the time I approached, he was up on his feet and staggering ahead, although hit in the shoulder."

That was the trip ashore. Within a little more than an hour, six waves had accomplished it—and later, when the tide went out, scores of bodies were visible on the exposed coral. Officer casualties ran high.

Marines at Tarawa

The original beachheads, much troubled by enemy mortar fire, snipers, and Japs, who infiltrated to fire from the shelter of damaged tanks and landing craft in the Marines' rear, were only 125 to 150 feet deep. There were three of them. At one, for a time, the attackers were penned between the water's edge and a log retaining wall only 20 feet inland.

Assault battalions were cut to ribbons. Marines who tried to push inland beyond the wall mainly became casualties—but Marines kept trying. The Jap pillboxes and blockhouses were doing very well for themselves, with much of the deadly sniping coming from their rifle slits. If the shelling had not done overwhelming damage to these fortifications, it had at least stripped the foliage from the palms and eliminated much of that sniper cover.

Nightfall found the Marines indifferently situated, and not too hopeful of being alive in the morning. Their orders were to shoot at anything that moved, and for every man permitted to snatch a little sleep, two had to remain on the alert. For one beachhead, first daylight brought a flank attack by Japs who had worked their way into the shelter of an old wharf 150 yards down shore. An infantry and tank rush drove them off.

An officer, wounded in the fight for the wharf, stayed in action for 60 consecutive hours notwithstanding. That tended to be the way with the wounded. Men with gaping abdominal wounds begged surgeons to fix them up somehow so they could stay in the fight. A captain shot through both arms and legs sent a message to his commanding officer for "letting him down."

The second day, matters began to mend a little for the attackers. Reserves coming in from the boats during the morning took a beating just as severe as those who had been in the original assault; but like the first waves, the reserves kept coming. The situation they relieved is reflected in a report from Colonel David Shoup, who had set up regimental headquarters 30 yards inland against a Jap blockhouse of log and steel. Messaged the colonel, "We're in a mighty tough spot. We've got to have more men."

By 1300 o'clock there was definitely a turn for the better. Light and medium tanks had gotten ashore, and so had half-tracks mounting 75mm guns. The pattern of naval bombardment was improving, and the incessant aerial strafing and bombing was beginning to tell. Millions of rounds of small arms ammunition had been fired.

The blockhouses began to fall to tanks and half-tracks that fought with the muzzles of their cannon shoved within a few feet of the firing apertures, and to Marines who crept up to thrust bangalore torpedoes in upon the Japs.

The Jap blockhouses consisted of a concrete emplacement five feet thick. Superimposed on the concrete were eighteen-inch diameter palm logs. Outside the palm logs were angle irons of railroad rails, and over all was from 10 to 12 feet of sand and coral.

Describing its toughness, General Smith said later, "Nothing but a direct hit from a 2,000-pound bomb would cave in or destroy that blockhouse. A number of them stood up like a house in the sky, silhouetted, and practically every one had been hit by a projectile.

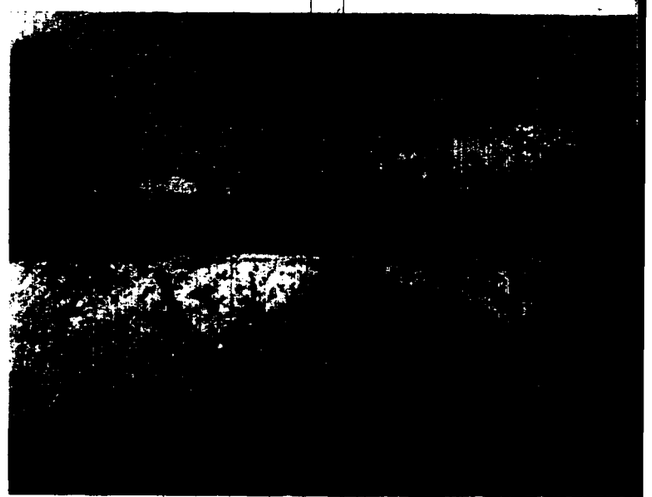
Despite the failure of the bombardment to destroy these strongpoints, however, General Smith contended that it did render the Japs unable to counterattack effectively at any time after the battle began.

By nightfall of the second day, the crucial period was past. The speed of the Marines' advance was increasing. The third day, the Japs began to fall apart. The final push was across the airstrip, Betio's most valuable installation and one which the Americans restored to operating condition within a few days after consolidating their victory. Reinforcements, landed at the west end of the island, finally pushed to the assistance of the men held up at the eastern extremity by concrete and log positions.

Some of the Japs ended their lives with their own rifles when the Marines' victory became inevitable. Most of them fought to the death, and estimates of the number killed have ranged from 3,000 to 6,000. However many were wiped out, the attackers were up against the Japs' first team. Betio was held by the Imperial Marines—the élite branch of the Tokyo military team.

A great percentage of the Marines who took Tarawa were battle-tried veterans. They comprised the 2d Marine Division, and many among them were graduates of the Guadalcanal Campaign. They took with them into battle the calm assurance of men who know what they are about, and how to do the job.

The Japanese used these British-built Vickers 5.5 and 8-inch naval guns, brought to Tarawa Island from Singapore, against the U. S. Marines landing on Tarawa.



Jan. 7 (AP).—Robert P. Patterson, Undersecretary of War, announced here today that a total of only 377 Japanese prisoners have been taken by United States forces to date.

Secretary of the Navy Knox quoted an estimate made by Admiral Halsey that 10 Japanese have been killed for every American lost in the Pacific area. . . .

In the Cape Gloucester area, 2100 dead Japanese have been counted, while only 117 Americans have been killed. . . .

On Guadalcanal, where the Japanese dead total 17,330, American dead in land operations, including airmen, totaled only 1950. In addition, in the Guadalcanal operations, it was estimated that between 25,000 and 28,000 Japanese troops were lost on transports sunk in the Guadalcanal area.

Infantry at Makin

Northward, at Makin, the 27th Division was making its fighting début. It was no Tarawa, but it was no push-over, either.

Sergeant Walter Schliessman, an NCO in the 165th Infantry, told a correspondent about the landing there. Said Schliessman:

"Japanese machine guns opened up when we were 500 yards off shore. Slugs hit the hull, so we debarked into hip-deep water. Quite a few men were hit while wading to the beach. We were in the first wave of the assault platoon. Jap fire stopped when we were about 65 yards off shore. They must have retreated to new positions.

"My squad pushed 20 yards into the brush and reorganized, then cut directly across the island, splitting the Jap positions. The opposition here was very light, just rifle fire. I got seven Japs I know of—five by rifle fire and two by grenades. That was after we crossed the island and began moving west.

"We came upon a Jap machine gun nest. I threw in three grenades, heard some jabbering and knew someone was down there. After the third grenade, four Japs came out. I got two with my rifle, and other fellows got the other two."

As usual, the Jap proved to have his fantastic moments as a fighting man. Sergeant Schliessman told of encountering one inexplicable enemy who was hard to kill.

"Down the trail," said the sergeant, "a Jap, well dressed and wearing a wool hat, came running toward me screaming. He had a new rifle but made no attempt to fire. I hit him with my first rifle bullet at fifteen feet and dropped him ten feet away with two more bullets. He was carrying his rifle at the port arms position and had plenty of ammunition. It puzzled me why he didn't fire. Maybe it was because he was hysterical."

Lieutenant Colonel James Roosevelt, USMC, was another to tell of curious Jap behavior on Makin. Colonel Roosevelt had gone in with the 27th Division soldiers to give them the benefit of his Makin Island experience, gained when he landed there more than a year ago as a member of Carlson's raiders. His account concerned a counterattack by about 100 Japs.

"It was led by four officers in full dress with feathers in their caps and each armed only with a sword," Colonel Roosevelt related. "They closed in on our front line for hand-to-hand combat. One young American got a bad slash across one wrist, nearly severing his hand. "The kid got the sword away from the Jap officer, though, and ran him through several times in spite of his own wound."

Teamwork

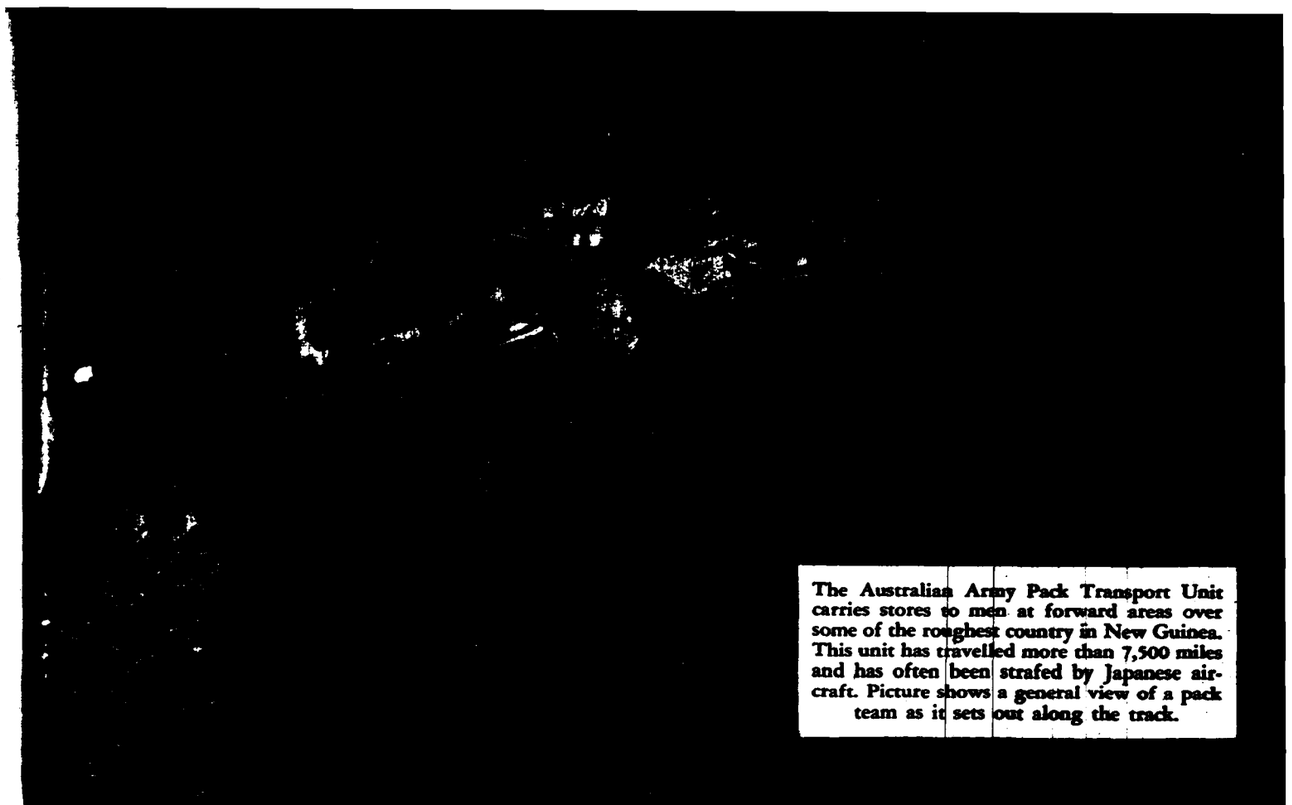
Narrow margins of safety were the rule when carrier-borne planes gave close support to the ground forces. On one occasion at Betio the Marines had to back up to make way for bombers working on Jap fortifications, and even so they left only a 200-yard leeway for error.

The Navy fliers were in action during most of the daylight hours of the three days the battle lasted, and the only naval vessel lost was the escort carrier *Liscome Bay*

An analysis of the battle and what won it was made subsequently at Pearl Harbor by General Smith:

"There is one thing I would like to stress. The capture of these islands was the result of teamwork; that is, naval gunfire, air forces and ground forces. It is my honest belief that never in the history of our country has there been closer coöperation and coördination and mutual support than in this undertaking."

Japanese soldiers died in and on their pillbox on Tarawa Island. Note the dead Japs at the left and on the pillbox. Many other Japs were buried alive in the fortification.



The Australian Army Pack Transport Unit carries stores to men at forward areas over some of the roughest country in New Guinea. This unit has travelled more than 7,500 miles and has often been strafed by Japanese aircraft. Picture shows a general view of a pack team as it sets out along the track.

Australian Pack Transport in New Guinea*

JEEPS are known to Australians as "busy little motor-cars that go places"—nearly all places, but not quite all.

In New Guinea even the Jeep at times cannot penetrate the baffling jungle country. That is where Army Pack Transport Unit, using several hundred horses and mules, comes into the picture.

The nucleus of the units was formed of horses on the island. Already acclimatized and accustomed to grazing on local pasture, these horses have given particularly good service on difficult tracks. On one very bad road it was common to see mechanized vehicles completely bogged, while fully laden horses trudged steadily by, sometimes through mud up to their bellies.

Often the firm bottoms of creeks are used. Sometimes five miles at a stretch have been covered in water up to three feet deep.

Feeding in areas where grass is unobtainable presents a big problem. Animals negotiating difficult trails for long distances have to carry fodder as a big proportion of their pack load.

In crossing high-banked streams it is frequently necessary to unpack the animals, manhandle the loads and saddles across, or rig flying foxes, then lead the animals over, wash them down, saddle up and re-pack the loads.

On many tracks, cut with axes and heavy knives, bamboo is plentiful, and care has to be taken to ensure that men and horses are not spiked by the sharp-pointed canes.

Glissades—steep clay banks, up to 100 yards in length—have to be crossed. Down these the horses sit and slide, while the men help to reduce momentum by taking quick grips on saddlery as the animals pass. Going up, animals pause and rest every few yards. Frequently, while taking such breathers, they lean against trees.

Where undergrowth is not particularly dense, horses sometimes wander off the tracks and become caught by their packs between the trees. They have learned to stop instantly, back out and return to the track.

Pack transport men claim that their animals show a reciprocal understanding. They will travel independently, with the reins thrown over their heads, and will fearlessly follow wherever the men lead. They say, too, that when men are injured and carried back on their horses, the horses travel with more than ordinary care.

The medium-sized mule is said to be better at picking his way than a horse, and also more sure-footed. The mule will carry a horse-load.

But there is one catch about the mule that many soldiers know. He will eat anything—camp and all, if there happens to be a camp and close watch is relaxed.

*Department of Information, Commonwealth of Australia.

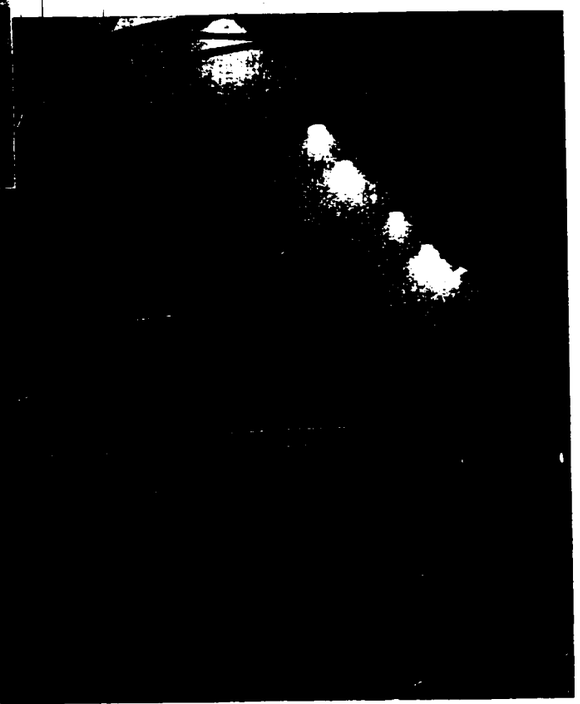
SOVIET TANK FIGHTING

by Major General Mikhail Katukov, Red Army

TODAY the Red Army possesses more tanks and other technical means of warfare than in the first months of war. It has acquired more experience and skill. Cadres of tank and antitank men have grown up—men who have a perfect command of antitank rifles and can well wield combustible bottles and antitank grenades.

Tank engineering works, which have been evacuated into the far interior of the country, are producing more machines on their new location than they did on the old. Many of them were evacuated in sections, and each section was set up in a different city. Now, in place of a single huge works, there are five or six that function at full capacity. On literally waste land, huge shops and factory blocks sprang up in the course of a few weeks. Produced there are the T-34's or medium tanks, which are the most numerous in the army; also, the invincible KV's which strike such terror into the German soldiers.

Left: **Guards Major General Mikhail Katukov, commanded a Soviet Tank Division in the 1942-43 winter offensive.** ***Below:*** **Young tank builders, assembling KV tanks, compete in speeding up the output. The KV's shown here have the new all cast turret.**



Tank crews from the front very often arrive at the factories to take over a consignment of machines. Here, in the shops, they tell the workers what improvements and alterations in the construction of the tanks have been found necessary by the "battle tests" to which the tanks have been subjected. The constructors take these remarks and instructions into account in their further work, and the tanks consequently become ever more formidable and powerful.

In the actual course of battle, Soviet tankmen have gained experience and applied new methods of fighting—tank ambuscades in defense, shock-group maneuvering, employing tank-borne infantry during attacks, interspersing tanks among storming groups when charging against forts and pill boxes, etc.

Tanks in Organized Attack

At the beginning of the war, the Red Army tank troops were organized into divisions. Battle experience has shown, however, that these units were unwieldy and inconvenient for managing. The tank divisions have since been broken up into smaller units and reformed into brigades that are more pliable on the battlefields.

On one of the sections of the Western Front, the 10th German Tank Division had succeeded in wedging into the defensive units of the Red Army, and the high command ordered a small tank unit to wipe out the enemy wedge—no easy job, since the Germans had had time to entrench themselves firmly in this position.

Two villages, situated at the edges of the wedge, had been turned into strongholds by the Germans, who had constructed pill boxes, dug tanks into the ground, fitted out blindages, set up barbed wire fences, and laid mines around the approaches to these villages.

According to the plan of the high command, seventeen tanks were to take part in the attack on the entrenched German line, and the whole attacking group was to form in four sections.

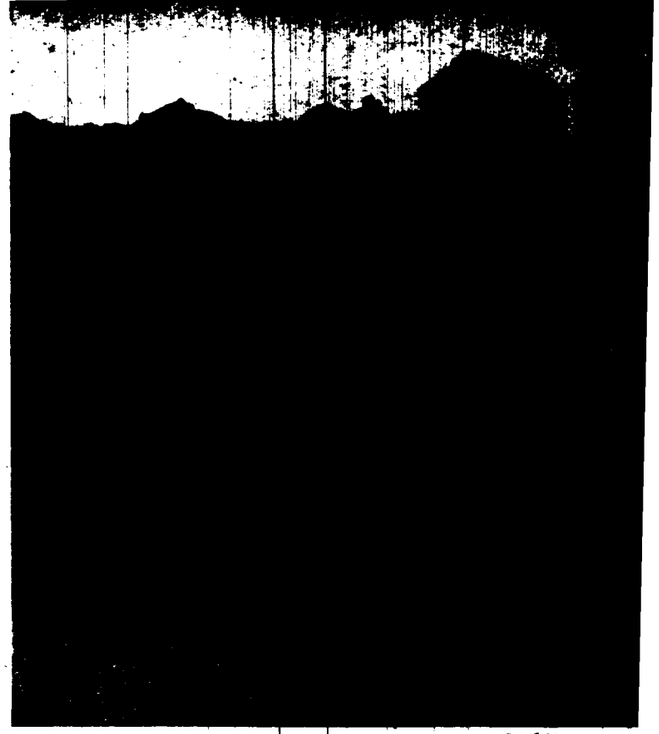
Three tanks were to advance forward for purposes of reconnaissance and bear the brunt of all the enemy fire in order to establish the location of the German guns.

The next two tanks, maneuvering all the while, were to support the first three with their guns.

The third section of six tanks was to crush the enemy's antitank defense.

Following them would come the fourth group of six tanks, whose job it was to insure the advance of the attacking infantry that would follow right after the tanks.

The command of the tank unit was applying here the tactics of quick, forceful darts. *The tank troops acted very much like the Cossacks—those in front dart forward, while those in the rear support them. Those in front withdraw, and those in the rear advance.*



Three T-34's move into action on the Southwestern front.

The tankmen prepared for these offensive operations with the greatest care. Each machine was carefully tested. Fire extinguishers were examined and made easily accessible. Turrets were given a fresh coat of white paint to insure their camouflage against the snow.

The morning scheduled for the attack was cold but clear. The motors of the tanks began to hum. Attired in white camouflage suits, the infantry parties came up with their tommy guns slung across their chests. At exactly 9:30 A.M., the first bursts of the artillery sounded. Soon, everything fused into a single roar of ever increasing explosions.

At 10:00 A.M., the first three tanks started off in third gear along the highway. They opened up a running fire, and a rain of missiles came in answer to their shots. The Germans put up a solid line of fire before the three tanks. Antitank guns, tanks that had been dug into the ground, and soldiers hidden in dugouts built in the village cemetery—all opened fire at once. A heavy enemy shell hit the turret of the first tank, and it began to burn, but the crew used the fire extinguisher and put out the flames. Two German long-range guns were observed set between two dug-in tanks to the left, and with a well aimed shot from the tank's gun, one of them was put out of commission and its gunners killed.

Under cover of tank fire, Soviet infantry now advanced boldly. The Germans first met them with heavy fire from their dugouts and concealed gun emplace-

ments. Soon the Germans started to counterattack with their own infantry, marching in erect formation, and all the while, kept a running fire from their tommy guns. One company of their tommy gunners was mowed down by the tanks' fire, and the rest turned and fled. The German counterattack had failed.

The fierce battle continued right until the tankmen had driven the Germans out of their entrenched line. In this one day's fighting, the tanks and infantry in organized attack had destroyed 21 tanks, 8 antitank guns, 2 heavy guns and had captured 3 tractors, 2 antitank guns, 14 trench mortars, guns and other armaments.

A Tank Brigade in Defense of Moscow

At the beginning of October, 1941, Guderian's German tank forces broke through to Orel and took the city. The Soviet command found itself with one tank brigade available, and it was this brigade that was assigned the defense of the roads to Tula and Moscow, pending the concentration of other troops.

For eight days the tank brigade engaged in fierce fighting with the enemy, which flung against this one brigade two of its tank and one motorized division—a total of three divisions against one brigade. The Soviet tank unit accomplished its task and inflicted heavy losses on the enemy.

This success was due primarily to excellent reconnaissance, which by virtue of the unit's exposed flanks, was conducted along a wide front; a system of pseudo positions; close interaction of all classes or arms comprised within the brigade; able and efficient interspersing of motorized infantry among the various battle units; tank ambuscades; and the maneuvering from far behind the lines, of groups of tanks that constantly attacked the enemy from the rear.

Captain Alexander Burda, whose tank exploits won him the distinction of "Hero of the Soviet Union."

Two BT-7 Tanks on Reconnaissance

On reconnaissance duty, tankmen frequently make long runs behind the enemy lines and often penetrate as far as 50-60 kilometers to the rear. The scouting troops seldom return without some catch and consider it a disgrace to come back to the unit with empty hands.

On a certain November day, two BT-7 tanks, with a party of reconnaissance scouts on board, made their way far behind the enemy lines. After making sure by their observations and questioning that German tanks and infantry were present in the near-by villages, the group started back. But not far from the front lines, they learned that there was an endless row of enemy tanks and cars moving along the highway.

The Soviet tanks came out onto the highway and, seeing the fresh tracks of armored cars, set out in pursuit. Soon the light BT 25's—"Betties"—overtook two German armored cars. The crew of one of them fled in panic, and the other was hit by a shell and went up in flames at once. The German crew hadn't even time to get out of the car. After stripping the remaining car of its guns and taking all the documents, the reconnaissance tank returned to base unharmed.

At six the next morning, the same reconnaissance tank set out on another mission.

The weather was very bad, and visibility almost nil. At twenty meters nothing could be distinguished. The snow, swept into the tank by a cold wind, covered all the instruments with a thick layer, and every 50 meters, the driver had to stop and again grope his way forward.

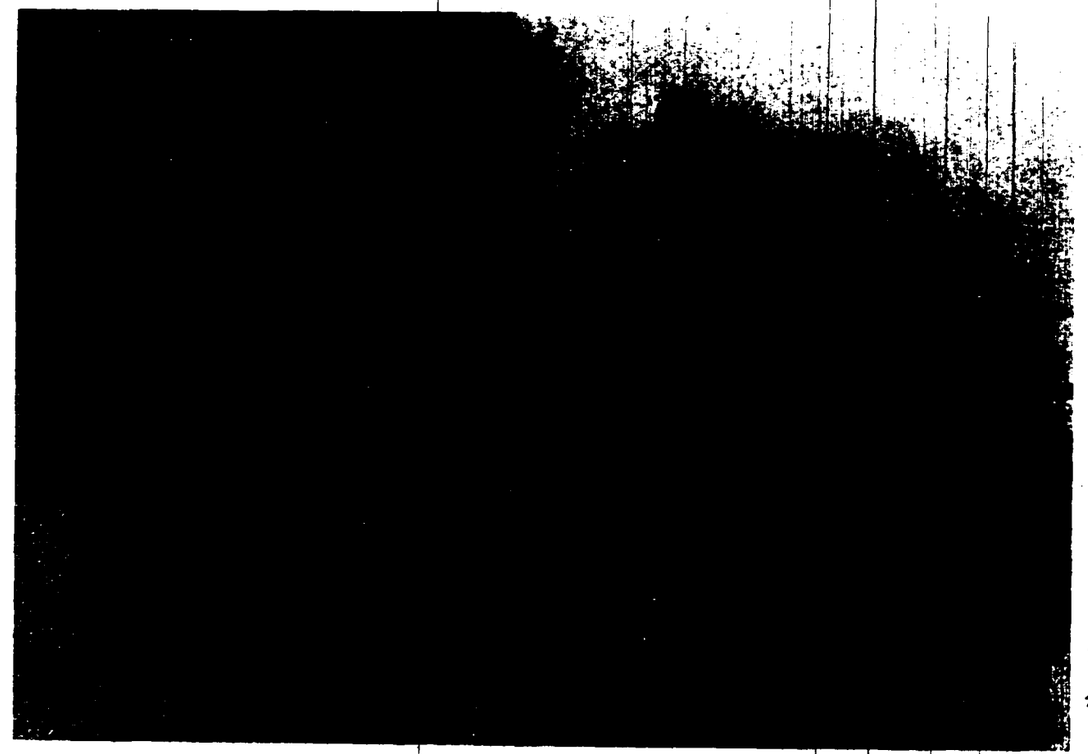
On approaching a village, the reconnoiterers noticed a 7-ton truck and five Germans rummaging around it. A round of machine gun bullets finished the whole group, and the truck proved to be half full of poultry and other local products of which the Germans had robbed the population. After returning these stores to the villagers and questioning them as to the movements of German troops, the tankmen took the truck, along with engineering equipment and secret mine locators, back to their unit under its own power.

A Company of Tanks Attack from Ambush

When Captain Alexander Burda, commander of a company of medium tanks, received orders to reconnoiter the German forces advancing on the Soviet town of X, he covertly led his tanks along the highroad and camouflaged them in the woods.

According to the scouts' reports, it was at this spot that the German troop column would pass. This information was correct, for at exactly 8 A.M. the Germans began moving towards the town.

Like a venomous snake, the German column emerged onto the road. In front crawled the panzer vehicles hauling antitank guns. These were followed



According to enemy sources, this T-60 light, fast tank weighing 8 tons, has a speed of 40 kmh, 20mm armor, and carries a 20mm gun and 7.62mm machine gun.

by medium tanks, then armored transport vehicles, and finally two or three heavy tanks—a total of two regiments of motorized infantry in all.

It required utmost patience to wait until the whole column had entered within the zone of ambush fire before attempting to crush and destroy it. Such were the orders of Captain Burda, but one of the men of his tank-borne infantry failed to hold out and opened machine gun fire when the head of the column had approached to within 800 meters.

The circumstances were such that they had to go immediately into action and attack the enemy, in order not to allow him time in which to take up formation on a dominating hill. At Burda's command, the tanks in ambush opened target fire against the enemy's armored transporters and tanks, while one platoon leaped from ambush and, with the treads of the tanks, began crushing the Germans who were caught napping by this onslaught.

At the same time, a soldier standing on the tank, shot point blank at the Germans, first from his rifle and then from his service revolver. He emptied the chambers of both weapons and, after accounting for 30 enemy soldiers, leaped off the tank and gave chase to a German officer, shot him down, and took his documents and revolver.

The enemy troop column was scattered, and it retreated in disorder, back to the town from which it had started. Only one battalion, turning left, made a detour of Burda's group, but they came up against a Soviet tank in ambush. This tank crew refrained from opening fire until after the tail end of the German column had entered the gully. Then they opened shrapnel-shell fire, while the tank's radio operator mowed the Germans down with machine gun fire. Very few men of the German battalion climbed safely out of the gully; most of them were laid low by the fire from the ambushed tank.

Infuriated by this unexpected resistance, the Germans attempted to wipe out Burda's group from the air, but the experienced commander foresaw this move and withdrew his tanks to the vicinity of the nearest village, and for thirty solid minutes thirty German bombers diligently bombed and machine gunned a blank spot.

Lone T-34 vs. Infantry Battalion

A young lieutenant commanding a tank platoon, was once returning to his unit after having his T-34

German tanks left behind during the Nazi retreat from Stalingrad, January, 1943.

tank repaired. The tank crew decided to call a halt in one of the small towns on their road and freshen up before rejoining their unit.

While seated in the barbershop, they learned that a column of German infantry with artillery and motor vehicles was approaching the town and that they were to hold up the column with this one tank until the arrival of Red Army units which had been summoned.

The young officer explained to his crew the forthcoming operation, which was no easy task.

The crew took its places, and the tank headed to meet the oncoming enemy. Some distance short of the village, the Soviet tank ambushed in a small grove in such a position as to have the entire road under range of fire.

A few minutes later the head of the German column appeared around a bend in the road. In front proceeded motorcyclists, then came the Staff H.Q. car. The antitank guns and infantry on foot brought up the rear. So sure were the Germans of the success of their contemplated attack that they did not even send scouts ahead.

The Germans moved ever closer, but the tank crew held their fire until the whole column was visible on the stretch of road. The very first shots wrecked two enemy guns, and in the face of the third gun, the tank rushed forward into the road to meet the enemy.

The surprised Germans had no time to fire a single shot, and the Soviet tank, smashing into the enemy column, crushed everything in its path. Its cannon and machine guns kept up a continuous fire, until the Soviet infantry arrived on the scene and put the finishing touch to the Nazis. Everything was over. The battalion of German infantry had been dispersed and partly destroyed.

The tank crew jumped out and began collecting the trophies. They stacked 13 tommy guns and 6 trench mortars on their tank, then took in tow ten motorcycles and the one remaining antitank gun with its full complement of shells. In the wake of the procession, a sergeant brought in the staff car, which was found to be the most valuable trophy of all. It contained important German maps.

Well satisfied with the results of this skirmish, the tankmen returned to the barbershop, had their shave, and then set out for their unit.

Two Tanks vs. Antitank Guns

One evening, two tanks took up their position ready to go into attack. From a small hill, the village was clearly visible, but the Soviet tanks were well camouflaged, and the Germans failed to detect them.

When the two tanks charged down the hill, one behind the other, the Germans were caught unawares and began to scatter in all directions, but the two Soviet tanks caught them at every point.

While one tank was wreaking havoc among the Germans in the southern outskirts of the village, the other tank was crushing them on the northern outskirts.

At this juncture some German antitank guns were brought into play, and an enemy shell jammed the transmission on one tank so that it was able to travel only in reverse gear. The men continued to fight, however, and succeeded in putting two of the guns out of commission.

German grenade throwers began to creep up toward one tank, and the driver had to keep maneuvering the machine from one side to another in order to protect the treads.

Suddenly another shell hit the tank, and this time the blow served to dislodge the shell that had been stuck in the transmission. The tank, now able to move forward, dashed for the German gun and crushed it to a pulp, together with its gunners.

When the two tanks finally left the field of battle and went into ambush not far from the village, they had crippled two tanks, destroyed three antitank guns and not less than two companies of infantrymen.

Conclusion

For two and a half years the Red Army has fought against the enemy and inflicted terrific losses upon him. Even when temporarily retreating, it has dealt the enemy crushing blows and destroyed much man power and matériel.

Germans Tow Stalled Vehicles*

THE magnitude of the difficulties that may be encountered in salvaging stalled combat vehicles has been clearly revealed in the campaigns in Poland and Norway, on the western front, in the Balkans, in Africa, and especially in Russia with its severe winters. In peacetime training and maneuvers, such problems could be solved with the equipment at hand, since the standard towing truck, especially the eight and eighteen-ton tractors, had all the power that was needed. Under war conditions, however, it is often necessary to salvage vehicles so badly damaged that their resistance to towing is several times that of a vehicle that is merely "out of order." In other cases, vehicles may be so wedged between trees or sections of masonry that it is impossible to move them by simply attaching a tractor.

The only salvaging equipment that has been found suitable for such work is the 18-ton tractor, which has a tractive force of about 20,000 pounds and is provided with a winch having a maximum tractive force of about 15,400 pounds. This tractor is designed to function as an auxiliary, and its tractive force has met the requirements under all normal conditions; for example, in the towing of equipment for the artillery. However, the provision of additional strength necessary for salvaging operations presents many difficulties, and in the case of tractors not used for salvaging, such added strength merely becomes a load to be carried.

In many cases the regular winch, when correctly used and supplemented by a loose pulley, can give very good service. Not only can the tractive force of the winch be exerted in various directions by means of pulleys (the cable should pull as much as possible in a direction parallel to the axis of the tractor), but on the principle of the bottleneck, the tractive force may be doubled or trebled whenever several pulleys are available.

An overloading of the cable itself should by all means be avoided. To prevent this, the older types are provided with a safety device employing the shearing principle, while the newer ones have a slipping coupling. Sharp edges and knots must be avoided, and the cable must be handled carefully and given regular attention.

In working with the winch, special attention must be given to the anchoring of the tractor and the firm attachment of the pulleys so that the tractor will not be pulled toward the object which is to be moved. This may be done by means of steel cables or chains attached to a tree or to stakes driven into the ground.

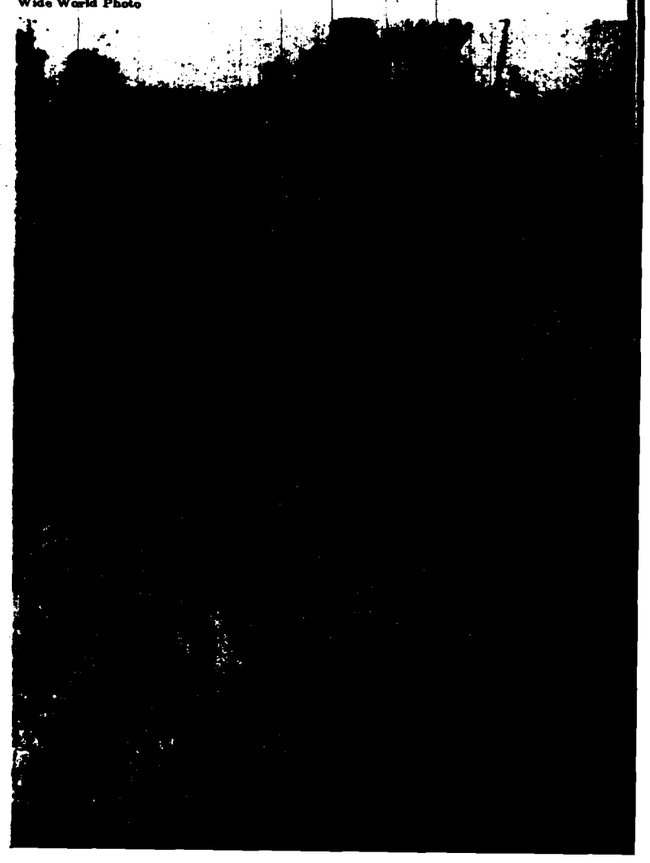
If the tractive force of one tractor is not sufficient, it is not always necessary to resort at once to the double or triple pulley, especially when there are several tractors available. Two tractors may be employed in tandem simply by attaching the leading tractor to the front coupling of the rear tractor by means of a cable or towing rod. If additional tractors are used they must not be hooked on ahead, for in that case the tractive force of all the leading tractors would be exerted through the rear vehicle, and the front and rear cross members of the frame are not capable of taking such a pull.

When it is necessary to use more than two tractors, care must be taken that each exerts its force where it is needed. In any case an easy, steady pull by all tractors is necessary, and this must not be left to the drivers alone but must be directed by means of signals from one place.

A loose pulley belongs with every chassis. Stakes for driving in the ground, hooks, shackles, and steel cable and chains are easy to obtain, although one can never have a sufficient quantity of them. Provided with this equipment, any heavy tractor can be employed as a salvaging tractor and, except in special cases, several together will be able to meet all demands fairly well.

This photo, received from Berlin by way of neutral sources, gives a graphic idea of what the German Army had to contend with on the Russian Front. Note cable towing truck.

Wide World Photo



*A digest of a German article in *Die Panzertruppe* September 1942, translated at the Command and General Staff School, Fort Leavenworth, Kansas.

SOVIET SAPPERS

With Tank Attack

*by Major F. Abolin**

NO tank attack should be launched unless full information is available about the enemy defenses. This information is obtained by means of deep reconnaissance by sapper-scouts, who are distinct from sapper-engineers. Both branches of sappers send observers to the perimeter of the enemy defenses to locate the positions of the German mines and determine the type of their defense.

Then the commanders of the tank and sapper units, with a detailed chart of the enemy's defenses and minefields before them, map out the route for the tanks. Bridges and corduroy roads are built to the outer line of the enemy defenses, and signposts are set up to mark the route.

It must be admitted that tank attacks are not always prepared as carefully as they should be. Close coordination is sometimes lacking between tank troops and sappers. A striking example of this was the case of one of our tank units that got stuck before they reached the perimeter of the enemy's defenses. This would not have happened if the commanders of the tank unit and the sapper engineer detachment had attended to the essential preliminaries and laid proper roads for the tanks.

In order to correct the mistake during the course of the battle, two lieutenants of the sapper unit first selected three routes. Then working under enemy fire after dark, their men made brushwood roads and built four bridges. The following morning, the tanks, accompanied by the sappers armed with mine detectors and explosives, moved forward with little difficulty.

Thereafter, whenever the column reached a minefield it halted. The sappers jumped from the leading tank and put the mines out of action. Then they blasted away the steep walls of German antitank ditches and laid fascines which enabled the machines to proceed.

The wisdom of including sappers in tank attacks has been thoroughly proved. The sappers, however, must be protected from enemy fire and should be carried inside the tanks whenever possible; else, they should be hidden securely behind the turrets.

In a recent offensive operation, a sapper with one of the tanks hopped out when the tanks came to a minefield, and with the aid of two other men put 15 antitank mines out of action. While these sappers were at work, the tanks neutralized the fire from enemy machine gun nests, automatic riflemen, and antitank guns.

This particular tank unit had a sapper reserve that proved extremely useful after the machines had forced their way into the enemy defenses. As the Germans retired before Soviet tanks and infantry, they had hastily laid mines among the thick grass and growing crops without any special concealment. The sapper reserves, going forward rapidly, put 250 of these mines out of action and set up beacons along the main routes of the advance to indicate safe passages for the rest of the tanks.

During this retreat the Germans had mined a bridge, which blew up as soon as the leading Soviet tank began to cross. Fortunately, the tank was not damaged, and the bridge was not wrecked sufficiently to prevent the tank from proceeding across. A platoon of sapper-engineers, carried in the following tanks, quickly erected a makeshift bridge. Where the roads were bad, they laid logs about two feet apart, and where necessary placed ready-made mats about four or five yards long and a yard wide. The tanks moved forward over this route and continued to harass the retreating Germans.

It was this coöperation between sapper-scouts and sapper-engineers that on several occasions contributed to the final success of the tank attack.

*Red Army.

Sovfoto

Northwest of Stalingrad, Sappers remove mines to clear the way for advancing troops.

On Independent Missions

*by Lieutenant Colonel A. Alexeyev**

HOW does the sapper artillery operate? Its basic materials are rocks and inflammables. Hurled out with great force by a powder charge, they sweep away everything in their path for a distance of up to 100 meters. In the absence of rock, the "rock-and-flame thrower" is loaded with metal scrap and pieces of rails. As shown in the course of recent battles, besides destroying barriers and wiping out manpower, these rock-and-flame throwers have a big psychological effect on the enemy. There have been cases when, lacking the necessary shelters, his troops have run in a panic when the rock-and-flame throwers were set off.

During one offensive operation in the foothills of the Caucasus, the sappers were set the task of making passages through barbed wire entanglements and mine fields located about 50 meters from the German gun emplacements. This work had to be carried out just before the attack and over a broad front.

The commander of the sapper battalion tackled the problem as follows:

For four days the engineering scouts made a careful study of the terrain, and calculated the number, size and location of the rock-and-flame throwers to be used. The night before the attack, the sappers crawled over to the enemy entanglements and under cover of their own artillery and mortar fire, which drowned out the noise of their work, set up 100 rock-and-flame throwers in two rows on a two-kilometer stretch. They were placed in such a way as to strike at the German troops, besides clearing paths through the barbed wire and mine fields.

At the fixed hour, a red rocket flew up, the signal for the sapper artillery to go into action. Two massive curtains of burning rock and flame poured down on the Germans with terrific force, and under its cover the Soviet tanks and infantry went into attack. Before the Germans had time to recover from the shock, they found themselves cut off from their second line. All their attempts to resist were unavailing.

Burrow Into Defenses

Underground mine warfare is another method used by the sappers in fighting for important heights and for separate buildings constituting powerful strongpoints within towns.

On one sector of the Central Front the Red Army units captured the outskirts of a large inhabited point. The Germans were entrenched in a number of brick buildings with a strongly fortified one in the center. Soviet forces attacked three times, but could not drive the Germans out. The sappers laid two charges of 50 kilograms of explosives under the building wall, and made a breach of about 10 meters in diameter, but even then enemy fire prevented our infantry from taking the building.

It was then decided to dig a tunnel under the building and blow it up together with its defenders. A shaft was sunk in a hollow some 40 meters from the building, and a tunnel 110 by 90 centimeters and 43 meters long dug beneath the frozen ground. The earth was carried out in munitions crates to a near-by house, to be removed during the night and hidden under the snow in shell holes and ditches. The tunnel was built without supports of any kind. Under the two-story building over an area of 46 by 34 meters the sappers laid charges of explosives weighing some 1,200 kilograms. After the explosion all that was left of the building was a huge pit.

Sappers often have to resort to ruses in the course of their work. On one sector last autumn, six boats were loaded with rock-and-flame throwers and detonator caps, and sent over the river to the enemy side under sail one night when the wind was blowing toward the Germans.

The boats went off with a roar as the detonators exploded one after another, creating the impression of steady firing. The fascists opened a torrent of fire at the boats and sank one of them. But the rest did their work. A hail of flaming rock flew at the enemy.

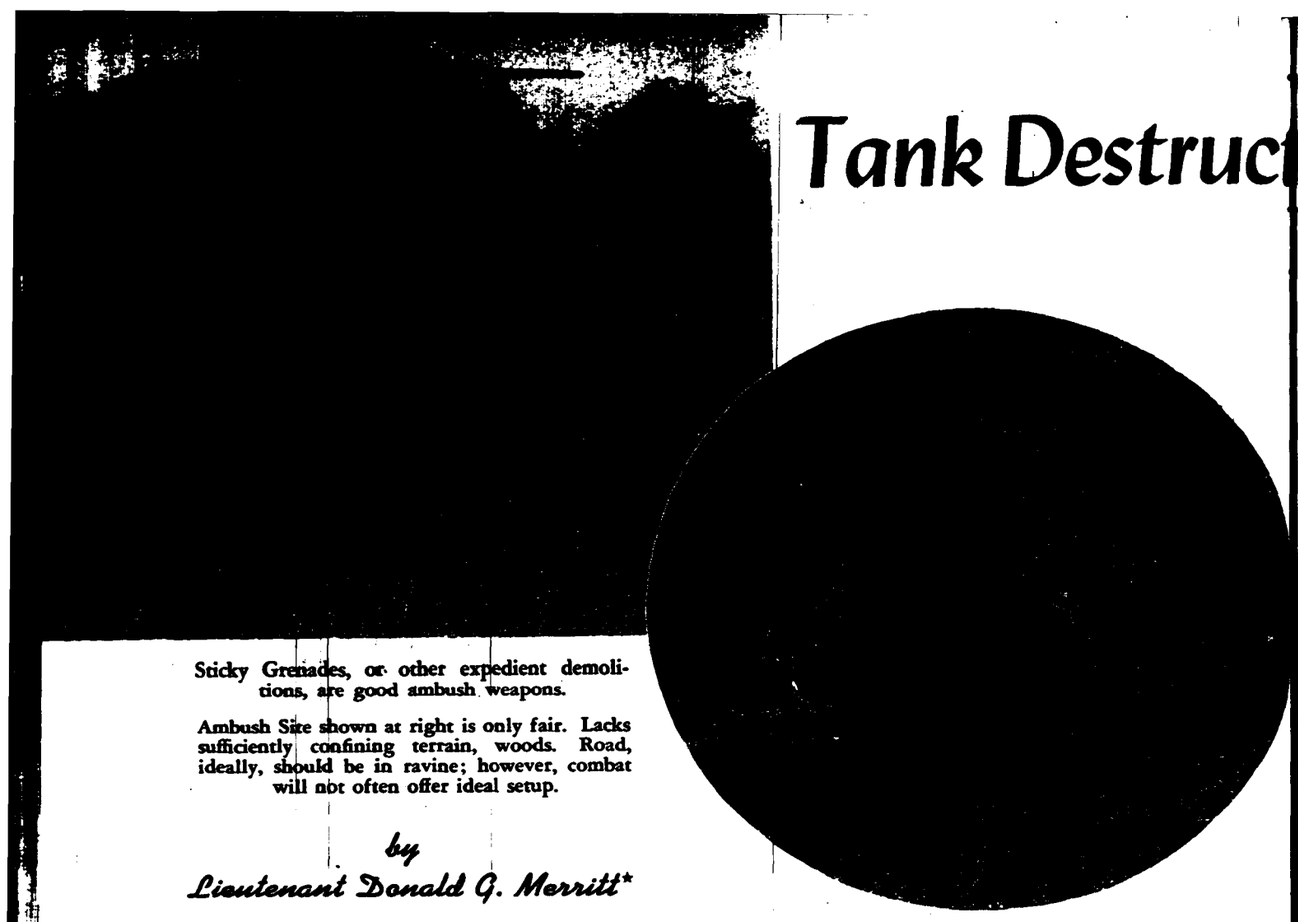
As a result of this operation, the artillerymen were able to locate a number of hitherto elusive German gun emplacements, which they wiped out the same day.

*Moscow News.

Sovfoto

Soviet Sappers clear a road of mines.

Tank Destruction from Dismounted Ambush



Sticky Grenades, or other expedient demolitions, are good ambush weapons.

Ambush Site shown at right is only fair. Lacks sufficiently confining terrain, woods. Road, ideally, should be in ravine; however, combat will not often offer ideal setup.

by

*Lieutenant Donald G. Merritt**

THE tank ambush is one of those handy tricks employed by competent soldiers that so often mean the difference between victory and defeat in today's fast-moving war. The ambush was used to advantage by the Russians in wooded country; also by the British in the early stages of the African campaign, when small groups of Nazi tanks were cut off and destroyed in desert wadis.

American forces, too, have employed ambush tactics. In one Sicilian incident, parachute infantry bazooka teams knocked out five of eight Nazi tanks from a hastily prepared ambush. Indications are that, with our forces gradually advancing into close European terrain, the ambush will assume even greater importance in combat planning.

The tactics department of the Tank Destroyer School has taught tank ambush fundamentals both as an expedient method of tank destruction and as a means by which small groups of determined men can adequately protect likely tank approaches to bivouac areas or gun positions, cover dead space in fire sectors, limit tank movement in close or wooded country, harass small tank reconnaissance units, or continue the mission of tank destruction should the primary TD weapons be disabled.

*The Tank Destroyer School.

The instruction given at the TD School is designed to present a general ambush plan from which officers and men will be able to set up an ambush to meet any conditions presented in combat. The first requirement is an ambush team. Such a group may consist of men who have lost their vehicles, men from the tank destroyer pioneer platoon or available overhead, or a set group of especially trained men within the battalion. Every man in the unit, however, should be sufficiently versed in ambush tactics to be able to take part after receiving the necessary details about the particular ambush at hand.

For instruction purposes, the TD School uses two possible teams. The first consists of a security section and a TD section commanded by a platoon sergeant. This gives twenty-three men—enough to take care of four tanks. The team has easily concealed transportation, a good knowledge of close combat weapons, and sufficiently heavy armament. Its equipment includes appropriate arms and demolition equipment to enable it to perform its mission.

The second group is made up of one complete reconnaissance platoon with equipment. On occasion, ambush teams may even consist of but one security section. The size of the group depends largely upon the number of tanks involved.

Training

The special training given is standard tank destroyer instruction, greatly intensified. The habits and limitations of tanks are studied carefully. Thorough familiarity with the organization of the tank crew, its weapons, visibility, and armor is stressed, as well as vulnerable points, and the dead space that lies around the tank itself. The men are trained in the use of the close combat weapons and in making demolition expedients. The type of terrain favored or avoided by tanks is discussed, with an eye to picking good ambush locations.

Ambushers are mentally and physically prepared for the technique of the ambush itself. A practice site is picked, and the assignment and exact spot for each member of the team are designated and marked for rehearsal purposes. The fundamental rule of the ambush is surprise, and the basis of surprise is often the absence of strict rulings or set procedure. After the essential procedure is learned, every ambush must be a rule unto itself. Plans and technique should be flexible enough to vary with the unexpected. It is a battle of wits and initiative, not of tactical dogma.

General Requirements

On the other hand, there are certain general guides which provide the outline for each ambush plan. The following should be provided for, according to the demands of the situation and the *time available*, before the ambush is to take place:

1. All-round security, with observers or scouts to front, rear, and flanks, and the establishment of an efficient and practical method of communication with the main ambush party.
2. A means of disposing of the enemy reconnaissance elements after they have passed the ambush area.
3. A method of stopping the tanks.
4. Smoke between tanks to isolate them from each other, and to allow the ambush crew to get in and use their weapons.
5. A team of men assigned to the destruction of each individual tank and crew.
6. Complete concealment of men, vehicles, and weapons.
7. The placing of machine guns to delay enemy motorized infantry which may be following the tanks.
8. Designation of a rallying position.
9. Rehearsal.

There are several points that require special attention.

Prior to planning the actual engagement, thorough dismounted reconnaissance of the ambush site and the surrounding area should be made by the key men of the ambush party. All weapons, equipment, and vehicles must be inspected closely before leaving the bivouac area. The terrain between the site and the rallying position is also reconnoitered, and all information given to the ambush team. Orders should necessarily be clear and simple, so that there is no chance of misunderstanding.

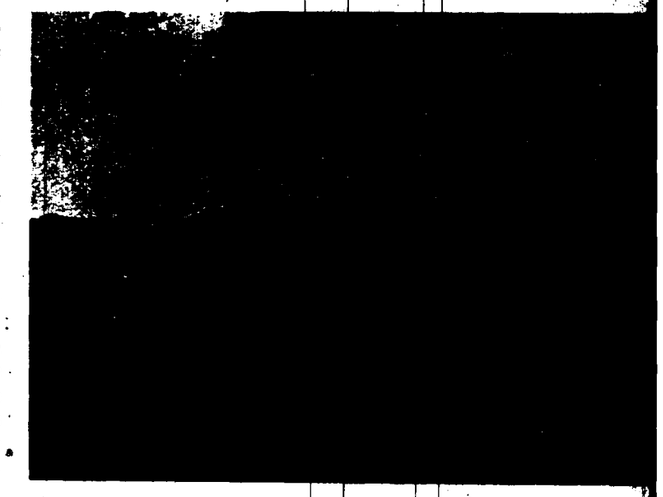
All personnel must be familiar with the plan as it concerns all phases and teams. To insure coördination, all men must know the mission and actions of their fellow teammates. Lastly, every installation in the ambush should be checked personally—signals, location of weapons, disposition of men, and above all, concealment. No stone can be left unturned, for once the trap is set, success depends on the correct functioning of all details. Central control is gone when the action starts. The commander has to depend on his men, and they must be able to depend on themselves.

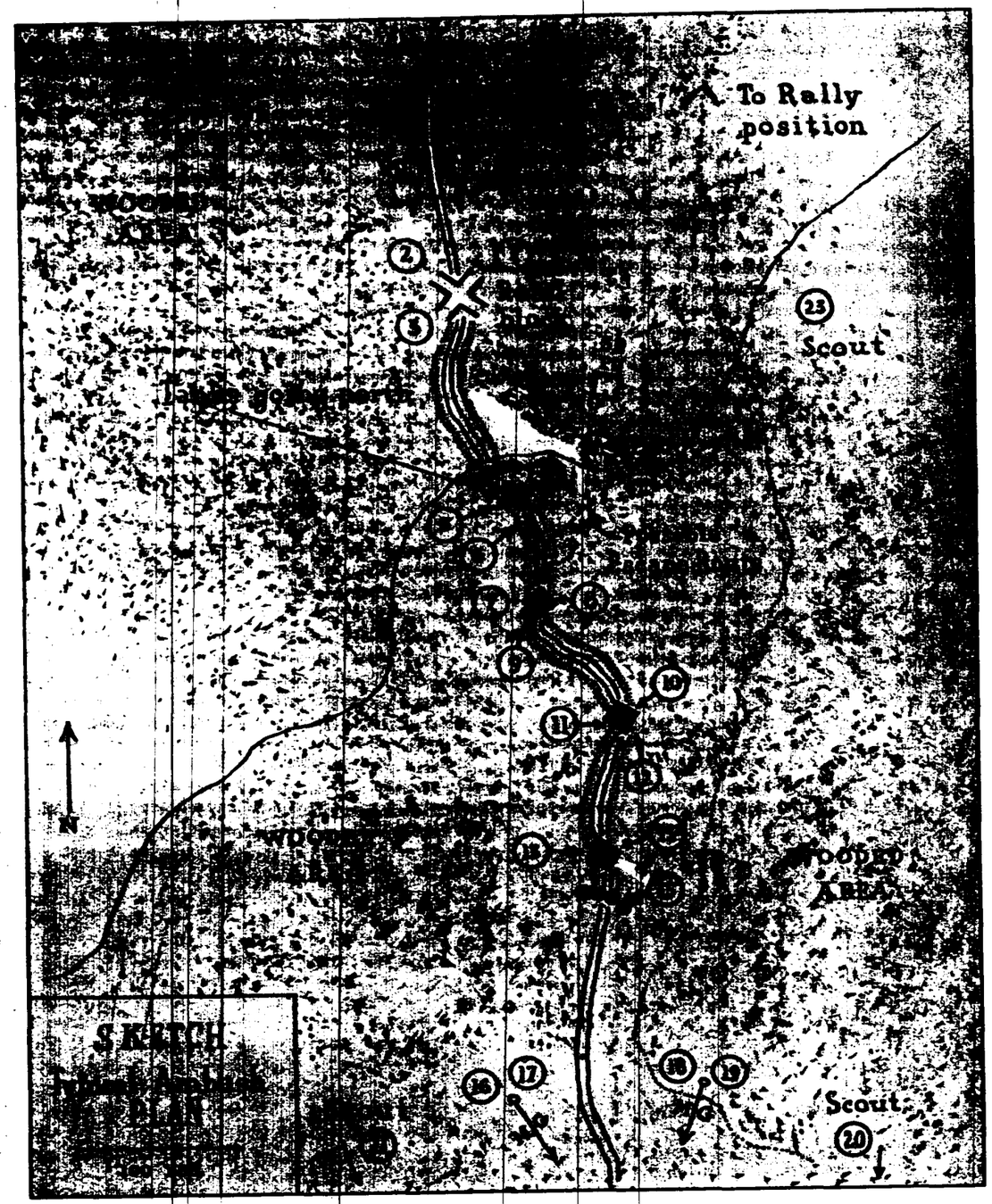
Plan of Execution

The reconnaissance element for a platoon, or less, of tanks may be one or two motorcycles or other light reconnaissance vehicles. They should be eliminated noiselessly by a detail posted just past the ambush site. This can be done by three men with small arms, plus a steel cable for motorcycles, or an effective barricade for wheeled vehicles.

Stopping the first tank in the ambush is not difficult. From a concealed foxhole or from natural concealment as near the road as possible a man pulls a mine chain across the road—timing his pull when the tank is within fifteen feet so the first tank cannot avoid the mines. The mine chain consists simply of AT mines tied one foot apart on a rope. If no mines are available, a pivoted board loaded with explosives can be used.

M10 Tank Destroyer, in defilade here, is primary TD weapon; can be used in dismounted tank destruction plan with the 3-inch gun covering possible avenues of escape.





The instruction given at the TD School is designed to present a general ambush plan from which officers and men will be able to set up an ambush to meet any conditions presented in combat.

As additional insurance, when the ambush is staged in a defile, a mine chain can be pulled behind the last tank, and the trap closed. Any side roads, or breaks in terrain or growth along the ambush site that would allow tanks to escape, can also be blocked with mines or by a bazooka team. If there is ample concealment, AT guns, towed or self-propelled, can also be spotted at these avenues of egress, laid on the opening.

The placing of smoke pots between tanks is worked simply by stationing men at the estimated interval left between tanks when the tank column is halted. These men must not fail, as any tank left unscreened will get covering fire from the tank behind.

A vital factor in the coördination is the designation of a specific team for the destruction of each tank. A team of not less than three men should be charged solely with the destruction of one particular tank, and each team member must have a specific responsibility.

The teams are placed as near as possible to the road, covered and concealed, and at the place where their particular tank will probably stop. Number 1 man pulls the mine chain, stops the tank, and closes in with sticky grenades, pole charges, or other demolitions. As soon as the tank stops, number 2 man attacks it with automatic small arms fire to keep it buttoned up and to prevent the escape of the crew. Number 3 man sets the smoke screen and, coming up through the undergrowth from the rear, closes in with Molotovs or incendiaries—concentrating on air louvres and intakes.

The action must be conducted simultaneously, swiftly, and smoothly with the assault on all tanks taking place at the same time. Hand-picked men, hard training, rehearsal, and coördination show up here.

A study of the employment of enemy tank forces indicates that a tank platoon used as a column point or on reconnaissance is supported by motorized infantry. The ambush plan should include some means of delaying this force. One or preferably two machine gun teams can effect this delay. The guns should be given the best possible field of fire along the route leading into the ambush. Their mission is to delay infantry or any support following the tanks, force it to deploy, and pin it down for the few minutes necessary for the destruction of the tanks. The signal system must be planned especially to enable these guns to move out in time to join the main ambush force at the rallying position.

All-round security is another essential of the ambush plan. The machine guns covering the rear must be supported by flank scouts. These security men guard against mounted and dismounted enemy reconnaissance elements ahead of the tanks. They also warn of the approach of the tanks themselves. Foolproof voice or other prearranged signal systems must be devised for these scouts, and the entire ambush crew made familiar with them.

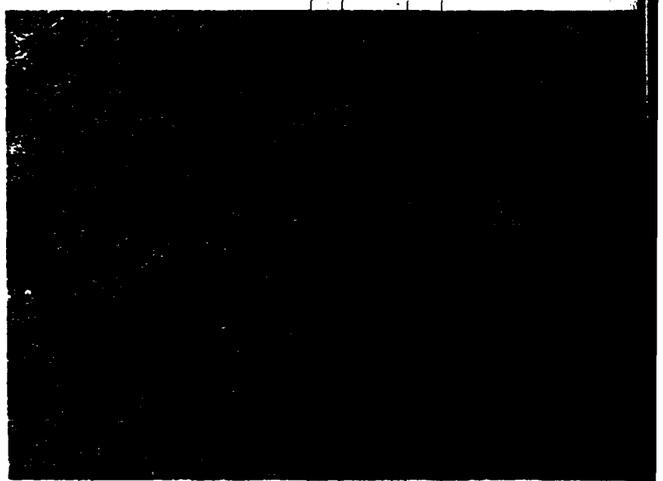
Next in importance to the success of the ambush itself is the safe withdrawal of the personnel and vehicles. If the ambush is well planned and rehearsed, if surprise is complete, and the men are capable of dealing with the unexpected turns of action that inevitably arise, the casualty list should be negligible. If the withdrawal is equally well planned and rehearsed, the loss in men and vehicles should not be increased.

Each man should be aware of the fact that less than five minutes elapse between the stopping of the first tank and the completion of the destruction. All members of the party withdraw as soon as their particular mission is completed. The location of the rallying position itself and the alternate routes must be explained clearly to all. The rallying position should be as close as is feasible. This depends upon the terrain, tactical situation, and locaton of friendly and enemy troops.

The last step in the general plan is the rehearsal. The time available, after the ambush is planned and set up, determines the nature of the rehearsal in actual combat. Many circumstances do not allow for rehearsals of every ambush on the ground, nor can they always include the details peculiar to the situation. But whenever possible, and especially in training, a rehearsal should be planned and executed.

Although surprise and the resulting confusion to the enemy are the basic elements of the tank ambush, they both depend on clear planning and the confidence, initiative, and ingenuity of the individual. It is the elemental, almost primeval, instinct of planning and springing the trap on the unsuspecting game upon which the success of the engagement depends. Clever, wily, and courageous, the tank ambusher in reality fights a man-to-man battle. That is what makes it a sporting venture, as well as a handy ace to have up one's tactical sleeve.

Dismounted Tank Destroyer in foxhole awaits signal to heave Molotov and follow through with small arms fire on ambushed enemy armor.



The THREE C's - Cover - Concealment - Camouflage

*by Captain George E. Price, Cavalry**

THE soldier's job is to stay alive and continue fighting. Simple, protective methods for concealing himself by artificial and natural means will enable him to keep on living, shooting, and killing.

Instruction should stress the old fact that the enemy has little chance to hit what he cannot see. Cover, concealment, and camouflage are vital subjects. Continued throughout the training period, effective camouflage practices must become second nature to every man in the unit. The earlier the soldier gets the "Know Why" and the "Know How," the earlier his unit can take the field and fight effectively.

There is only one way to make sure of it.

What men do in training, they will do in combat. The truth of that statement has been established by authoritative reports of our observers on the fighting fronts.

During training, nothing should be taken for granted. Men in combat do not suddenly acquire the ability to do things that have been omitted in their training. The activation of the instinct of self preservation cannot be depended upon by unit commanders to make up for deficiencies in their instruction. Second nature actions and reactions are initiated only by drive, foresight, sweat, and uncompromising attention to the smallest details in training.

For the fast-moving cavalry troops, the two *fundamental* requirements of concealment are:

1. Choice of position.
2. Camouflage discipline.

The normal method is camouflage by natural means. Artificial means are resorted to only in cases of necessity.

Thorough Indoctrination

To insure the success of concealment and camouflage training, leaders first must be indoctrinated. If they are convinced that the need for such training is a matter of simple logic and common sense, the training of soldiers will be conducted with the required amount of initiative and energy. Training area inertia is a fault for which leaders are responsible. Laziness in training means lives needlessly lost in battle.

Camouflage discipline is no good unless it is one hundred per cent effective. One careless or lazy man can be the cause of the destruction of an entire unit. Soldiers in training must be impressed with that fact. It is one thing to put out orders and instructions pertaining to camouflage, and quite another thing to see that they are complied with uncompromisingly and continuously. Reliance should not be placed upon the inspection reports of even trained subordinate camouflage specialists. That is a "back door" method. The drive and the impetus necessary to overcome indifference to proper cover, concealment, and camouflage practices during training must come from the top down through the channels of command. It must be relentless and exacting. *All* tactical training must be conducted under conditions as nearly approaching combat as possible.

How does the average soldier react to the camouflage requirements during training? The well-disciplined soldier always is cautious of his personal appearance. He wants to look neat and smart at all times. Unless camouflage training is given early, it is difficult to get him to subordinate this desire to the need for camouflaging himself and his weapons. He is slow to appreciate the necessity for smearing mud on his face, dulling the high shines which certain items of his equipment have acquired under "spit-and-polish" routines.

Unless the "Know Why" is brought out strongly, the average soldier, having been required to mottle his clothing and equipment during tactical exercises, relaxes and becomes somewhat careless in taking care of his uniforms and equipment. Organization commanders should demand that their men live up to the highest standard of smartness when on pass or performing garrison duties. However, time should not be wasted by requiring men to shine or remove mottling from equipment for the usual Saturday inspections. Such a requirement is characteristic of things which in the training period retard a unit's readiness for combat. Distinction should be made between *appearance* and the *operating efficiency* of weapons and equipment.

From the viewpoint of a unit commander, to demand smartness at a sacrifice of combat principles is as wrong as insisting upon the use of close order formations in battle. Lack of smartness in a combat situation will not damage discipline any more than dispersion, which after all is a battle necessity. *We must train the way that we fight.*

Constant Practice

Good camouflage discipline requires more than indoctrination. It requires *practice*. Each man's initiative and proficiency must be such that in the absence of orders he prepares himself, his clothing, his weapons, and his vehicles or animals according to the instruction he has received. He will darken his exposed skin with mud or dirt. He will mottle his clothing and web equipment to harmonize with the environment. He will break the regular silhouette of his rifle or carbine barrel with strips of burlap. He will dull everything that shines and destroy the outline of his helmet with brush and leaves.

To make sure that the junior leaders of cavalry units understand and believe in the effectiveness of fundamental camouflage practices, the Cavalry School teaches camouflage where it should be taught—*in the field*. Under the supervision of the Department of Tactics, demonstration areas have been reserved and developed. They contain training aids constructed locally at a small cost. Similar areas can be laid out by field units.

Instruction

In the demonstration area instruction is conducted as follows: Students are transported or marched to an adjacent *assembly* area. Here they are oriented thor-

*Instructor, The Cavalry School.

Figure 1. All equipment must be painted—any shiny surface reflects light.

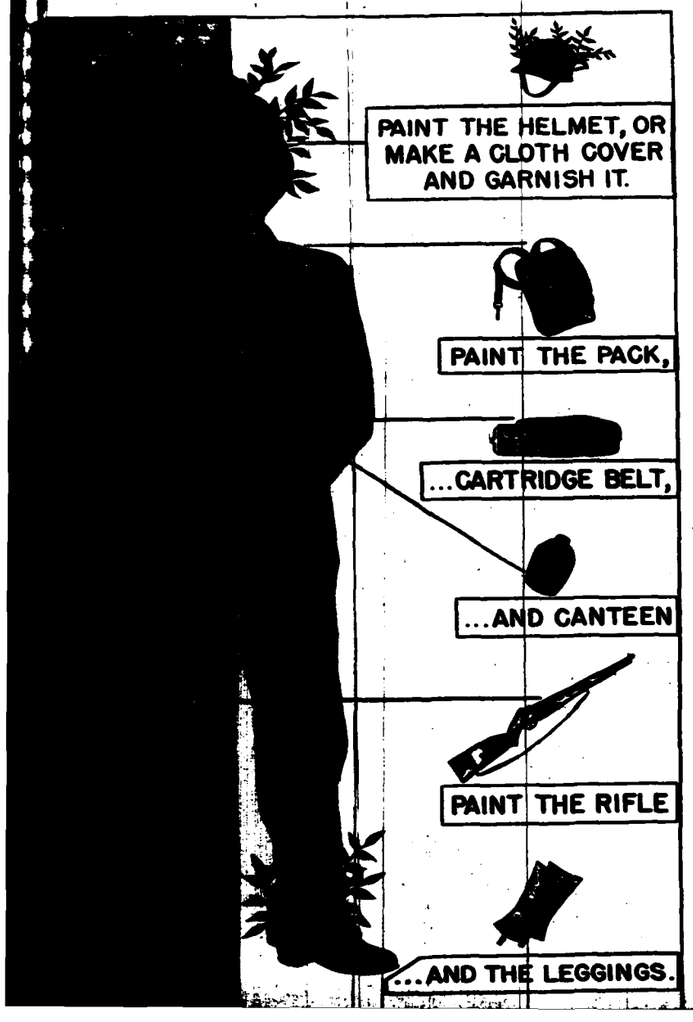


Figure 2. Good camouflage blends the individual with his background.

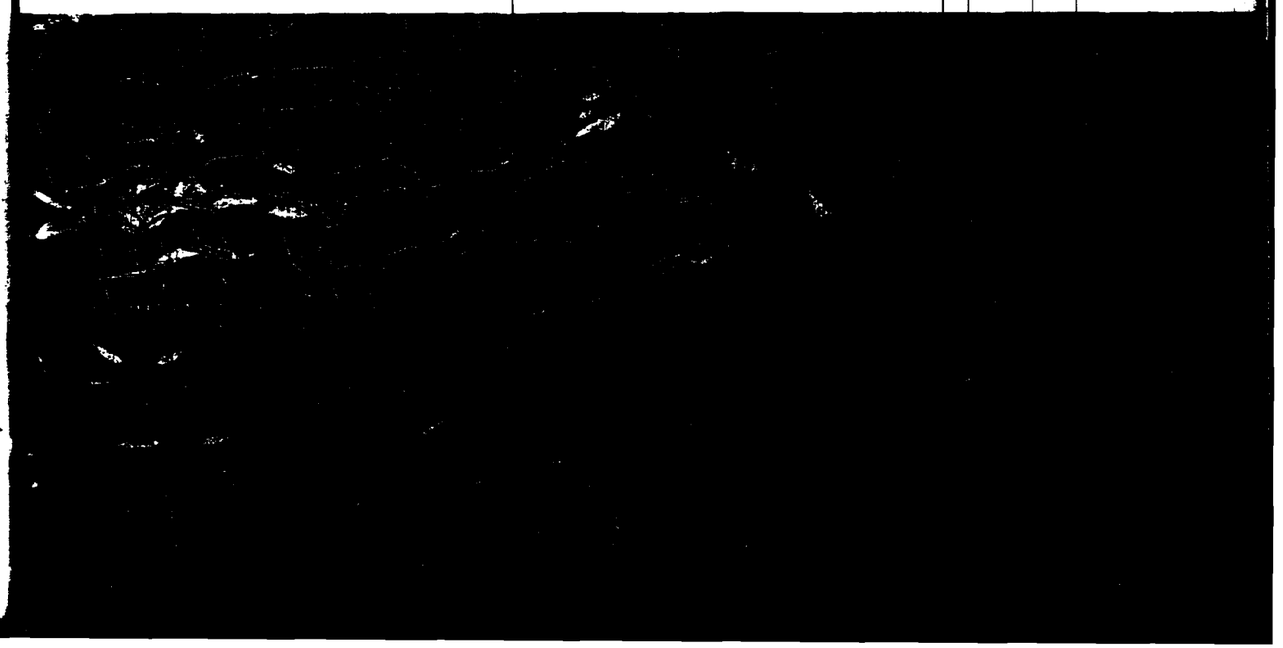


Figure 3. Camouflage Demonstration Areas. (See legends.)

Legend for Area "A"

No.

*1. Real ¼-ton truck parked first incorrectly, then correctly.
2. Concealment measures for skin, clothing, and equipment for individuals.
3. Turnoff.
4. Headquarters Section ¼-ton truck model.
5. Supply half-track M3A1 model with 1-ton armored trailer model.
6. Headquarters Section ¼-ton truck model.
7. Alarm, gas.
8. Supply half-track M3A1 model with 1-ton armored trailer model.
9. Latrine, straddle trench.
10. Headquarters Section ¼-ton truck model.
11. Path, dismounted, summer.
12. Path, dismounted, winter.
13. Turnoff.
14. Headquarters Section armored car model.
15. Turnoff.
16. Latrine, straddle trench.
17. Alarm, gas, improvised.
18. 2½-ton truck model with 1-ton cargo trailer model. 3 dull-finish water cans on 3 gasoline water heaters. 1 soakage pit. 1 solid-garbage pit. 1 water sterilizing bag. Demonstration of mess-line operation.

18a. Example of incorrect concealment of fox hole, shelter tent, and individual equipment.

19. Half-track M3A1 model with 1-ton armored trailer model.
20. Turnoff.
21. Headquarters Section armored car model.
22. Turnoff.
23. ¼-ton truck model.
24. Maintenance Section armored car model.
25. Maintenance Section ¼-ton truck model.
26. Turnoff.
27. Maintenance Section half-track model.

*28. ¼-ton truck model in open under cut brush to break up man-made form and shadow.
*29. Machine-gun emplacement.
*30. Half-track model dug in under low drape.
*31. 2½-ton truck model in open under drape.
*32. Track made by light tank.
*33. Light tank under tree.
34. Park for visiting vehicles.

NOTES: Items marked * are not a part of the Reconnaissance Troop Headquarters bivouac. Fox hole is present for each member of the crew of each vehicle in the Reconnaissance Troop Headquarters bivouac.

No drape is needed on any vehicle in the Reconnaissance Troop Headquarters bivouac in the present state of foliage shown; in winter time drapes almost certainly will be needed.

Legend for Area "B"

No.

35. Mountain wagon.
36. Concealment measures for skin, clothing, and equipment of individuals.
37. Rifle Platoon squad picket lines.
38. Kitchen in operation including:
    2 cavalry pack cooking outfits and/or 2 gasoline water heaters.
    Dulled utensils.
    Soakage pit.
    Solid-garbage pit.
    Traffic control tape at kitchen.
    Mess-line operation demonstrated by serving hot meal to demonstrating troops.
39. Troop Headquarters picket line.
40. Machine-gun squad picket lines.
41. Rifle squad picket lines.
42. Rifle squad picket lines.

NOTES: Prone shelter for each person above or beside his squad picket line.

Equipment generally between prone shelter and picket line.

Latrine per squad to one side of prone shelters.

Gas alarm at kitchen and one near upper end of the draw near "42."

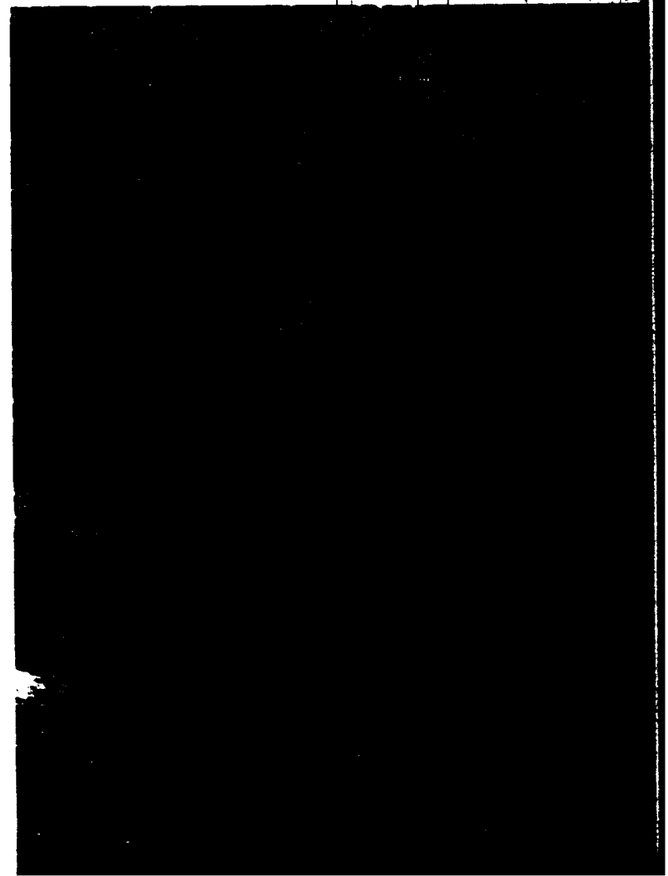
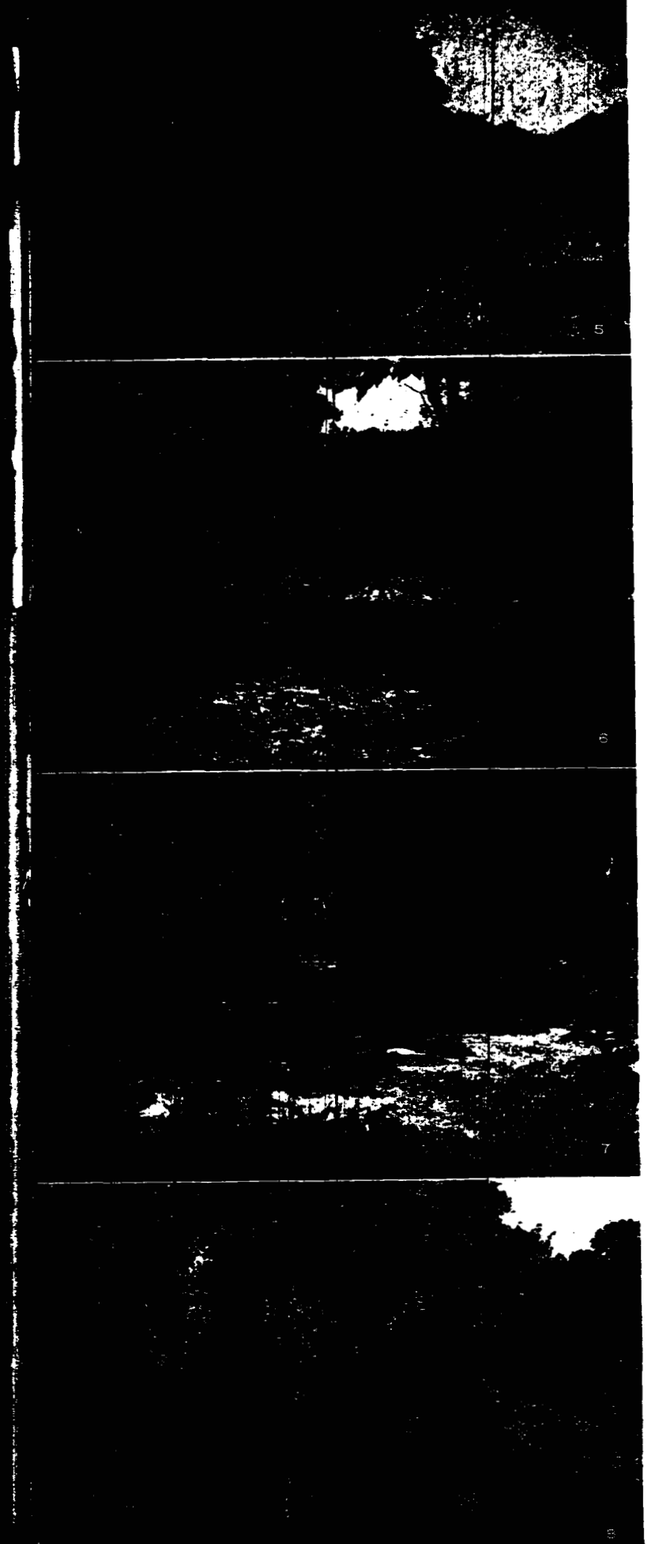


Figure 4. Trail leading into Area "B." (See Figure 3.)



oughly. Each student is provided an aerial photograph of the terrain (Figure 3). The purpose and scope of the exercise are stated. The camouflage discipline required of them during the period is explained in detail. The instructor then outlines the assumed tactical situation for a bivouac. This affords the opportunity for a thorough review of security measures that normally would be taken.

The importance of the time of entry and departure is stressed. It is pointed out that air observation is ineffective during the two low visibility periods—dawn and twilight. Ground troops can and should move in this half light. It is further pointed out that these periods of half light or low visibility vary with the climate, topography, season, vegetation, and of course the weather.

The importance of prior reconnaissance cannot be overemphasized. It is essential that the best troop area available be selected and that each element of the unit be assigned a subarea which will facilitate its tactical employment when the maneuver is resumed. The march of the unit into the bivouac area should be uninterrupted by congestion of the entryways. An element should not have to halt or close up.

Initial Positions

March to the designated subarea should be made at intervals consistent with the tactical situation. For the purpose of this exercise each student is designated a leader of a billeting party and as such is required to make a reconnaissance of the entire area. He must note terrain characteristics with reference to landmarks. He must select initial positions for guides to conduct platoons to their respective subareas.

The location for the kitchen is determined by considering the following factors:

1. Centrally located if possible.
2. Best available overhead concealment.
3. Covered routes for movement of kitchen equipment, rations.
4. Water supply.
5. Good surface drainage.
6. Mess line formation.

After reports are made and discussed, the instructor conducts students to the several installations within the Area A in the order shown in Figure 1.

Area A

Demonstration Area A is developed to represent an overnight bivouac for troop headquarters of a reconnaissance troop, mechanized. Aerial photographs of the area were taken before and after the installations were made. Similarly, it was checked by aerial observers during all stages of its development. Dead ends, turnarounds, visible turn-offs, and widening of existing routes were avoided. Turn-offs are concealed from air observation by overhead foliage. (See Figure 5.) The entrance shown in Figure 5 was selected because the large tree (center of illustration) affords ample concealment from the air and is located near the main trail. The effectiveness of an entrance of this kind can be damaged seriously by careless driving and turning. Personnel and vehicles use only the *covered entrance*. This area (see Figures 3, 5, 6, and 7), however, has more than one exit. It is located far enough from the main road to insure against normal noises being heard at that distance.

The model vehicles shown in figures 8 to 10 inclusive are constructed of wood to prevent excessive scarring of the terrain. This was considered expedient because of the necessity for scheduling successive demonstrations. Before the dummy vehicles were moved into the bivouac location, real ones were moved into and out of the area once in order to produce realistic scars on the ground and to emphasize accessibility of the area.

All routes into and through the area have been wired off to prevent unnatural scarring by personnel. (See Figure 6.) Students, as well as demonstrating personnel, are required to observe camouflage discipline. They are not permitted to widen existing trails or make new ones. The entire area is fenced in to prohibit trespassing or use of it for other purposes. Figures 1 and 2 show the extent of the individual camouflage required of the individual as a part of the exercise and demonstration. In situations where camouflage suits are not available, a few dabs of paint and scraps of tape and cloth will do the job.

During the supervised tour, the features of each installation are discussed by the instructor. Students have at all times the privilege to comment and ask questions.

Area B

Area B is a model installation complete with trained personnel from the 29th Cavalry Regiment (Composite), assigned to the Cavalry School. The mounted rifle troop, completely equipped for the field, is shown in bivouac. During the course of the demonstration, this troop is fed a hot meal prepared in the bivouac area. Mess-line operation—handling of mess kits and kitchen utensils in daylight—according to recommended concealment practices, are demonstrated.

Earlier in this article it was stated that for fast-moving cavalry troops, the two fundamental requirements of concealment are choice of position and camouflage discipline. It is believed that the use of demonstration areas, such as those described, is the best method for impressing junior leaders and other cavalry personnel with the logic and the common sense of camouflage and concealment practices.

Figure 5.—Entrance to Area "A." (See Figure 3, No. 3.)
Figure 6.—Trail leading into the area from Figure 5.
Figure 7.—An entrance or exit to Area "A."
Figure 8.—Half-track with trailer (wooden model).

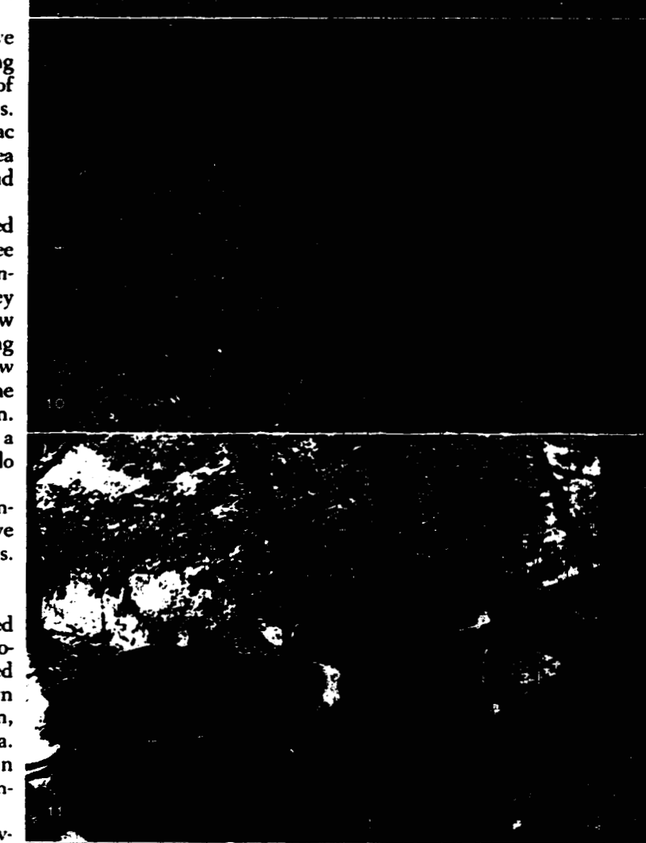
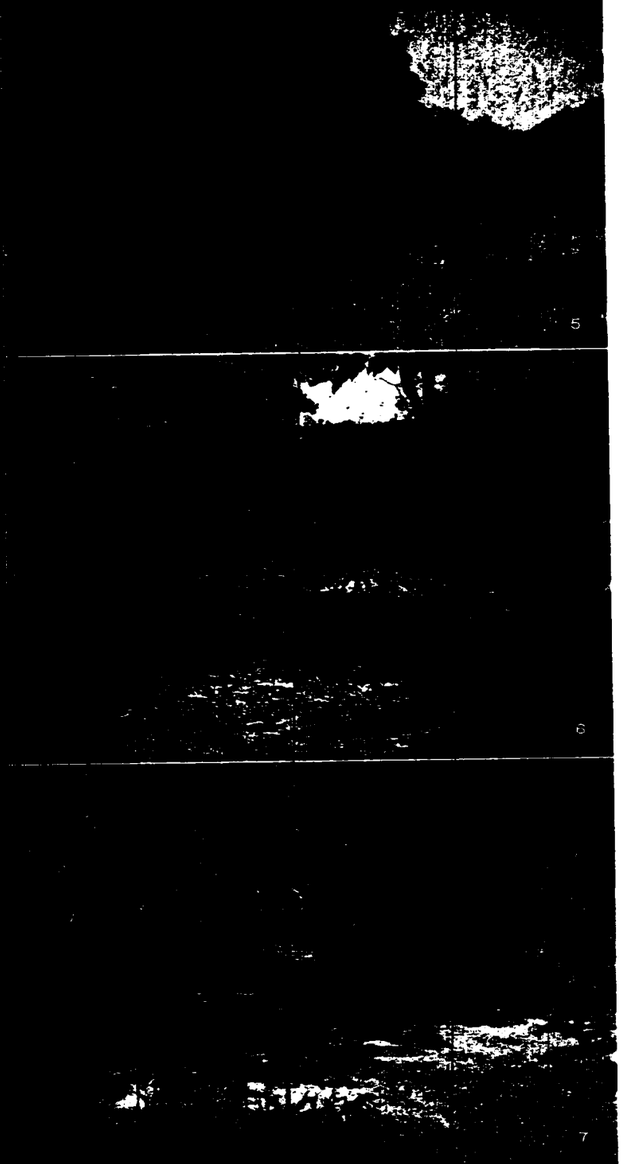


Figure 9.—Half-track with trailer (wooden model).
Figure 10.—Half-track (wooden model).
Figure 11.—Squad picket line.
Figure 12.—Squad picket line.



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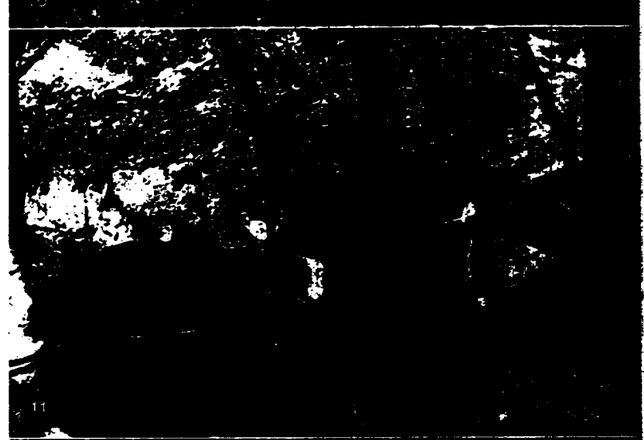
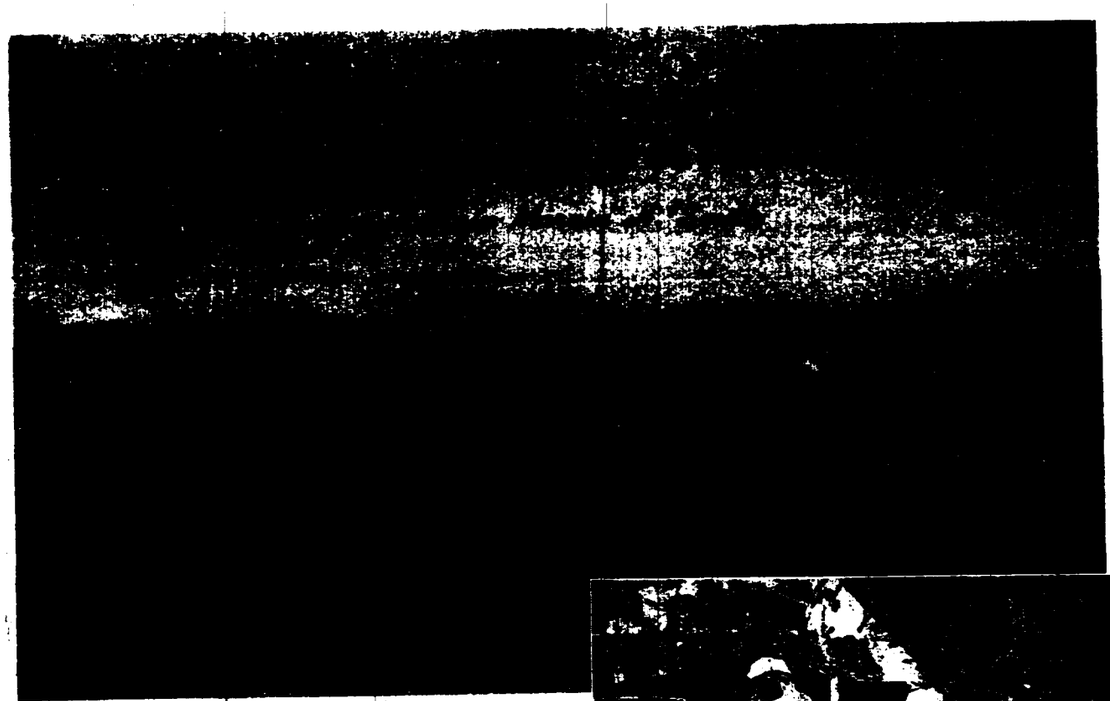




The desert south of Negrine. After one examination of this terrain, Captain Smith decided to go ahead without his half-tracks.

A friendly Arab examines a weapons carrier mounting twin-fifties, as the men eat C rations beneath a date palm at Negrine.

AFTER the German smash through Kasserine Pass on February 17, 1943 was halted, we were catching our breath in bivouac near Elma el Abiod, south of Tebessa when our battered reconnaissance company received orders from II Corps Headquarters to seek contact with the enemy to the south—a mission that was to develop into a blistering nightmare across uncharted desert sands.

We had no idea that within the week we would be feasting on camel steaks and be saved from stalling in a small desert outpost by a mysterious cache of gasoline, miles from the nearest supply depot.

The company was ordered to move at once 35 miles south to Bir el Ater, set up headquarters there, and dispatch reconnaissance platoons southward in an effort to maintain contact with the enemy.

Remnants of one platoon that had suffered heavily in men and vehicles at Kasserine were sent north to maintain liaison with the French forces. The pioneer platoon was to guard a minefield in a mountain pass just west of Elma el Abiod.

At 1600 hours, the remaining two reconnaissance platoons and headquarters platoon moved out in open column formation on our new assignment, while the rest of our battalion remained at Elma el Abiod. We were forced to close up the column to maintain contact in the blackout-driving after sundown.

At the end of a wearisome 10-hour trip over dusty, wind-swept, rocky roads, we reached Bir el Ater at 0200 hours. So far no enemy had been sighted. At daylight, after only a few hours of sleep, our platoon was further ordered to push south and west some 40 miles to Negrine and reconnoiter that area for possible tank approaches and determine proximity of the enemy forces.

It was believed that the French occupied Negrine, but we were warned that enemy patrols had been operating between our position and this little town, a fact we digested slowly as we moved out.

Rather sleepy-eyed from lack of rest and still somewhat dazed by the quick turn of events, we moved

*Tactics Department, Tank Destroyer School.

EDITOR'S NOTE: Captain Smith and the members of his reconnaissance platoon of the 701st Tank Destroyer Battalion were awarded the *Fouraggere*, representative of the French *Croix de Guerre*, for their participation in actions with Company B, of the same battalion.

out at 0500 on the second day of our mission. Prepared for anything, and not sure whether we would meet enemy patrols or friendly French, we now advanced by covered bounds from terrain feature to terrain feature. Our relief was great when we ran into a very dejected French driver standing beside a stalled ¼-ton truck a short way out of Negrine. In his exuberance over his rescue by Americans, the Frenchman jabbered at such a rate that my meager knowledge of the language, based on two years' study in high school, didn't have a chance. By use of gestures and a plentiful sprinkling of sand drawings we were able to learn—at least we hoped we had learned—that Negrine was outposted by the French.

Somehow the Frenchman had yanked the ignition wires under the dashboard and was at a total loss as to what caused his motor failure. Within a few moments one of our mechanics had the truck purring again. It was truly a crowning achievement in Franco-American relations.

It had been a profitable meeting all around. The Frenchman rode away blessing the mechanical genius of Americans, and we moved forward, relieved by the knowledge that we would meet friendly troops at Negrine.

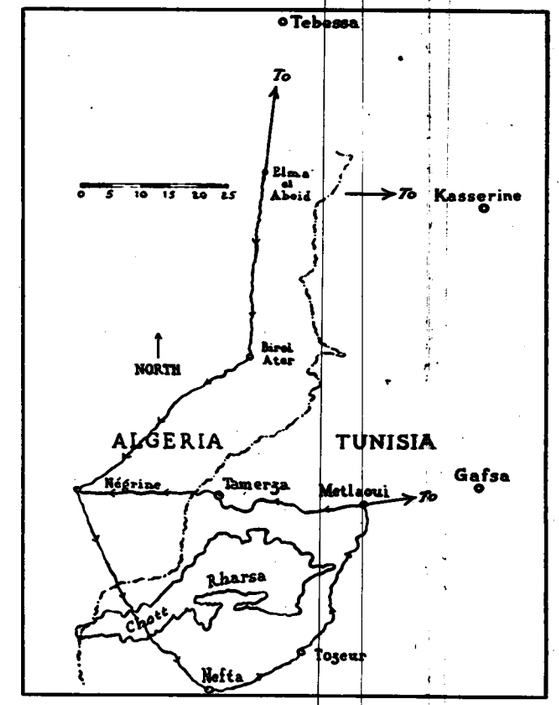
Late that afternoon, we nosed into Negrine after playing tag with frolicking herds of wild camels during the late stages of the advance. Negrine was a mangy settlement of some 30 or 40 adobe huts and concrete buildings built in a defensive circle on the edge of the desert. French information that the Germans had displaced southeast across the desert some 50 or 60 miles to Tozeur indicated the futility of obtaining enemy information at Negrine.

More than 50 miles to the south across shifting desert sands was Nefta, the lone French outpost between Negrine and Tozeur. For a week no word had been received from this outpost, though it was hoped it still existed.

Three days before we arrived, two French officers were killed when their ¼-ton truck struck a German mine as they attempted to reach Nefta. Fifteen enemy tanks were reported at Tozeur, and lively enemy patrol action had been met throughout the area to the south. After the jeep incident no further efforts had been made to reach Nefta.

At Negrine we met Lieutenant Heller, a French officer with whom I was to become well acquainted. Together we pored over maps of the area—French maps with a superimposed British grid.

Orders had been "to seek contact with the enemy to the south." So far, we had not been able to do this. But because we had pushed more than 30 miles south of the company headquarters at Bel el Ater (far out of range of our only radio, the SCR 510). It had been impossible to keep superiors informed. Under these circumstances I made a command decision in keeping



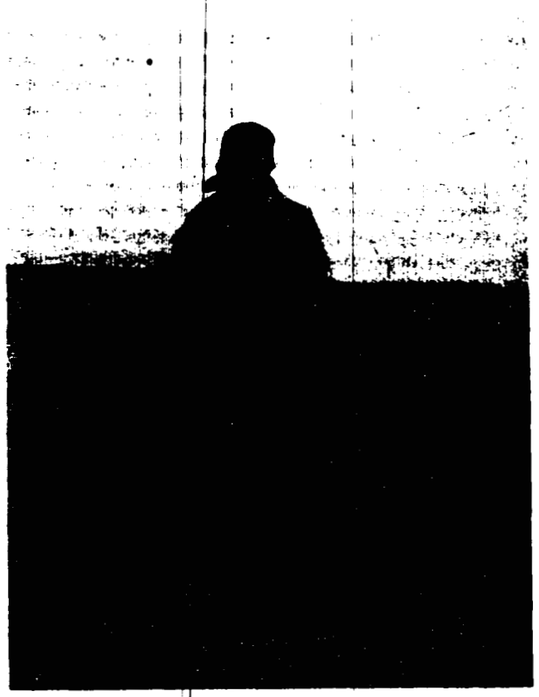
Route of the Reconnaissance Company, 701st TD Battalion.

with my interpretation of my original orders. I decided to try to reach Nefta, and if possible, Tozeur. If 15 enemy tanks were at Tozeur, I knew the company and battalion officers wanted to know it. If I waited for messengers to run back to Bel el Ater and return with new orders, much valuable time would be wasted. It was under these conditions that I decided to take the responsibility for pushing farther south and east.

Lieutenant Heller, in spite of doubts expressed by his colleagues as to the sanity of the trip, offered to accompany me. With his help, we persuaded an Arab scout, who had recently made the trip by camel, to act as our guide, though neither of us had much faith in him.

The half-tracks were left in Negrine, since they would be unable to negotiate the soft sand of the desert, and we proceeded south with only the six jeeps. In the event that radio contact could not be reëstablished, the party left behind was to send a cycle rider back to company headquarters to inform them of our plans.

As we pushed deep into the desert, our lack of effective communication increased. It was now two days since we had been in contact with battalion headquarters at Elma el Abiod. At the end of this weird desert journey we were to learn that two days after we left the half-tracks at Negrine, the entire party was given up for lost—all because of a breakdown in com-



Captain Marvin H. Smith, the author, dressed in the combat garb of the desert. The gloves, he explains, were for protection on cold desert nights.

munications. A searching party actually was formed to recover our bodies.

(Right here, it should be emphasized that long-range radio sets are as vital to reconnaissance as ammunition is to guns. At least an SCR 193 or a similar radio is recommended for each reconnaissance platoon.)

Despite the risks described in the proposed push on to Nefta, all of the men wanted to make the trip. They expected plenty of action and pleaded for a chance to avenge the drubbing taken at Kasserine Pass.

After the men who would make the Nefta trip were selected, those left in the Negrine party were put under the command of a section sergeant, with instructions to inform the Bir el Ater headquarters of our plans and to attempt to maintain radio contact with us.

Our party of 16 men, one Arab, one French officer and myself pushed off on the morning of the third day after we had left Elma el Abiod. We navigated by compass, since no landmarks existed in this vast expanse of shifting sands. Our top speed was about 15 miles an hour through the soft, hot sand. It was necessary to stop frequently to check compass readings, for in crossing small dunes we had a tendency to veer to the right and, unless we had made corrections for these turns, we would soon have been going at a tangent to our desired route.

Our progress was further hampered by the need for continued foot reconnaissance from the sand dune crests. Before crossing each major crest, the men in the leading jeep dismounted on the rear slope and went forward on foot to reconnoiter the area of our projected advance. Now that there was no road to follow, we traveled in staggered column formation with mutual fire support, ready to meet anything over the next dune.

The thermometer must have soared to 120 degrees, and the oppressive heat bore heavily upon us. Motors soon overheated in the heavy going in low gear, and the men shed all but the bare essentials of clothing.

Many of the dunes were so high that the jeeps stalled before reaching the top. We would back off a few hundred yards and, with motors wide open, hit the dune again. It soon became a game for all concerned except the Arab. Unused to traveling in jeeps, he was in a perpetual state of terror. He held on for dear life and offered prayers to his God in loud wails.

The only human contact that we made during the first blistering, searing day came in midafternoon as we topped a mountainous dune. Below us spread a ragged array of tents from which spewed a stream of screaming women and howling dogs. It was an Arab village and apparently the men were off getting water. The column was halted, and the vehicles arranged behind a crest to cover the advance of two men with tommy guns. Once they determined that no enemy were present, we pushed ahead.

It was about 1600 hours when our next break came. We were becoming apprehensive. Certainly, we thought, we had gone far enough to reach Nefta. We were continually assailed by the fear that we had missed the French outpost, a mere dot in the sandy wilderness. Suddenly, we saw spread in front of us a clump of palm trees growing on the edge of a lake. We estimated the distance at about five miles and pushed forward with everybody in high spirits. We traveled for half an hour, but our oasis was no nearer. Thinking it was farther than we had estimated at first—distances are very deceptive in the desert—we pushed ahead once more. After the second such stop, we determined that we had been fooled by a mirage—as realistic a one as I ever hope to see.

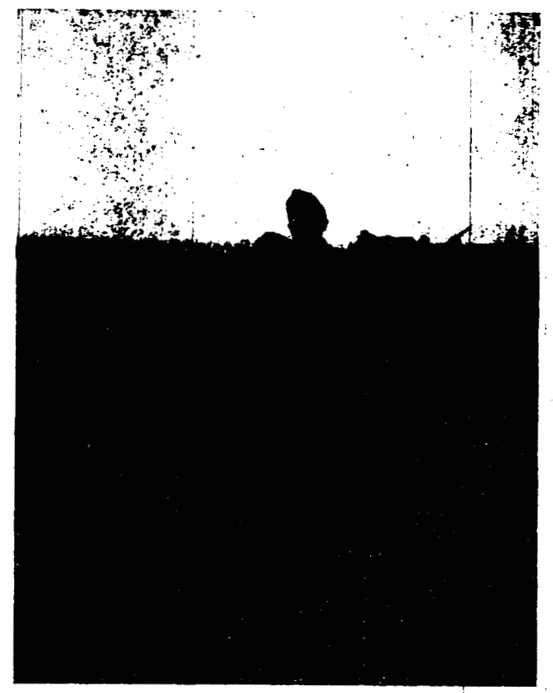
As it turned out, we were approaching the huge Chott Rharsa, a flat salt lake bed with surface so smooth and hard that for the first time we could let our jeeps go and make real speed.

We rechecked our compasses and continued on, a downhearted crew. At about 1730 we saw several men running along the top of sand dunes about 1000 yards to our right front. Two jeeps were dispatched in pursuit, but they were unable to find these ethereal men. A few minutes later a radio call was received from the last vehicle reporting that it had been fired upon. The driver wanted to know what to do. After it was ascertained that nobody had been hit, we continued our advance.

Darkness overtook us, and we were still at a loss as to our distance from Nefta, though it seemed as if we had traveled far enough to reach the outpost and return to our base. In these vague circumstances, we decided to spend the night there on the dunes. The platoon was drawn together in a tight Indian circle of no more than 50 yards in diameter and a walking guard, armed with tommy guns, was posted. We ate a distasteful cold supper of C rations in the piercing chill that clamps down upon the desert as soon as the sun goes down.

All was quiet until 2100. At that hour we heard vehicles moving slowly north to the east of us. We saw a bright flash of light, and then just darkness. All we could do with our meager force was to wait and see what happened. Soon the noise faded in the distance and we returned to sleep. Forty-five minutes later the same motors were heard some two miles on the other side of us, moving south. Once again our patrol sounded the alarm. We all came to the conclusion that we were being looked for by someone, probably a party sent out by the men who had fired upon us the preceding evening. Again the noise faded and we returned to our blankets, but the turn of events had created some uneasiness.

At dawn on the fourth day, after another cold meal of C rations, we moved out. The Arab was slowly becoming educated to eating the American food, though he was showing no enthusiasm for it. But neither were we. With high hopes of entering Nefta within an hour, we moved forward in the same staggered column formation that we had used previously.



Lieutenant Heller, the French officer who accompanied Captain Smith on the reconnaissance trip, is pictured beside a wrecked Allied plane that was found and reported to higher headquarters.

We had traveled about three miles when a soldier was seen approaching on foot. As I dismounted and went forward on foot to investigate, the patrol immediately spread out and covered me with their machine guns. This stranger wore an overseas cap, a long flowing cloak with a red ammunition belt at the waist, and sandals. He carried a rifle. We approached each other cautiously—myself with a tommy gun ready in my hand, and he, as I afterward learned, with his finger on the trigger of his rifle. Through Lieutenant Heller, it was learned that the stranger was a French member of the Arab Desert Command, and his entire patrol, lying just behind the next sand dune, was likewise covering his approach.

After a brief discussion with Lieutenant Heller, the officer agreed to accompany us the remaining 10 miles to Nefta, while his patrol continued on its routine desert mission. It was one of his men who, mistaking us for Germans, had fired on us the day before. And it was they who had been looking for us the night before.

We reached Nefta at about 1000 hours on the fourth morning after we had left our battalion headquarters at Elma el Abiod. Our gasoline supplies and rations were running dangerously low.

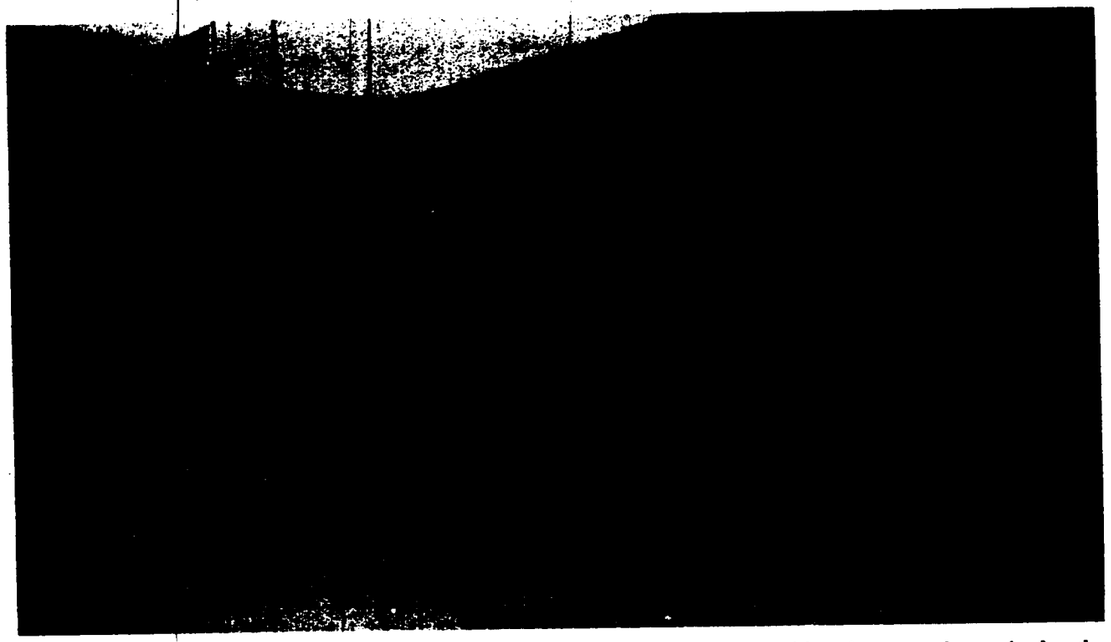
Nefta was a cluster of Arab mud huts and a small French brick fortress. We found the entire French garrison of four officers and 12 men outside the building to greet us with two machine guns and eight rifles trained upon us as we roared joyously into the city. They had seen nobody for a week and thought we were the Germans.

Once it was determined that we were Americans, they threw their arms about us in joy and invited us into their headquarters. They bombarded us with questions on the turn of war to the north. They said they were prepared to fight to the last man, since they had no gasoline and only one broken-down American 2½-ton truck. That news about no gasoline didn't bolster our spirits. Our original supply of full gas tanks and an added five-gallon can for each jeep was dwindling after our buffet with the desert sands. It was lucky that a couple of the jeeps had two instead of only one five-gallon gasoline can, or we would have been stranded there.

When we spoke of pushing on to Tozeur, they told us of three men who had left the previous night in a ¼-ton truck and had not been heard from since.

We told them we would go there as soon as we had something to eat and try to learn what had happened to their three men.

Lieutenant Heller and I accepted an invitation to eat with the officers. They served a tasty meal of wine,



A French civilian stands at a distance and gazes curiously at the men of Captain Smith's platoon as they arrived at the Nefta garrison. The French tri-color can be seen in the background waving over the garrison gate.

celery tops covered with oil, French bread, a few olives, and a meat course.

Only after we had finished the meat did they tell us that it was camel steak—the only meat available at this outpost. It was delicious.

We were plenty worried about our gasoline supply that afternoon as we pulled out of Nefta with the good wishes of the garrison and one of the largest French flags I have ever seen. We were to tie it onto the lead vehicle as we approached Tozeur as a sign of friendly troops to the French patrol that had preceded us—if that patrol was still alive.

At Negrine the French commander had told us that we would never be able to enter Tozeur with jeeps. He was certain that the town was occupied by Germans and that it would fall only after a fight.

We carefully avoided a small road that led in the direction of Tozeur. We had gone too far to run chances of setting off German mines at this late date. After three hours we saw Tozeur in the distance. We stopped about five miles from the city and fastened the flag to the leading jeep. It extended as high as the radio antenna. If the French, providing they were still alive, could not see that flag, they certainly would not have been good enough marksmen to hit us anyway.

The patrol spread out as we approached the town. We were within 800 yards, when a vehicle came scooting out from between two buildings. The patrol stopped, and all gunners manned their guns. We were ready to put up a fight; but it proved to be the French patrol. Lieutenant Heller soon learned that the Germans had left the town but 12 hours before. It was nearly sundown when we were taken to the center of the town and introduced to the mayor.

Much to our amazement, we found that Tozeur was a resort town with one modern hotel. That night each man had a room and private bath to himself. What luxury! A paradise in the middle of the desert.

We posted a guard about the vehicles in the hotel courtyard and turned in for the night. But our sleep was of short duration. At about 2400 a French soldier pounded loudly, persistently on the front door of the hotel. He said he had a message for Lieutenant Heller. He said the lieutenant was wanted at the railroad station at once. It was pitch dark, and we thought it was a trap, but we decided to go. We took one jeep with a loaded machine gun, and Lieutenant Heller and myself each carried a tommy gun. As we approached the railroad station, we noted several parked vehicles. We went to the station entrance with our tommy guns at full automatic, but to our relief we learned that a French caravan had arrived to take over Tozeur. We never were certain where it came from, but we were mighty glad that it was there.

With the next town of Metlaoui more than 30 miles away and with our gasoline supply almost depleted, no word from company headquarters, and with only one day's rations left, we found ourselves in a nasty jam, until the natives miraculously came to our aid.

From caches in the desert, the natives dug up several

50-gallon drums of 100 octane gasoline. Stories of its origin varied from one that the British had buried it when the Germans approached, to another that it was saved from a wrecked transport plane and hidden before the Germans could reach it.

We took on all the gasoline we could carry and began a search of the Tozeur area for mine fields—a rather tricky business at best. We found no mines but made notes on all the information that we had gathered, preparatory to moving out the next day—the fifth since we had left Elma el Abiod. Still no word from Negrine or any of the other bases.

Pushing on toward Metlaoui the next morning, we traveled off the roads as usual to prevent running over German mines. When we came upon a bridge, about 15 miles from Tozeur, we fanned out about two miles and dismounted to reconnoiter the area on foot. We found that the Germans and Italians had cut all the telephone wires in the vicinity and had placed the telephone poles through the spans of the bridge to prevent anyone from driving across it. One of the men discovered three grenades hanging on a single thread of wire from one of these telephone poles. That was enough; we moved off at a distance in a hurry and set off the grenades by rifle fire.

We crossed the creek at a ford and continued on our way. As we approached Metlaoui, we noticed scattered letters, ration cans, and some ammunition and clothing lying on the ground, signs of hasty withdrawal by the enemy. Only two cars went into the town. The rest of the party, left at a road junction just outside the city, was instructed to remain there for two hours and, if we did not return within that time, to go back to the base camp at Negrine, directly west of this point.

As we approached the city, we were spied by five children playing in the streets. They immediately ran screaming to their homes, and we proceeded into the town. As soon as we were recognized as Americans, the residents came pouring out of their houses, to form a cheering mass in the streets that immediately halted our progress. They climbed upon the jeep, shook our hands, patted us on the back, gave us wine—good wine—and cried with joy. A pretty French girl hugged and kissed every man in the patrol, which made nobody angry.

We were told that the Germans had left the town only four hours before we arrived. We were gaining on them, but we still had not caught them.

We drove through the streets to the center of this town of some 5,000 persons and conferred with the officials. We had neither the gasoline nor food for further pursuit, and it was necessary that we get the information collected back to battalion headquarters. After searching the town for mines and booby traps, I returned to the road junction where the remainder of the patrol had been left. When the men at the crossroads learned of the reception in town, they set up a howl for a second reconnaissance.

It was about 1400 hours, and we decided we must head toward our base camp and get our information back to Elma el Abiod headquarters. After four hours of uneventful traveling in a general westerly direction, we arrived at Tamerza where we found the garrison hastily erecting fortifications. They had heard the Germans were coming. We assured them the enemy was moving east in the direction of Gafsa. Whereupon they dropped their work and decided to take up pursuit of the Germans. Members of the party who had been left at Negrine were in Tamerza preparing to go out in the desert and hunt for us. It had been three days since we had left them, and we had been out of radio contact for all except the very early hours of that period. They informed us that company headquarters at Bir el Ater had given us up for lost three days ago.

We returned to our base at Negrine where we picked up our half-tracks and then headed almost north to company headquarters at Bir el Ater. From there our reconnaissance report was radioed to battalion headquarters at Elma el Abiod. Headquarters was very much pleased with it, for our reconnaissance showed that the entire southern area was now clear of the enemy. Just a few days later, the Germans, who had fled from Metlaoui before we arrived, were shoved out of Gafsa, and the British Eighth Army continued its unrelenting push up the Tunisian coast.

Conclusion

This patrol brings out several pertinent points:

First, the need for better communications for reconnaissance units.

Second, the advisability of using the smallest number of men and vehicles possible to accomplish a mission. In the above reported case, it would have been futile to have attempted to continue beyond Negrine with the half-tracks.

Third, much can be gained by a reasonable show of initiative. By moving on south of Negrine we cleared up doubts about a broad area at a great saving of time. Since it was found that danger of enemy action no longer existed in that section the battalion was relieved for action elsewhere. This could not have been learned had our reconnaissance stopped at Negrine.

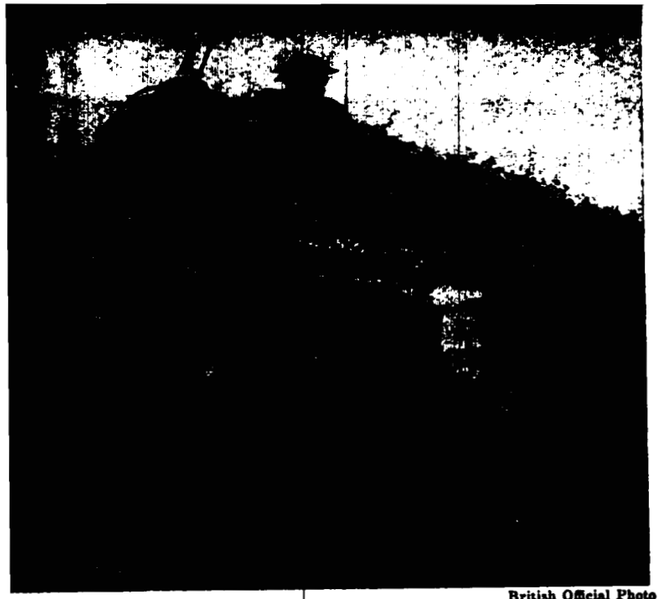
Watch for The Cavalry Journal's new book on

RECONNAISSANCE

—a collection of outstanding articles and excerpts published during 1942-43.

For publication date and price, see next issue.

British Reconnaissance Corps*



British Official Photo

The Reconnaissance Corps, the "armed eyes of the army," seeks out the enemy and establishes preliminary contact. Dispatch riders play an important part by taking messages and keeping in touch with the various units.

THE Reconnaissance Corps is not only the eyes and ears of British infantry divisions, but is also prepared to serve as a clenched fist. One battalion of the corps is attached to each division, and has as its main task the gathering of information, by aggressive means if necessary. Thus the corps fills a rôle which used to be that of the cavalry. Its regiments, feeling their way forward and throwing a screen in front of the advancing army, are careful to let the main forces know with what enemy strength they are confronted.

Fighting for information is the Reconnaissance Corps' chief function, and a regiment must expect to find itself far in front of the main forces. Widely extended, it searches likely localities for trouble, or watches the enemy's movements. Again, it may be called upon to capture or defend important ground, or to send out patrols to give warning of the enemy's approach. The only circumstances in which the corps is not called upon to operate are those, such as prevailed at El Alamein, when the opposing armies found themselves in close contact. The moment that battle is given, while the forces maneuver for position, the Reconnaissance Corps comes into its own.

The Corps did particularly impressive work during the Tunisian campaign. In the first stages of the operations of the First Army, reconnaissance regiments moved two hours ahead of the infantry divisions to which they belonged and acted as an armored screen. Sometimes they advanced as much as 40 miles ahead of the main forces on their tireless search for the enemy. With the enemy found, their job was to overcome him if the opposition was light, and thus clear the way for the infantry advancing in their wake. If this was impossible, they would pin-point and make contact with the enemy so that on the arrival of the infantry they could promptly and accurately be put in touch with the position.

With such a rôle, it will be seen that the regiments of the Reconnaissance Corps have to be specially equipped for both speed and striking power. In fact, each regiment has a great fleet of mechanized vehicles of various types which include armored cars and Bren carriers, troop-carrying trucks and motorcycles. In Tunisia armored car patrols often averaged between 50 and 60 miles an hour at their work. The armament of a reconnaissance regiment includes antitank artillery, batteries of mortars and great quantities of Tommy guns and light machine guns. It is, in fact, equipped with all the infantry weapons, with an especially high percentage of automatic arms.

During training, great care is taken in seeing that the Reconnaissance Corps lives up to its reputation as a "corps d'elite." Trainees are chosen with great discrimination, and after basic training are sent to the specialists' squadron where "talent scouts" keep close watch on them during the early stages of their work, so that in due time they can pick the right men for the right job. The company which produces signallers, motorcyclists and mechanics has the first choice of the personnel available.

Wireless is the life blood of reconaissance in modern warfare, and the signallers are the most important trainees in the corps. In three months, recruits master three different types of wireless sets which send information from the smallest sub-unit to regimental headquarters. Messages must be transmitted on the Morse Buzzer at rates of 12 to 15 words a minute. Scores of motorcyclists are also used by each regiment for intercommunication. The mechanics are trained intensively and in three months master a trade which could not be learned in less than a year during peace time.

Other companies train men for work with the armored cars and carriers. These crews must learn enough of tactics to take their place in an operational scout platoon when posted away from the training center. The correct procedure for transmitting messages to a receiver over 20 miles away must be mastered. Crews must also be well trained in map reading, in field engineering, demolition, and mine clearing, among other subjects.

Assault infantry are trained in another company. They are taught to swim rivers and scale rocks in full kit and are hardened by intensive drill, physical training, and long marches and exercises on the scantiest of rations.

The men produced in this hard school have proved superbly effective in action. Many stories are told of their work in Tunisia, in which not only their remarkable speed but also their hitting power proved to be important factors in hard fought engagements. After the first advance from Algiers, one troop with a battalion in the First Army was given the task of racing forward to seize and hold a bridge beside a small village. The bridge was tactically important as it commanded a road, access to which was necessary for lines of communication. The troop was ordered to seize the bridge, if possible, before the Germans took it, and, if too late to do that, to drive the enemy from it. The armored cars went forward at top speed with the Bren carriers behind, and the unit reached the village in the early hours of the morning, eager to go into action for the first time.

On approaching the bridge, the troops decided that the best way to hold it was to go some two miles beyond it and make their dispositions there, on the far side of the village. They dug weapon pits, posted sentries, and settled to wait for the Germans. As they were not attacked that night they decided at first light to send out a fast armored car patrol to discover the whereabouts of the enemy. Some 10 miles from the bridge this patrol spotted the Germans, put down a smoke screen to cover their retreat, and got back in time to warn the troops holding the bridge of the enemy's approach. As a result, when the enemy attacked that afternoon with a force five times as strong as that holding the bridge, the troop's plans were made and it was able to repel the attack with very severe casualties to the enemy and with but slight loss to themselves. The troop was able to hold its position until ordered to withdraw by the division commander.

Among other stories of the deeds of the Reconnaissance Corps in Tunisia is one that shows how a fighting patrol goes to work. It happened that near Medjez el Bab the enemy had penetrated into a valley that was of great tactical importance. They had occupied several farms in this good tank country where there was much open ground with few obstacles. A troop of the Reconnaissance Corps was given the task of attacking one of these farms which had proved extremely troublesome. Its task was to see if it were held by the enemy, and if so, in what strength. The spearhead of our attack was formed by two heavy armored cars which approached the farm along a very open track with a hill on one side and thick bushes on the other.

The leading car was within 200 yards of the farm when two German antitank guns opened fire on it. The leading car was hit three times and completely knocked out. The second car also was hit, the turret damaged, and three members of the crew wounded. The driver of this car, however, was uninjured, and he promptly made for the farmyard, thrust his Tommy gun through the driving vizor and did not cease firing until he had polished off the crew of the German machine gun. Then he swung his car back across a ploughed field and around the rear of the antitank guns which were still firing at him, and thus made his way to our lines. During the return trip his car had received two more direct hits, and when he finally returned, it was almost completely wrecked. This exploit was a typical example of how the Reconnaissance Corps goes to work. It fought for its information, found out that the enemy was on the farm, where his guns were, and how this strong point could best be attacked.

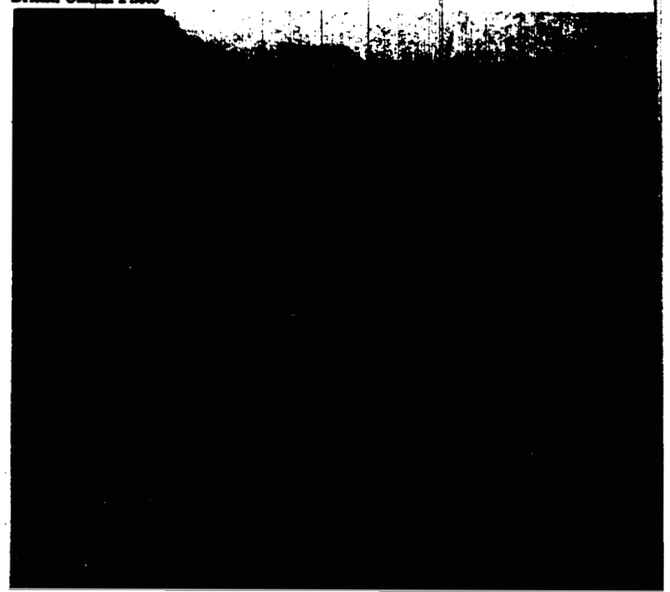
The Reconnaissance Corps also succeeded in capturing a good many of the German parachute troops during the Tunisian operations.

It is clear that every man in the Reconnaissance Corps must be an individualist, capable of taking the initiative into his own hands, as he may have to do vitally important work while temporarily out of touch with his officers.

One of the youngest units and one of the most highly mobile in the Army today, the Reconnaissance Corps gave a superb account of itself throughout the Tunisian Campaign. It fought for information and got it, and ably acquitted itself in the three other main tasks which fell to it. It protected the main flank of our forces; it seized and held ground needed for the advance of our divisions; and finally, it repeatedly sent out far reaching patrols which gave due warning of enemy approach.

This line of Humberette scout cars, proceeding along a country road, are alert against possible air attack.

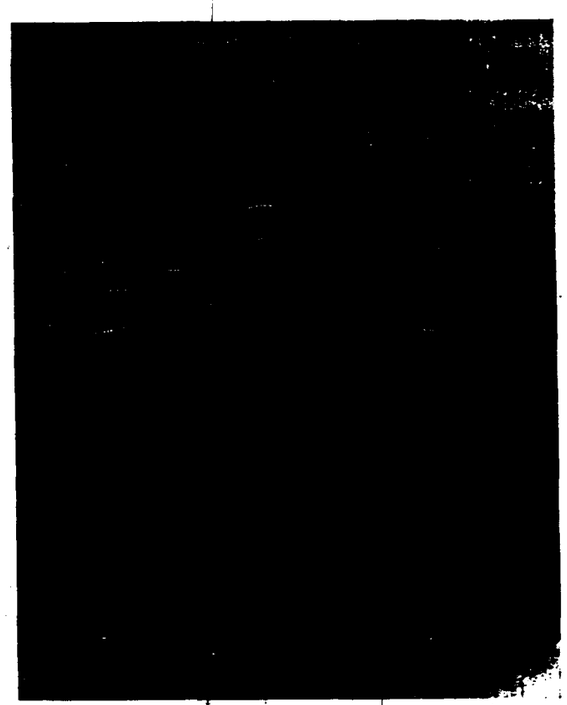
British Official Photo



*Prepared by the Joint Liaison Committee.

The Armored School's Road Magnet

Saves Tires and Salvages Scrap



A BOON to the national rubber conservation program is the queer, helpless looking, yet terrifying gadget constructed in the Wheeled Vehicle Department of the Armored School at Fort Knox.

The whole idea grew out of the increased incidence of punctures and cut tires in the Armored School area, which two years ago was literally blanketed with buildings 10%, 25%, and 50% complete and a few just finished. The accompanying menace of nails, wire and miscellaneous metal oddities loomed very large at a time when rubber was becoming increasingly valuable and its care imperative.

The device which aided materially in solving the tire destroyer problem at Ft. Knox was created according to a single specification—that the device be capable of attracting and holding a 100-pound anvil. This was to insure enough magnetism so that no mere nail would ever go unnoticed within two feet.

Two views of the Armored School's big new road magnet, which picks up nails, wire and other metal that might damage tires. Above: rear view—the tractor in background furnishes the motive power. The "guts" have been removed from the differential housing on the "bug's" rear axle. Below: The men who built the road magnet. They are, left to right: Master Sergeant C. A. Bonnarens, Private C. R. Stone, Private B. R. McNamara and Master Sergeant B. Pelton, all of the school's Wheeled Vehicle Department.

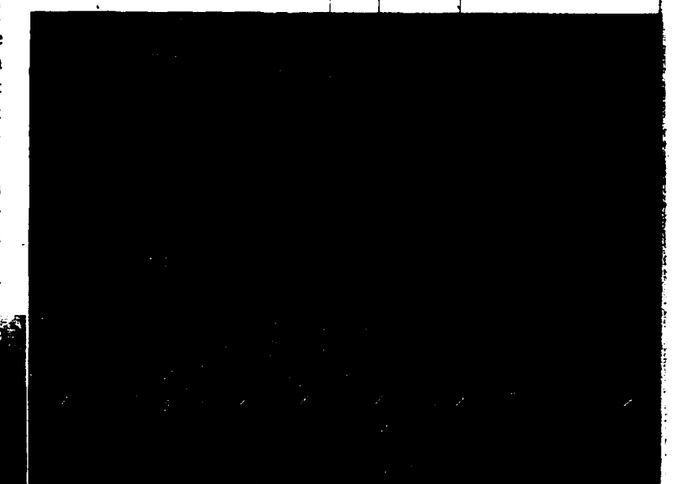
Consisting of a stubby frame (salvage), an old engine (reconditioned), a DC generator, with rheostat (cost $80.00), and four magnets, the completed whatyoumaycallit has many times repaid its cost with the amount of metal scrap it has picked up as well as tires it has saved from punctures.

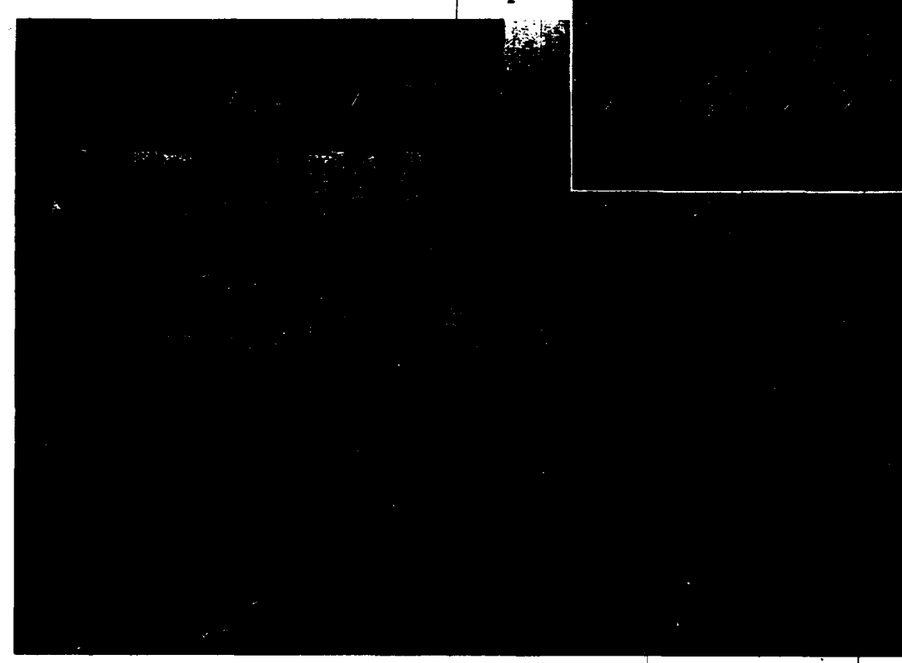
The first step in the construction was to cut down an old 4 x 2 chassis (I.C.'d) by taking a section out of the center and leaving frame and wheels with a 60-inch wheelbase. A dead axle was substituted for the live axle. A good strong hitch was added. The engine was mounted on the front half, and the generator on the rear half of the chassis. A machined flange was bolted directly to the flywheel with a flexible coupling on the shaft between the flange and the generator. A 54-inch bracket was added to the rear of the frame to support the magnets. A windlass incorporated into the bracket allows the magnets to be raised and lowered as necessary.

Each magnet consists of a 4 x 4 mild steel core with corners rounded. The core is welded to a 12-inch circular section of old boiler plate and is wound with No. 8 wire from the salvage yard, brazed at the splices. Each coil of a pair is connected to the other of the pair in series, and the two pairs to each other in parallel. One magnet can actually lift the anvil 6 inches by attraction.

Statistics show that during 70 hours of operation in the Armored School area the machine has picked up 1017 pounds of metal, mostly nails and short pieces of wire. It was borrowed by the Post Engineer, who ran it over an area where old buildings had been razed, and in one and one-half hours picked up 1500 pounds of nails, which proves that it has the additional advantage of being able to salvage critical scrap as well as protect precious tires from unnecessary injury.

In the miscellany collected was a battered gallon bucket, a "STOP" sign, 3 second lieutenant bars, and 41 rubber heels complete with nails.

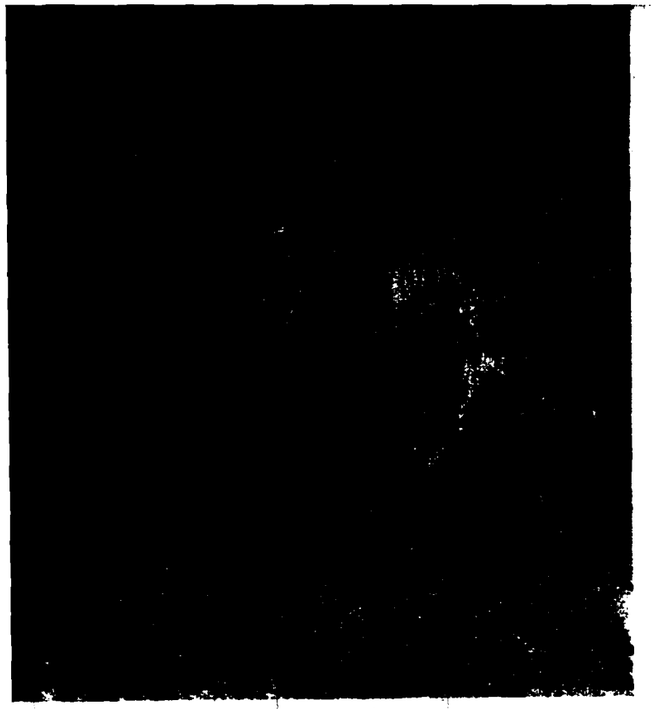




Above is a close-up of magnets and bracket. Only about 45 amps of the generator's 80-amp capacity are required.

Side view at left shows the weld in the frame and the flexible coupling. The battery is just visible behind the weld.

Jeff—The Army's Saddlery Center



A trained pack horse with a cavalry machine gun troop takes a hurdle on maneuvers. Equipped with Phillips Pack Saddle, the horse transports the gun without difficulty.

by Lieutenant Otto H. Frederickson

THAT mechanized warfare has far from eclipsed the importance of animal transport can readily be seen when it is considered that two large plants are supplementing the Jeffersonville Quartermaster Depot in the manufacture of Phillips Pack Saddles alone.

Press reports of operations in China, New Guinea, as well as Tunisia and Sicily have "spotlighted" the usefulness of pack animals in supplying our troops and those of our allies with the sinews of war. In the jungles of the Southwest Pacific, and the mountainous terrain of Europe and Asia, pack artillery and pack trains have been pressed into service when the going became too tough for mechanized units.

No single activity stands out more vividly than the procurement and fabrication of saddlery and harness equipment in the long and colorful history of this depot, situated at the falls of the Ohio River, in Southern Indiana. Since its establishment seventy-nine years ago, it has been identified with the purchase, storage and issue of harness, horse drawn vehicles, hardware and kindred items.

The Spanish-American War witnessed the ever-widening use of harness and harness parts in warfare. Virtually all the equitational equipment used by our cavalry and other arms and services in that war were procured or fabricated at Jeffersonville. Harness turned in by organizations mustered out of service at the close of that conflict was shipped to the depot for repair and reclamation. The manufacture of hand-sewn ambulance harness followed after the completion of the reclamation program.

The harness and leather shops were not found wanting in the development of new techniques and fabrication of new items when the United States entered World War I. Demands of that war made it necessary to enlist the coöperation of many leather manufacturing plants under contracts processed by the Jeffersonville depot.

In the early twenties much of the metal, leather and textile machinery had been transfered to this depot from the Rock Island Arsenal as the result of the assumption by the Quartermaster Corps of many articles formerly handled by the Ordnance Department. This greatly facilitated the experimentation, modification and development program of army equipment.

There is nothing in its history of which the Depot is prouder, or has achieved wider fame, than the Phillips Pack Saddle, developed by Colonel Albert E. Phillips, (Cav.) QMC, a veteran of forty-five years of military experience, and the recognized originator of indirect machine gun fire as well as the organizer of the first machine gun troop in the American cavalry.

Upon Colonel Phillips' return from France in 1919 (where he was Chief of the Ordnance Small Arms Service on General Pershing's staff), the War Department placed on his shoulders the responsibility for the development of a pack saddle suitable for all branches of the Army. The Phillips Pack Saddle for cavalry gaits won out in competition with the pack equipment of all first-class military powers.

Colonel Phillips not only designed the pack saddle, but also designed the carriers and hangers which permit the saddle to meet the needs of all branches of the Army. There are two types of Phillips pack saddles—the Cavalry Pack Saddle, and the Cargo Pack Saddle adopted for pack artillery and pack trains.

Where motors cannot go, pack units can. This view shows Phillips Pack Saddles being assembled at the Jeffersonville QM Depot, ready for service on the world's battlefronts.

Design of Phillips Pack Saddles is basically different. Pads may be adjusted quickly and easily to fit the types of animals for which designed. This scene shows craftsmen in the Harness and Saddlery Shops at JQMD stuffing the pads.

Basically different from that of any of the world's pack saddles, the design of the Phillips Pack Saddle permits a quick and easy adjustment of the pads to fit the types of animals for which the saddles were created. As developed, the frame will carry rope-hitched cargo loads, top loads, or side hanger loads. The breeching is a unique feature, and even the method of cinching is different. As issued, the saddles will fit from 90 to 95 per cent of the animals without pad adjustments.

As Consultant on Saddlery and Harness at the Jeffersonville QM Depot, Colonel Phillips was keenly aware of the rôle to be played by pack equipment on the various battle fronts, by both American and Allied forces, particularly in the Pacific and Far East, and China where a lighter class of animal prevails.

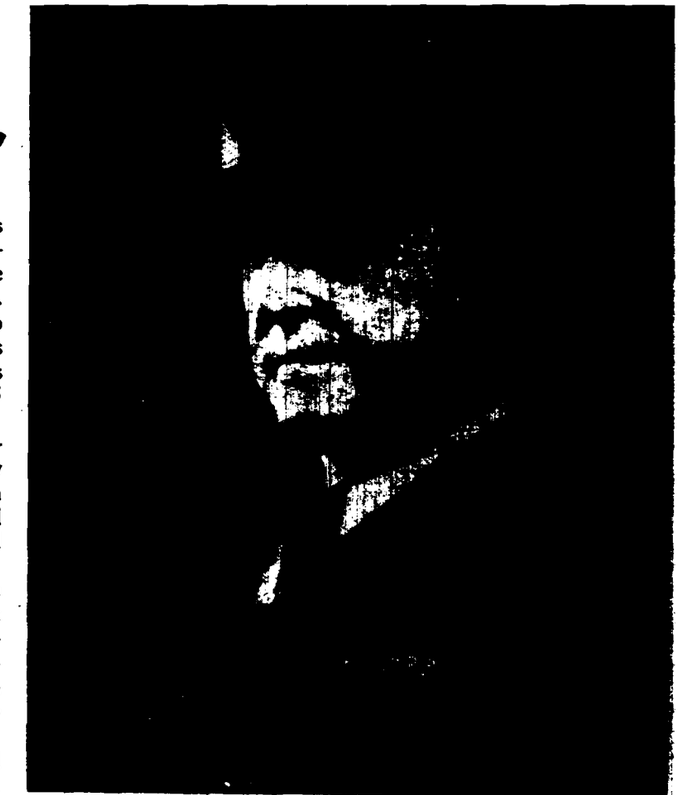
As a result of his research, there was announced in August of this year the design of a new Phillips Pack Saddle, Cargo, Modified, which was specifically designed for the light type horse and mule weighing approximately 900 pounds. At present the Jeffersonville depot is the only plant tooled to manufacture the new saddle.

For China, Colonel Phillips designed a modified form of the Cavalry Pack Saddle for packing American 75mm howitzers on the Mongolian 800-pound ponies. Thousands of these saddles are now in China.

The Phillips Military Officers Saddle, the first forward seat saddle in America, is the pride of the trained rider. The 1941 model is the fully developed saddle.

Of the seventy-four classes of supplies listed in the Quartermaster Supplement to the Federal Standard Stock Catalogue, the Jeffersonville Quartermaster Depot is charged with the procurement and/or manufacture of eleven. Tentage and manufactured canvas articles comprise the largest purchase. Other supplies include the following: mess furniture, field safes and camp tables; lighting apparatus; harness, saddlery, pack equipment and various leather items; hand-tools except for motor transport; tableware; bake-shop apparatus and kitchen equipment, including "Outfit, Cooking, Cavalry Pack"; field ranges and bake ovens; hand and animal drawn vehicles; agricultural implements; individual equipment, such as canteen covers, shelter-half tents, canteens, meat cans, canteen cups, haversacks, cartridge belts, etc. Altogether, the depot stores over 27,000 articles and procures or fabricates 500 more.

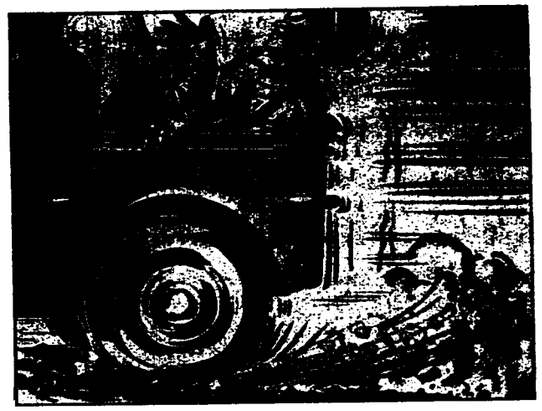
Each of our nation's conflicts has witnessed intense activity at Jeffersonville. The requirements of the present war dwarf by comparison any of the previous demands placed upon this quartermaster depot. Today it is charged with the fourfold functions of procurement, manufacture, research and development, and the general storage and issue of supplies to America's armed forces.



Colonel Albert E. Phillips, who has been stationed at the Jeffersonville Quartermaster Depot as Executive Officer since January 30, 1941, in an appropriate ceremony given in his honor September 26, 1943, was presented the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding service in connection with development, procurement and administrative activities." A cavalry officer of the Regular Army, Colonel Phillips has forty-five years service, spent partly with the infantry and ordnance. For the past seventeen years he has served with the Quartermaster Corps, where his time has been devoted largely to developing Army equipment—numbering hundreds of items of military importance. He retires from active duty in January.

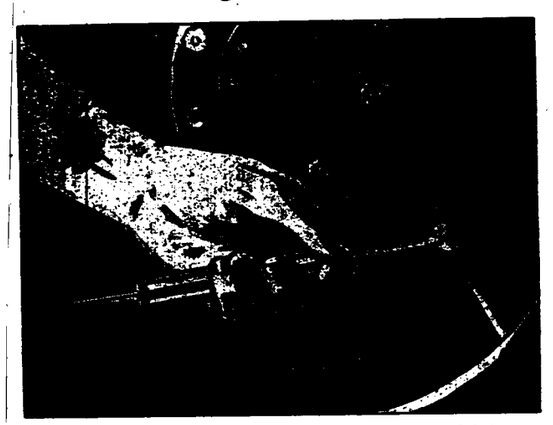
DO'S and DONT'S ON Tire Care

Tires now rank higher than ever among critical items. Army trucks in the U. S. must depend mainly on recaps in 1944. New tires must be saved for combat zones. These tire tips, from TM 31-200, are vital. Have you read *your* copy lately?



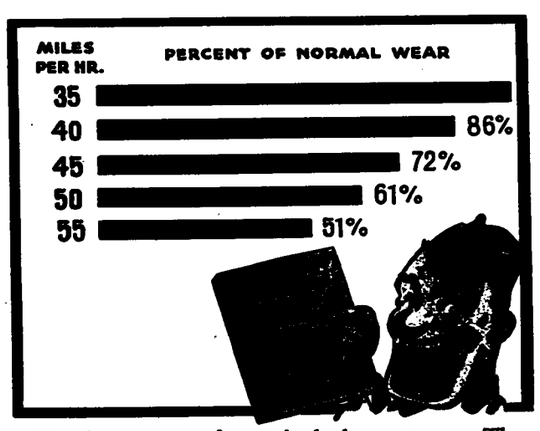
"Avoid "jackrabbit" starts and jamming on brakes. These practices tear rubber like a grindstone.

Avoid stones, ruts, holes and curbs. Obstructions damage a tire's cord body, causing tire failure.



Check tire pressures daily. Pressures too high or too low will ruin casings—make them unfit for recaps.

This tire, blistered, worn through to the cord, is unfit for retapping. Inspect tires! Recap in time!



Watch your speed, particularly on turns. The rate of wear mounts when you pass army speed —35 miles per hour.

Book Reviews

TOTAL PEACE. By Ely Culbertson. Doubleday, Doran & Co. $2.50.

A year ago Mr. Culbertson published his *Summary of the World Federation Plan.* This book was the fruit of many years of study and experience. Six universities and three revolutions contributed their share toward his understanding of mass psychology and power politics.

The author describes his second book as follows: "*Total Peace* is more than a mere elaboration and improvement of the *Summary of the World Federation Plan.* . . . Although a modern plan for collective defense and an international police force is the main purpose of this book, many chapters present new principles of United States foreign policy and are designed to help an intelligent reader find his way in the complex mechanisms of power relations among nations."

The same balanced, shrewdly analytical mind that produced the forcing system of contract bridge is evidenced in every chapter of this fascinating book. It is particularly interesting to note that many of the same principles that apply to contract are equally true when applied to power relations in the world.

WORLD WAR II. By Frank Monaghan. J. G. Ferguson & Associates. $7.50 Deluxe Edition; $5.00 Regular Edition.

The author of this book is now a major in the Army of the United States. He was formerly assistant professor of history and fellow of Calhoun College, Yale University. He commences his book where any authoritative history of the present war must begin, at the Treaty of Versailles. He covers in detail the incidents, great and small, that have aggregated to produce the present conflict. From this point the events of the war are chronicled through 1942.

It is freely admitted that there is much that cannot be told at this time, but Major Monaghan maintains that these omissions are superficial, and that fundamental facts remain the same.

Plans are in progress to write the second volume when events have completed it.

THE GROWTH OF THE RED ARMY. By D. Fedotoff White. Princeton University Press. $3.75.

Mr. White has an enviable reputation for remarkable fairness among both Reds and Whites. He has utilized his objective attitude to excellent advantage in this history of the organizational growth of the armed forces of the Soviets.

This is not a tactical study, and it does not deal with exploits. Rather, it is an effort to approach the Red Army as a striking social phenomena of the times, peculiarly indicative of the trends of the nation itself. For the present this book stands alone as the only study of its kind.

THE NAVY AT WAR. William Morrow and Company. $4.00.

The Navy At War is a book of paintings and drawings, not only of the navy, but of the army as well, by Lt. Commander Griffith Baily Coale, Lt. Dwight C. Shepler, Lt. Mitchell Jamieson, Lt. William F. Draper and Lt. Albert K. Murray. Of this project, Admiral Hepburn said: "These men have not done their painting in ivory towers, nor have they used the war as a test tube for new theories of art and expression. They have risked their lives, as have the men behind the guns, in order to give, in a simple graphic medium, a better appreciation and a more complete insight into what is being done by our fighting men on the world's far-flung battlefronts."

Lt. Jamieson has done excellent work in the North African Theater. His work, even as a student at Corcoran, showed marked ability, and his maturity in both color and composition is most interesting.

Lt. Draper's paintings and drawings on the Aleutians exhibit a markedly different technique, more dependent on color than line for its power.

Lt. Shepler is definitely at his best in portraiture.

Commander Coale's work is primarily an example of what happens to a potentially good artist when he confines himself to drafting for too long.

EMPIRE. By Louis Fischer. Duell, Sloan & Pearce. $1.00.

A powerful book, founded on facts, giving figures and authorities, and compiled with logical exactitude of thought, always warrants serious attention.

Mr. Fischer, in this small volume, deals with the problem that he feels is the greatest deterrent to the successful avoidance of a third World War—the practice of empire building and maintenance.

He turns to history to show that no mother country has ever considered its colonies able to rule themselves. Yet when free to solve their problems, the colonies have frequently not only smoothed out past difficulties, but have been of increasing instead of static value to the world. Mr. Fischer points out that the conditions prevailing in a subjected Asia are a detriment to the world at large.

Empire may never go beyond the shelves of the libraries of advanced thinkers, but in years to come the truths propounded in it must inevitably come into their own.

CONDITION RED. By Commander Frederick J. Bell, U.S.N. Longmans Green & Co. $3.00.

Condition Red takes its title from the signal of impending attack in the South Pacific. While it is essentially the story of the ship commanded by the author, the narrative gives a general picture of destroyer action in battle, in convoy, and on patrol.

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A SHORT HISTORY OF THE CHINESE PEOPLE. By L. Carrington Goodrich. Harper & Brothers. $2.50.

The history of Europe is taught to young Americans as a matter of routine, whereas the history of China and other Asiatic countries can be secured only in college, and then, as a rule, only in special courses. As the world narrows its lanes of travel and widens its contacts between nations, it becomes essential for the "average" citizen to assimilate some knowledge of the Eastern nations, their history, economics, social and religious customs.

Mr. Goodrich has filled a serious need in the intelligent man's education by writing this compact and comprehensive book on the history of China. The information is well organized and tabulated, with ample index and chronological charts paralleling European eras and Chinese dynasties with their comparable accomplishments. For those who wish to pursue the subject more thoroughly, or along specific lines, a supplementary reading list is supplied by chapters.

MILITARY PSYCHOLOGY. By Norman C. Meier. Harper & Brothers. $3.00.

This book deals in simple and direct language with the main problems involving military affairs and psychology in relation to each other. It discusses the selection and placement of personnel, the problems of adjustment created by actual combat, the traits and qualities essential to a leader and the effects of mass psychology.

One feature, too often missing, that is worthy of comment is the inclusion of a glossary of psychological terms and their clinical meanings. This should prove of tremendous value to the layman in reading not only this book but others more technical on the subject.

THE COMPLETE JEFFERSON. Arranged and assembled by Saul K. Padover. Duell, Sloan and Pearce. $5.00.

For the first time Jefferson's writings, except for his letters, have been compiled and arranged by subject matter in such a way that they may be read for pleasure or consulted for reference. The variety of his interests and the immensity of his mind are incredible.

This book makes available to all men what, until now, has been food only for scholars—the wisdom set down for us by the "Author of the Declaration of American Independence, of the Statute of Virginia for religious freedom, and Father of the University of Virginia."

LEND-LEASE. By E. R. Stettinius. Macmillan Company. $3.00.

Too few people know why Lend-Lease was necessary, how it has been set up, or what its primary functions are. The former administrator of this phase of our war program has written a simple, straightforward and readable account of our solution of the problem of getting supplies to our Allies, and the equally important record of what we have received from them. There are charts and pictures to assist the reader in comprehending the magnitude of the job and the method by which it is accomplished.

BLITZ GERMAN. By Dr. Rudolf Brandl. Military Service Publishing Co. $.75.

A companion to *Blitz French* and *How to Say It In Spanish*, this book meets the growing demand for a superficial knowledge of German. These books do not attempt to teach a thorough knowledge of the language. They endeavor to supply a good workable vocabulary of words and phrases essential to a person entering the country. Even those who have a slight knowledge of German should find this pocket-size guide, with its English-German, German-English listing, a great convenience.

A SOLDIER'S CHRISTMAS READER. Edited by George Macy. Heritage Press. $2.95.

It is most unfortunate that this book, and its companion, *A Sailor's Christmas Reader* did not reach the booksellers until the mailing date for service men abroad had passed.

The book contains 9 full length books, 12 short stories, 15 essays and over 250 poems. As in all anthologies, many features are hackneyed to the avid reader, but all of the inclusions are interesting examples, sufficiently varied in type to supply a general appeal.

A BASIC MANUAL OF MILITARY SMALL ARMS. By W. H. B. Smith. Military Service Publishing Co. $2.00.

Military men, collectors, manufacturers and designers will be equally interested in this manual. It covers arms from Austria, Belgium, Great Britain, Denmark, Finland, France, Germany, Hungary, Italy, Japan, Mexico, Soviet Union, Spain and the United States. The drawings are excellent, and the photographs are not only deliberately posed to show how to handle and care for the weapons, but also to show the parts from so many angles that they may be identified easily during dismounting and reassembling.

TALES OF THE PIONEERS. By W. A. Chalfant. Stanford University Press. $3.00.

Whether your ancestors were pioneers or not you will be interested and certainly amused by Mr. Chalfant's collection of stories of the California-Nevada border—stories he has heard recounted, or has seen occur in his fifty-five years as editor of *The Inyo Register*. "Law As It Was Administered" should certainly be included in any anthology of American short stories.

ROGER WILCO: ABC OF RADIO FOR FLYERS. By Lt. Adras P. LaBorde. Military Service Publishing Co. $2.00.

A book on the proper use of radio in flying should need no sales talk. Every aviator, military, transport or amateur, knows the importance of radio to safety in flying. Lieutenant LaBorde has covered signals and their proper use in such a manner as to emphasize this importance in efficient flying.

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HOW TO WRITE A MILITARY LETTER. By Corporal David Klein. Military Service Publishing Co. $1.25.

A popular magazine recently quoted the formula for getting ahead in Washington: "Shoot the bull, pass the buck and make seven copies of everything." It is to the "seven copies of everything" that this much needed and long awaited book applies.

The text covers the required forms, punctuation, spelling, grammatical construction and use of certain words as preferred by the War Department. The book is well indexed and as brief as is compatible with the subject.

HORSES: THEIR SELECTION, CARE AND HANDLING. By Margaret Cabell Self. A. S. Barnes and Co. $3.00.

Written primarily for the beginner, this book is a welcome publication at this time when many of the old books on horsemanship are out of print. Excellent photographs not only illustrate many important features but make a valuable asset to visual readers, particularly children.

THE ARMY READER. Edited by Lt. Colonel Karl Detzer. Bobbs-Merrill Co. $4.00.

The editor of this collection states that its purpose is "to tell the story of the American Army." As is the case in most anthologies, some inclusions fulfill this purpose and others do not. A number of the articles are by men who have studied for years that particular branch of the service with which they have been connected, and who have endeavored to explain carefully and lucidly, for the benefit of civilians, the purpose of their particular arm. Articles of this type, and stories of combat by men who actually participated, such as "The Fighting 26th" by Clark Lee (reprinted from The CAVALRY JOURNAL, March-April, 1943) are well worth reading. Just how valuable articles by men who are not, and never have been, sufficiently a part of the army to become identified with it may be in instructing civilians is a question deserving serious consideration by any editor.

AMMUNITION. By Melvin M. Johnson, Jr. and Charles T. Haven. William Morrow & Co. $5.00.

The authors of *Automatic Arms* have turned their attention to ammunition and compiled a history of it from the beginning of the paper musket cartridge to the present day. The book covers both early and modern pistol or revolver cartridges and all the foreign as well as American sporting cartridges. It includes a discussion of the larger type of fixed ammunition—the .50 caliber, 20mm, 37mm and 40mm shells and cartridges now being used in aircraft, antiaircraft and antitank cannon. With the professional soldier in mind, the authors have incorporated information on the function of ammunition, its stoppages in basic types of weapons, and a general discussion of practical ballistics, accuracy, sight adjustment.

For the man interested in firearms, *Ammunition* will take its place on the shelf with *Automatic Arms, The Sharps Rifle, History of the Colt Revolver,* and *The Rifle in America*—all authoritative books on the subject.

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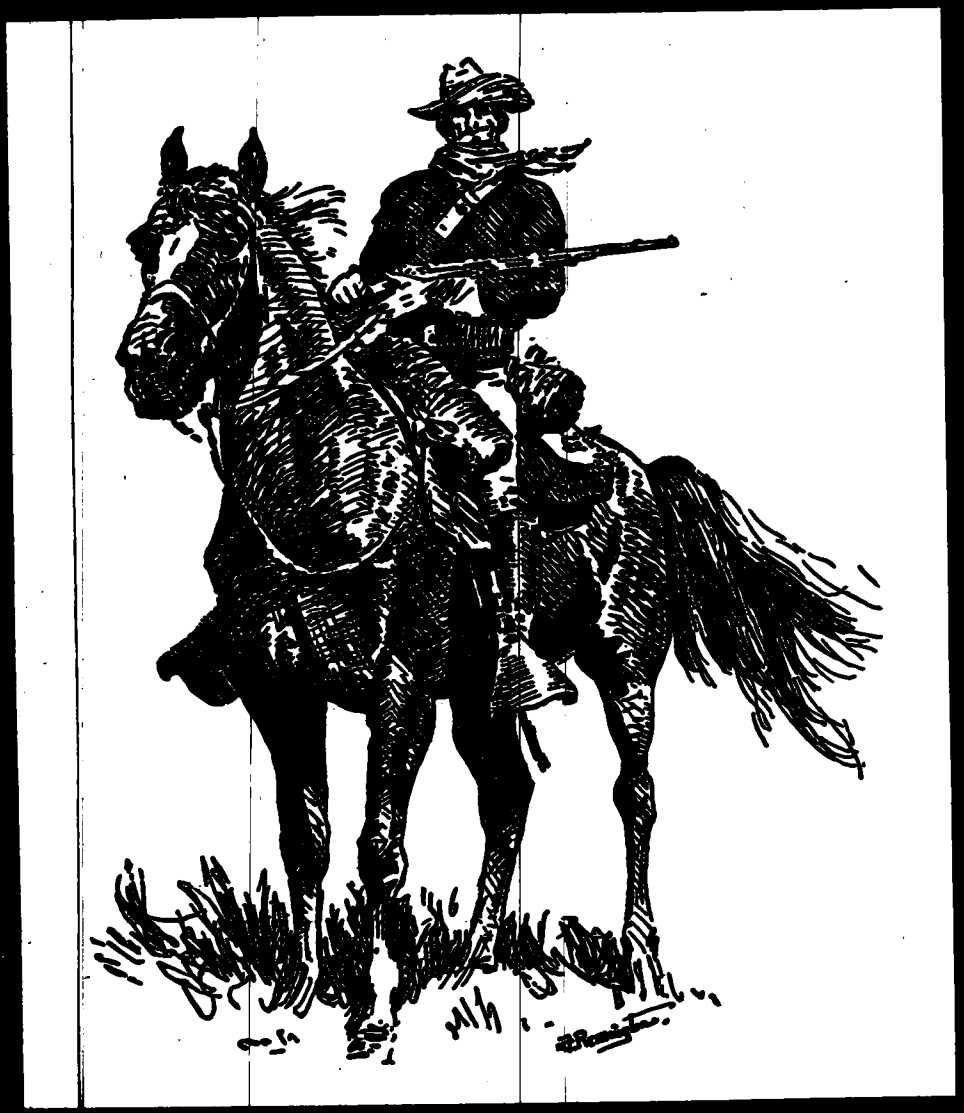

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Red Army's Use of Mobile Forces

Cavalry As Offensive Arm*

by Colonel P. Kolomeitsev

REPORTS of the participation of large forces of cavalry in the offensive operations of the Red Army are being received more and more frequently from the front. Cavalry formations are pursuing the retreating enemy, giving battle to counterattacking tanks, helping to breach the enemy's defenses and capturing bridgeheads across strongly defended rivers.

There is hardly a form of warfare in which the Soviet cavalry is not taking part at the present time. Its technical equipment has reached such heights that even massed action by aircraft and tanks is powerless to prevent it carrying out its operational assignments.

Cavalry and Tanks

Experience has shown the particular effectiveness of coördinated action by cavalry and tanks. Last year, for example, cavalry corps helped motorized and tank units to encircle the German grouping at Stalingrad. After this grouping had been liquidated, the mounted units struck in a western direction and played a major part in routing the forces sent to the relief of the German Sixth Army.

The cavalry and tank combination is a potent trump in the Red Army's modern mobile action. Colonel Kolomeitsev, well-known tank officer of the Red Army says, "The principle of Soviet tactics in the employment of cavalry is not to be influenced by the respective merits of horse and motor but by their aggregate merits."

The operations of the Soviet cavalry have proved just as effective in the current offensive of the Red Army, particularly in the south. It is well known that a deep outflanking movement carried out by a combined cavalry and tank group was decisive in smashing the German defenses along the Mius River, which was followed by the rout of the enemy's Taganrog grouping.

Cavalry Attacked by Air

When the Germans discovered that Soviet horsemen were operating in their rear, they threw large forces of aircraft to smash them. In the course of one day alone nearly 1,500 sorties were made by the Luftwaffe. Although suffering certain losses, the cavalry proved that it was no more vulnerable to air attack than infantry or any other ground force.

True, it is easier for infantrymen to adapt themselves quickly to the terrain and take shelter from bomb splinters. On the other hand, however, the cavalry is more mobile, which enables it to maneuver to evade air attacks, rapidly break formation and move through sheltered localities. Moreover, *Soviet cavalry units are equipped with powerful antiaircraft guns,* so that enemy raiders are forced to keep at a respectful altitude and drop their bombs without proper aim.

The large forces of Soviet cavalry operating west of Taganrog were also supported by fighter and bomber aircraft. The fighters fought off bomber attacks, while the bombers pounded away at ground objects in the path of the horsemen. This close coördination between the cavalry and aircraft was maintained throughout the raid.

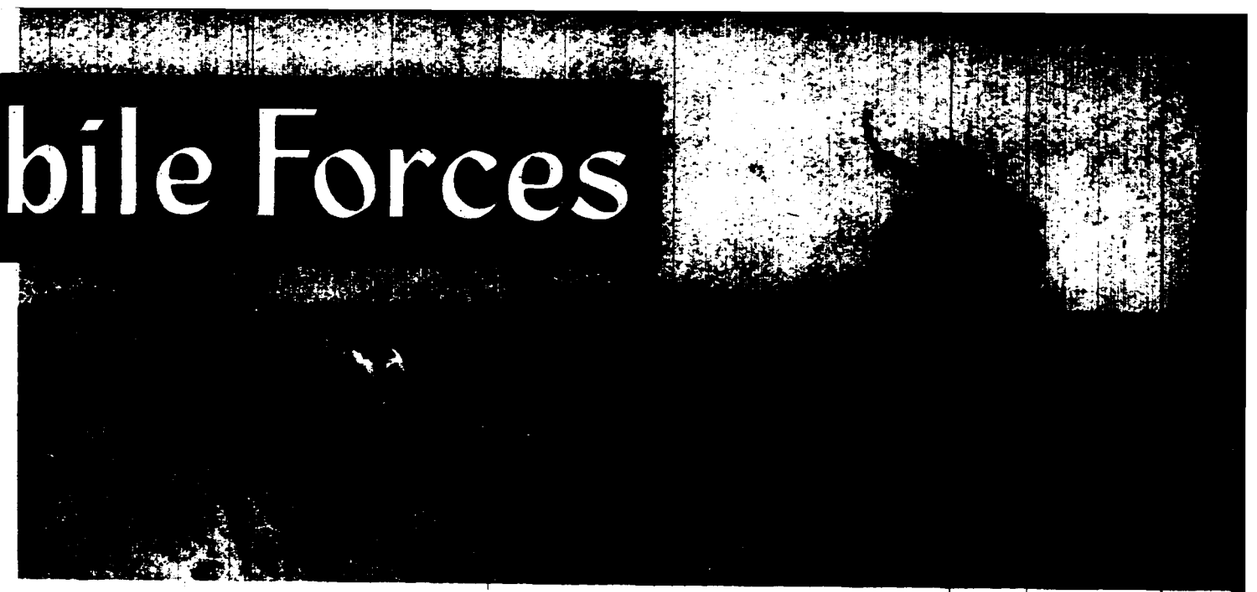
Cavalry Attacked by Tanks

The Germans also threw large forces of tanks against the cavalry. Here, too, however, the horsemen showed that they were no lamb before a wolf. The panzers encountered heavy fire from powerful artillery, organically part of the cavalry units, as well as other antitank weapons from grenades to cannon of various calibers.

The battles with the German tanks were exceedingly bitter. Yet the enemy was unable to halt the Soviet cavalry, for its protection against tanks has grown tremendously since the beginning of the war.

Of course, it would be a grave mistake to underestimate the danger of an armored enemy, but I repeat that this danger is in no way any greater for the cavalry than for any other arm.

*Moscow News.



A Soviet cavalry charge. So successful have been Soviet cavalry tactics that Germany has been forced to reconstitute its own cavalry—but good cavalry cannot be created overnight.

Horse and Motor

Although the most valuable quality of the cavalry is its extreme mobility, that of the mechanized forces exceeds it. How effective then is close coördination of the horse and the motor, which is widely practised in the Red Army? The principle of Soviet tactics in *the employment of cavalry is not to be influenced by the respective merits of horse and motor but by their aggregate merits.*

It is not difficult to imagine the force represented by a cavalry and tank group raiding deep behind the Germans' lines. The tanks, moving on the flanks and in the vanguard of the cavalry, break down the enemy's resistance. When the defenses are very strong, the cavalrymen dismount and, supported by their artillery, attack like infantry with the tanks. Then, mounting again, they regain their mobility and set off together with the tanks in hot pursuit of the retreating enemy.

Forcing Rivers

In the course of the present offensive operations of the Red Army, the basic quality of the cavalry—its ability to carry out swift maneuvers in all directions and in any terrain passable to man and beast—has been used with great effect in forcing rivers. Suffice it to recall the exploits of the cavalry corps commanded by Major General Kryukov, which, breaking through the enemy's lines, captured a bridgehead on the western bank of the Desna River and held it until the arrival of infantry despite four days of desperate counterattacks by German tanks and motorized infantry, supported by large forces of aircraft.

Many more examples could be cited to show the great force that the Soviet cavalry has become in the course of the present war. This old and tried arm has proved its power even in the epoch of a war of motors.

Tank-Cavalry Tactics*

by Colonel V. Tereshchenko

IN tanks, cavalry has acquired a steel shield with which it can cover itself during battle and become a powerful battering ram for breaking and destroying the enemy's combat formations.

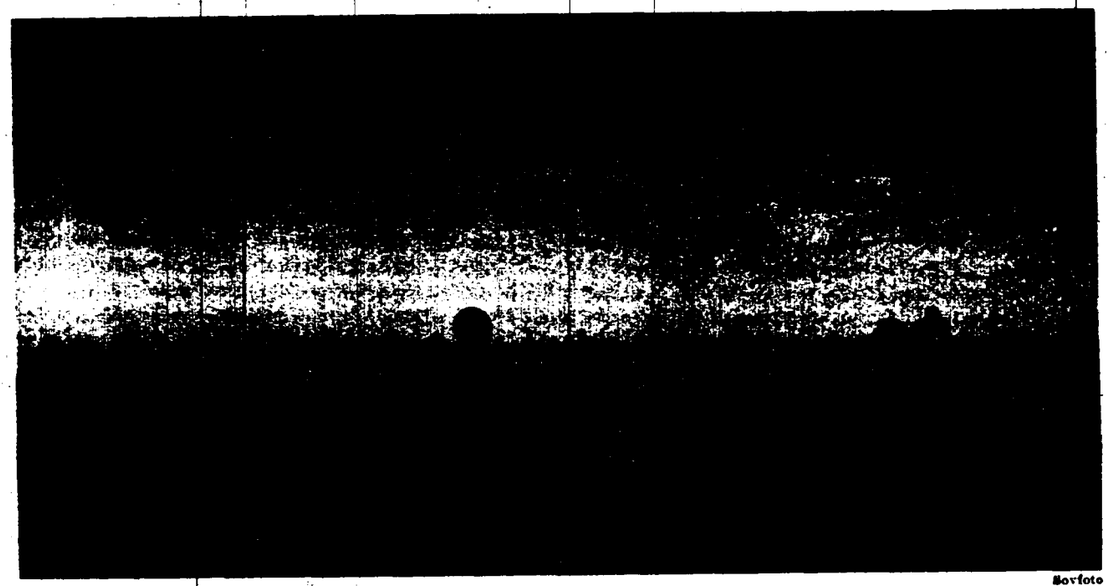
For the employment of tanks with cavalry, the Red Army has worked out a number of tactical rules. The most important of these are:

1. Mass utilization of fighting machines.
2. Close and clearcut coördination and mutual relief.
3. Support of the tank-cavalry attack by all artillery resources available.

An example of the close and clear-cut coördination between these two arms was displayed in action in the southern sector in 1943. Cavalry was assigned the following task: Working in close coördination with tanks, it was to get into the enemy's rear and cut off his line of retreat to the west. Preparations for this operation started with a clear-cut plan of combat assignments to both cavalrymen and tankmen. The situation required that the right flank and rear of the cavalry should be covered and secured by action of the tanks, inasmuch as the cavalry, after entering into the breach, would descend to the south and inflict its blows in a southeastern direction.

The commanders of both cavalry and tank units found the right solution to this problem. At the moment when the breach was entered, the tanks inflicted

*By cable to The Cavalry Journal from War Department, U.S.S.R., Moscow.



Sovfoto

Massed utilization of fighting machines is one of the fundamental principles of Soviet mobile tactics.

their blow strictly in the northwestern direction and thereby widened the breach for the cavalry to pour into the enemy's rear and draw his reserves upon itself. In the progress of this struggle, the cavalry, by its bold offensive action threw itself forward and after crumbling the enemy's defense, wedged into his rear and cut his lines of communication.

The enemy tried to stop the Soviet cavalry by drawing his reserves to the districts which the cavalry had penetrated, but his design proved abortive. The tank units, after making a blow in the northern direction and forcing a passage for the cavalry in the districts indicated, broke away from the enemy and, going into his rear, followed the cavalry to the right.

This movement of tanks safeguarded the right (western) flank of the cavalry against possible attacks by the enemy's distant reserves. The outcome was the inevitable result of two arms of the service effecting a raid in precise coördination. When the German reserves came up to the right flank, the Soviet cavalry and tanks, by a sudden attack, inflicted losses on them. Subsequently, the German units were surrounded and smashed.

"In Russia I talked to many Russian cavalry officers. Their idea of a perfect cavalryman was the American civil war fighter, General J. E. B. Stuart. They know of his raid around McClellan's army in 1862 and of his raid into Pennsylvania later in the year. They have studied his methods. When you talk to them of modern cavalry in other armies, with its motorized artillery and hundreds of trucks, they will tell you to study Stuart.

—*The Russian Army*, by Walter Kerr.

Another example, showing the application of all three tactical principles, is represented in the following action:

The retreating enemy clutched at an advantageous line which he hastily adapted to his defense against advancing Soviet units of cavalry and tanks. The main base of this defense was a large village where the Germans concentrated a great number of their forces.

A frontal attack on this position was inadvisable. It would have involved heavy sacrifices and might have protracted the battle for a long time. It was decided, therefore, to tie up the enemy from the front by the actions of one dismounted squadron, while two-thirds of the cavalry forces, also dismounted, were directed to outflank the Germans in the village.

The path of the flanking group was intersected by a marshy brook, so sappers were provided to fix a crossing for it. Reserves, ready to act with the cavalry formation, were placed in the nearest grove. Also concentrated in the grove were tanks, which would rush forward as soon as the dismounted cavalry crossed the brook. Then, overtaking the cavalry, the tanks would proceed to flank the village.

Up to the time that the brook was crossed and the cavalrymen emerged beyond it, the battle developed exactly according to plan. At that point, however, a change occurred in the order of combat for flanking the village. From behind the height west of the brook, the enemy threw in reserves—a small group of tanks with several self-propelled guns and about two companies of infantry.

The commander of the cavalry unit decided first to smash the enemy's reserves and then to attack the village. For this action, all of the antitank fire and all of the rest of the artillery was directed at the German tanks and self-propelled guns, while machine gun and minethrower fire was thrown on the enemy infantry. The tanks and cavalry were sent back into the bushes and ordered to do nothing that might make their presence known, but to be ready to open fire should the enemy succeed in approaching within a distance of three or four hundred meters.

The fight with the reserves did not last long. The enemy tank group, having fallen into the zone of artillery fire, lost three tanks and one self-propelled gun, whereupon it took to its heels. After the retreat of the enemy's fighting machines, the cavalry directed its fire against the German infantry, which was unable to stand and so turned back. The Germans in the village also attempted to retreat in the direction of their reserves.

The moment to decide the issue of the battle had arrived. It was necessary to act swiftly and resolutely. The commander of the cavalry unit called out the men in charge of the horses and hidden reserves, and ordered the commander of the tank unit to attack the village jointly with the cavalry. As soon as the horses were brought up, the cavalry mounted and took the offensive. The tanks, keeping within a distance of from three to four hundred meters, skilfully crushed the enemy's gun emplacement on the outskirts of the village, and in this way, facilitated the rout of the enemy. After a short struggle, the Germans surrendered.

Losses among the Soviet cavalrymen were quite insignificant, as the battle was fought at a very fast pace and in a manner entirely unexpected by the enemy.

Battle for a Railroad Junction*

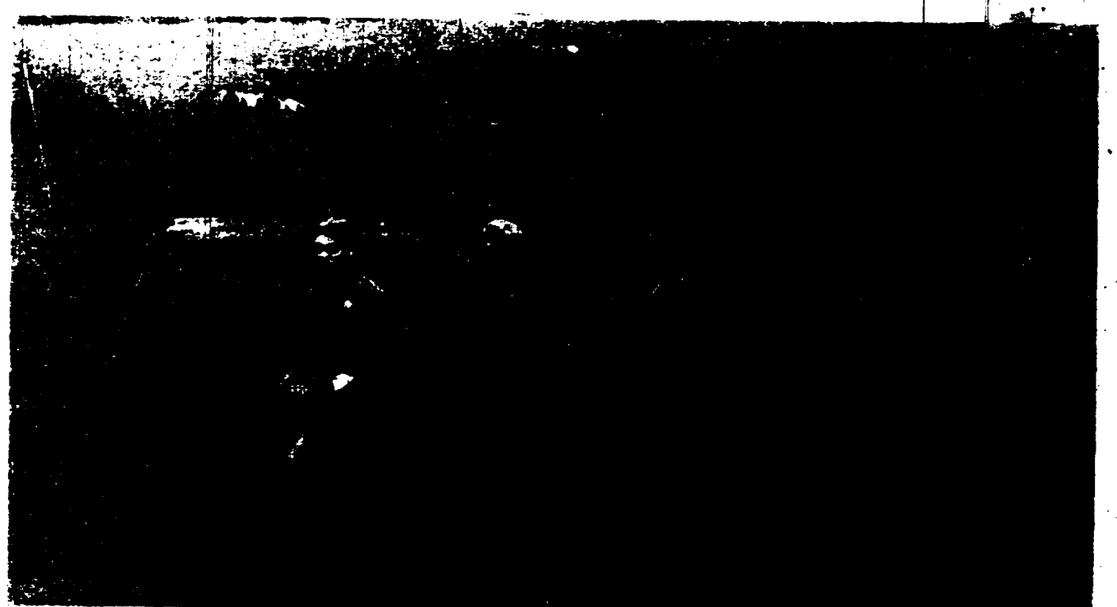
by Captain G. Pomomarev, Red Army

BYELORUSSIA is a country of bogs and forests. A greater part, situated on the upper reaches of the Dnieper, Pripet, and Berezina Rivers, is called Poleasye, which in Russian and Byelorussian means "region of woods." The chief characteristic feature of this section is the small number of lines of communication and road junctions.

The Germans tried to stem the Soviet advance into Byelorussia by building strong points of resistance on the most threatening sectors, because the force which occupied the key positions on roads and heights would be able to put up formidable resistance without erecting long complicated lines of defense.

When Soviet troops forced a crossing of the Dnieper and captured Retchitsa by means of an enveloping movement, the theater of operations in the region of Mozyr and Kalinkovichi became particularly important to the Germans, who had concentrated dumps and distribution points of their Second and Ninth Armies at the big railway junction of Kalinkovichi. When developing the initial success, Soviet troops moved up the Berezina River, cut the Zlobin-Kalinkovichi rail-

*By cable to THE CAVALRY JOURNAL from War Department, U.S.S.R., Moscow.



Sovfoto

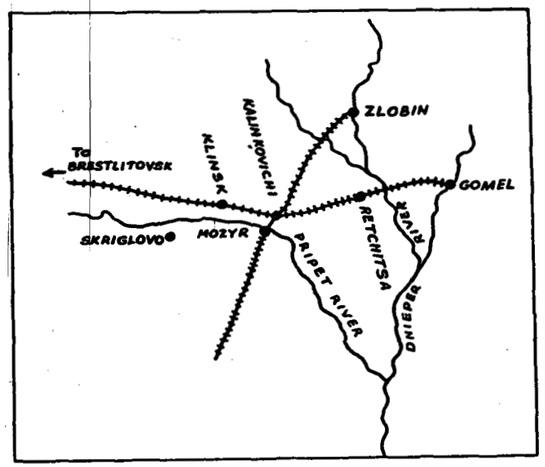
The Red Army's use of cavalry for flanking attack has been of prime importance in accomplishing wide encirclements of the enemy. Above column is on the march, September, 1943.

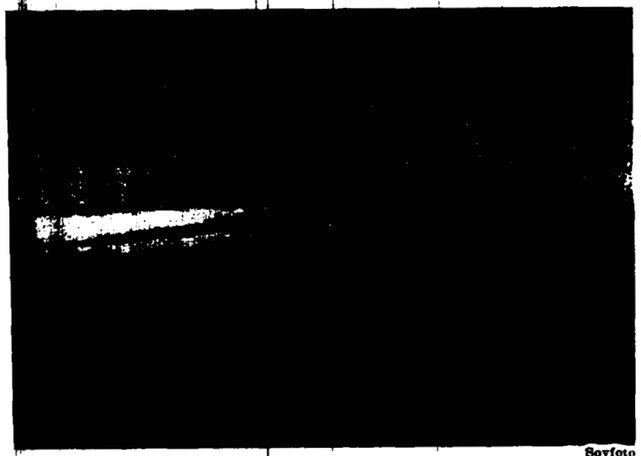
roads and created a threat to this junction from the north.

In December, the enemy made attempts to regain the lost ground and restore the original situation. They employed considerable forces in an attempt to recapture the railroad, but all their efforts to consolidate their positions on this sector proved of no avail and, after losing 250 tanks, they discontinued their assaults and took up positions for defense. How vital the Mozyr-Kalinkovichi terrain was to the Germans is indicated from the fact that they had been erecting defenses in that sector for some time past, and had massed there five tank and four infantry divisions, not counting numerous SS battalions.

The Soviet command adopted the following plan of operations:

At a good distance south of the sector where the Germans expected the attacks, Soviet scouts discovered a comparatively weak spot in the enemy's defense. After





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On a hill hidden behind the dense woods is the enemy's line of fortifications. Soviet infantry have approached their objective unseen, and at the moment when the final assault is to be made, bombers put up a smoke screen for the attacking ground troops.

accounting for outposts, the Soviet cavalry began to concentrate. By traveling across forest paths in pitch darkness, small parties of horsemen infiltrated into the rear of the enemy and massed secretly at an appointed place. The enemy did not expect the Soviet attack at that point, and soldiers of the garrison and a small police force were exterminated before they could put up any sort of resistance. The main force of cavalry emerged west of Mozyr and cut a number of highways leading to the south and southwest.

On the bank of the Pripet River, the cavalry moved in two directions. One party turned westward along the bank of the river; the other attacked Mozyr.

On the night of January 11th, a strong party of mounted scouts rushed the village of Skriglovo and engaged a battalion of Germans posted there. Sleepy and in their underwear, the Germans ran out of the cottages and attempted to flee, but were chopped up by the cavalrymen. Very few succeeded in escaping across the thin ice of the river to seek shelter in the woods.

On the morning of the 11th, one group of cavalrymen was already waging battles on the approaches to Mozyr, where the Germans occupied positions for all-round defense. This group of horsemen, attacking dismounted, captured a number of populated localities west of Mozyr. As soon as the cavalry commenced fighting in earnest on the western approaches to Mozyr, other Russian units launched a concentrated attack from the north and east and pierced enemy defenses.

Meanwhile, the main blow was being delivered on the railway line from Zhlobin to Kalinkovichi. This

Tanks, closely supported by infantry make a frontal attack while cavalry cuts into the enemy's rear and severs lines of communication.

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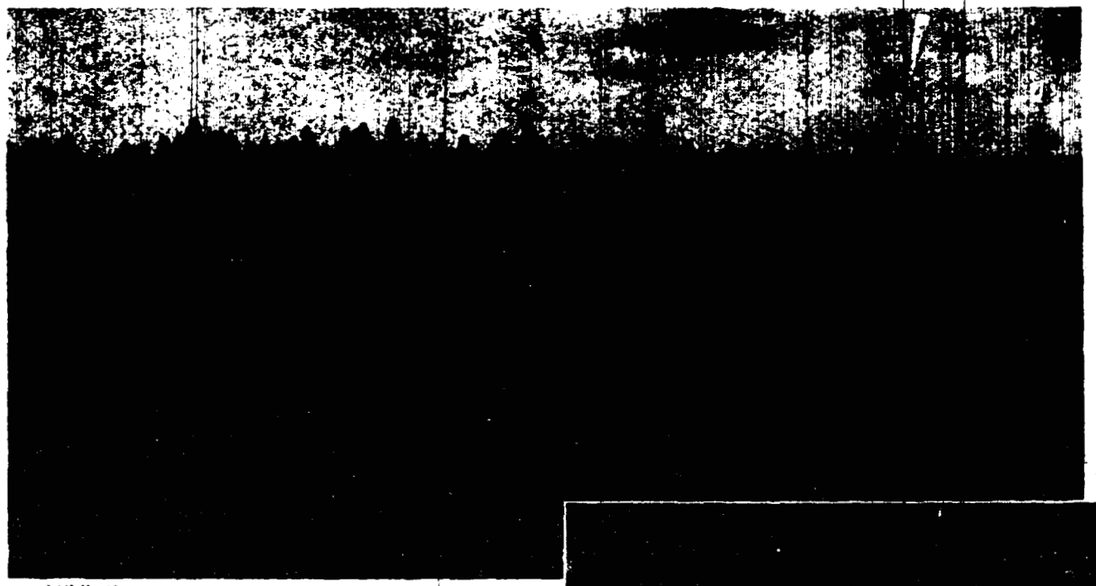

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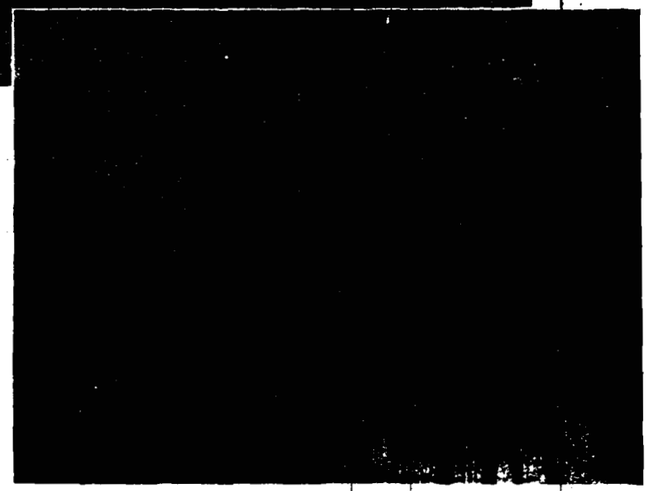
The enemy's resistance cannot always be smashed by a cavalry charge, but cavalry are trained to fight dismounted and to use various kinds of weapons.

operation was by tanks, artillery, and air force working in close coöperation. Artillerymen accompanied the tank commanders in their machines, and if obstacles stood in the paths of the tanks, the observers immediately reported the target and corrected the artillery fire. Representatives from the air force followed with the infantry and directed Stormoviks and bombers to targets. Despite bad weather, Soviet pilots attacked from low altitude.

Abandoning their arms and ammunition, the dazed enemy began a hasty retreat. They put up very stiff resistance on the left flank in the hope of withdrawing remnants of their troops from the right flank to beyond the Ipa River, where, under cover of the swampy banks, they might be able to stem the advance and regroup. But Soviet tanks and infantry units, attacking incessantly, fought their way forward for fifteen kilometers, and by the end of the day had knocked out 21 tanks and killed 2,000 Germans. The enemy hoped for some respite during the night, but the harassing attacks continued.

On the morning of January 12th, the Germans again counterattacked with a battalion of self-propelled guns and from 15 to 20 tanks. One of their infantry battalions found itself pressed into the swamps by a Soviet tank unit and infantry which had been hurried to the scene. The Germans went into a counterattack three times in an attempt to break through the ring. German tommy gunners attacked furiously under cover of 15 tanks and shell fire, but Russian tanks crushed them with their tracks, and Soviet infantry mowed them down with rifle fire. After a desperate battle, the battalion was practically annihilated. Four hundred Germans were killed; four ferdinands, five tanks and 50 lorries were destroyed.

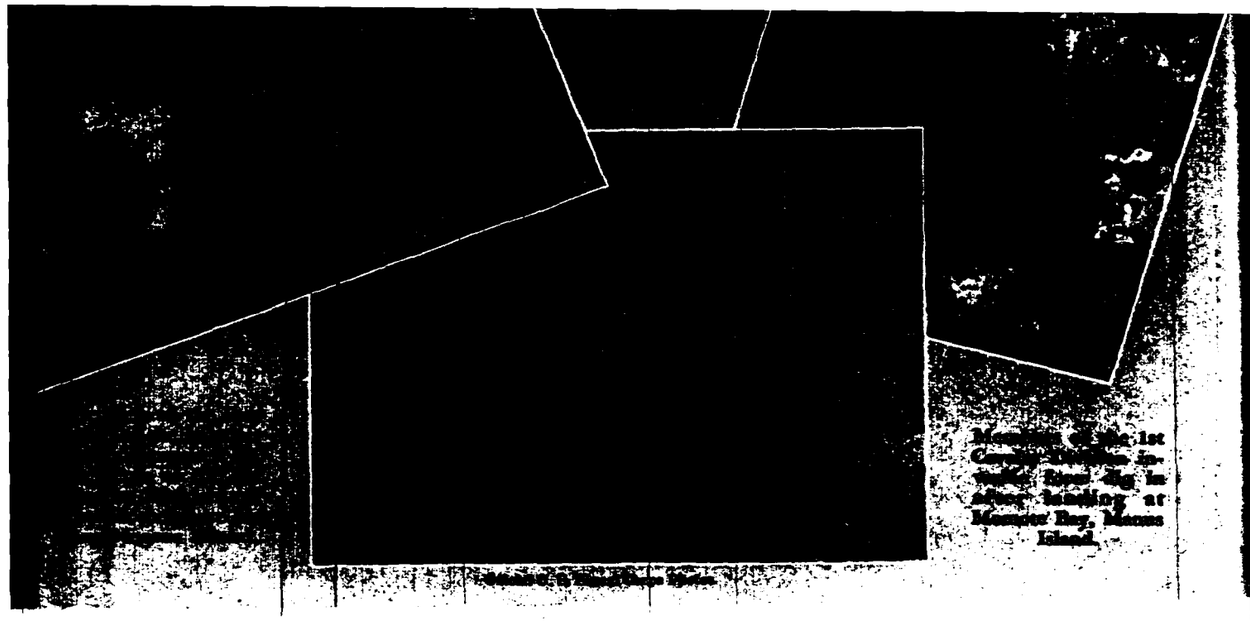


With sabers drawn these cavalrymen descended on a surprised enemy and accomplished their mission.

On another sector, the Germans, abandoning 22 machine guns, many rifles and large supplies of ammunition, fled under cover of a smokescreen.

On January 13th, the fighting was even more desperate. Soviet cavalry continued battles for Mozyr; while infantry, operating from the east, fought their way through to the approaches of Kalinkovichi. Resisting stubbornly, the Germans attacked with as many as 18 and 20 tanks with supporting artillery and gunfire from an armored train.

Northwest of Kalinkovichi, Soviet units, advancing steadily, pressed the enemy toward the Kalinkovichi-Brest railroad and tightened the loop around the Mozyr and Kalinkovichi theaters. Finally, on January 14th, Soviet troops stormed the enemy positions from the railway junction at Kalinkovichi and captured the town of Mozyr.



Jungle Operations

by
*Lieutenant Colonel Roy W. Cole, Jr.**

AS a result of the first staggering series of Japanese victories in the Far East, there appeared a vast amount of literature designed to explain the revolutionary tactical doctrines employed by the Jap. To a great extent, the information was both spectacular and ill advised, in that it built up in the minds of those intrusted with the training of our troops the legend of the Jap super-soldier.

After this phenominal build-up, history was largely forgotten and the immutability of the proven principles of war was momentarily scrapped in an effort to devise the means of out-Japping the Jap. Innumerable SOPs were designed to suit every jungle situation, and it was not until we were brought back to earth by the performances of the Marines on Guadalcanal and of army troops in the Papuan Campaign, that training once more assumed a realistic attitude. Then and then alone was it realized that the mysteries of jungle operations were an open book to one whose basic tactical training was sound, and that the teachings of the service schools, when applied with due consideration for terrain, climate and logistics, still applied.

Another factor, which has resulted in a change of attitude, came as a result of the initiative passing over to forces of the United Nations. Air and naval superiority combined to make the Allies the aggressors—gave them the opportunity of carrying the fight to the enemy instead of conforming to his strategic aims. Today, with the Jap admittedly committed to the defensive along the far flung reaches of his perimeter, it is known that only by a properly supported and vigorous attack can the forces of the United Nations succeed in driving him out.

Combat experiences gained in the past year against some of the best forces of the Japanese Empire have resulted in realistic reports which both enlarge on enemy doctrines and correlate the problems of jungle combat with our own methods. This article simply reiterates certain items of importance to all those who will meet the Jap on his own ground.

Pin-pointing the Enemy. As soon as contact is gained, every effort must be made to locate with precision elements of the enemy position. Small and aggressive patrols, working around the enemy flanks and into his rear areas, coupled with close-in patrols feeling out the enemy front, will pin-point enemy installations. If it is desired to maintain standing patrols in the rear of the enemy position, they should be strong enough to be self-sufficient and able to meet the attack which will result from their discovery. As a general statement, the small patrol will give better information, since a large force is both difficult to move and to maintain when out of contact.

Fire Power. Once the enemy position has been pinpointed, and the location of pill boxes, headquarters installations, and automatic weapons plotted, the attack must be prepared by every means available to the commander. Fire power is the key which opens the lock, and massing the fires of both organic and supporting weapons will be the rule rather than the exception. From recent experience in the European theater, it has been found that if the situation warrants, the entire division artillery may be concentrated in support of the attack of a single unit. Commanders of all echelons must be made to employ every means of fire power within their disposal, and to remember to include the possibility of air support to further their preparation.

The Assault. After the position has been pin-pointed and the plan of supporting and preparatory fires agreed upon, the troops must begin their movement under cover of artillery and mortar fire. The truism that it is better to take 1% casualties from our own weapons than 10% from the enemy should never be forgotten. Under ideal conditions, troops can crawl to within a comparatively few yards of their artillery barrage without danger. As soon as the last rounds are on the way, the troops must be either on the enemy position or in the shell holes caused by their barrage before the enemy has a chance to recover from the shock of the preparation and man his weapons. This process should be repeated until the enemy works are gained. The success or failure of an attack will be determined by the manner in which subordinate leaders initiate the assault, and hesitation will inevitably result in avoidable casualties which can never be justified.

An Island of Resistance. Should isolated pill boxes hold up a part of the attack, reserves must be committed through the gaps made in the enemy position. Flame throwers, bazookas and AT grenades, supported by smoke, small arms and automatic weapons fire, will prove to be invaluable in reducing these pill boxes. If the bunker is not isolated, it is well to remember that the Jap usually organizes with one forward pill box supported by the fire of two in its rear. Hence, the other bunkers capable of firing at the operators must be cov-

*Hq., 8th Cavalry

ered as well. The caliber .50 machine gun has been found to be well suited as a supporting weapon.

Continued Pressure. Once the enemy is driven out of his position, he should be kept off balance by a continuous pushing that allows him no chance to get set. The Jap has been found to break under such continued pressure, because his small units tend to become confused when not specifically instructed as to what they should do.

Digging In. Defense should be organized as soon as the objective has been attained. This fact must be made an actuality in the shortest possible space of time. During this phase, if the enemy position cannot be made tenable and it is necessary to dig in, the men must dig in lying down. There have been too many casualties from snipers caused by men digging in while standing up, for even after the Japs have been expelled from a position, there will still be snipers waiting to take a crack at anything that moves. Although the marksmanship of the average Jap is generally poor, some of their snipers are excellent shots.

Mopping Up. When the enemy position is gained, special mop up detachments must clean out all trenches and dugouts overrun in the assault. Other troops must be given antisniper missions both in and after the assault, as the tree snipers will pick the leaders who are the main-springs of success. When the nature of the jungle permits, during the last stages of the fire preparation it is wise to have the machine guns spray the trees left standing on the enemy position, as an added protection against snipers.

It has been found that meal formations are favorite times for snipers to fire; also, that they are prone to engage small groups, say three or four men walking along a track, but will pass up any larger group in the belief that it is too dangerous.

Countersniping. In countersniper operations, it has been determined that only predesignated men should do the firing. When in bivouac, the three-man team of sniper-observer-sniper should be used. These men should be emplaced on the extremities of the area. Other groups should be used in trees to supplement the ground posts. These groups will systematically return all sniper fire by engaging likely looking trees and positions in the general direction from which the fire originated.

Another successful method of combating snipers, especially in a mobile situation, has been to send out a three-man patrol under cover of an harassing fire to work into position close to the enemy sniper.

Enemy Counterattack. If there is one principle of tactical training which has been substantiated in every battle, it has been the Japs' unvarying practice of counterattacking after having been driven from a position. Such attacks will usually come as soon as the Jap can reorganize, and more often than not will take the form of isolated attacks launched as the leaders work their men up to it. The coördinated attack is rare in circumstances.

Jap Methods. Prior to the Jap attack, a diversion in the form of firing and noises of various kinds can be expected, but the attack itself will come from another direction. During the hours of darkness, the crawling attack is generally made, although the probability of the headlong rush should not be discounted. On New Britain, the Jap has made no attacks whatever during the day, so it appears that he believes that his best defense against our firepower is still the night attack.

The Jap Night Attack. Under no circumstances should automatic weapons be used to fire at enemy noises, as the Jap is endeavoring to locate our automatic weapons.

Regarding Jap night assaults, the decision must be made by the front line commander in the threatened sector as to whether or not the Jap is launching a general attack. Once the decision to fire is made, everything must be poured on at once, both for the shock action that such a volume of fire will bring and also for preventing the discovery of isolated weapons.

Infiltrations. In close fighting against infiltrating Japs, troops often wait for them by lying in their holes and, in order to shield the muzzle blast of their weapons, fire up from their positions as a Jap comes into view over them. This is an example of the extremes to which our troops go to prevent their positions from being discovered.

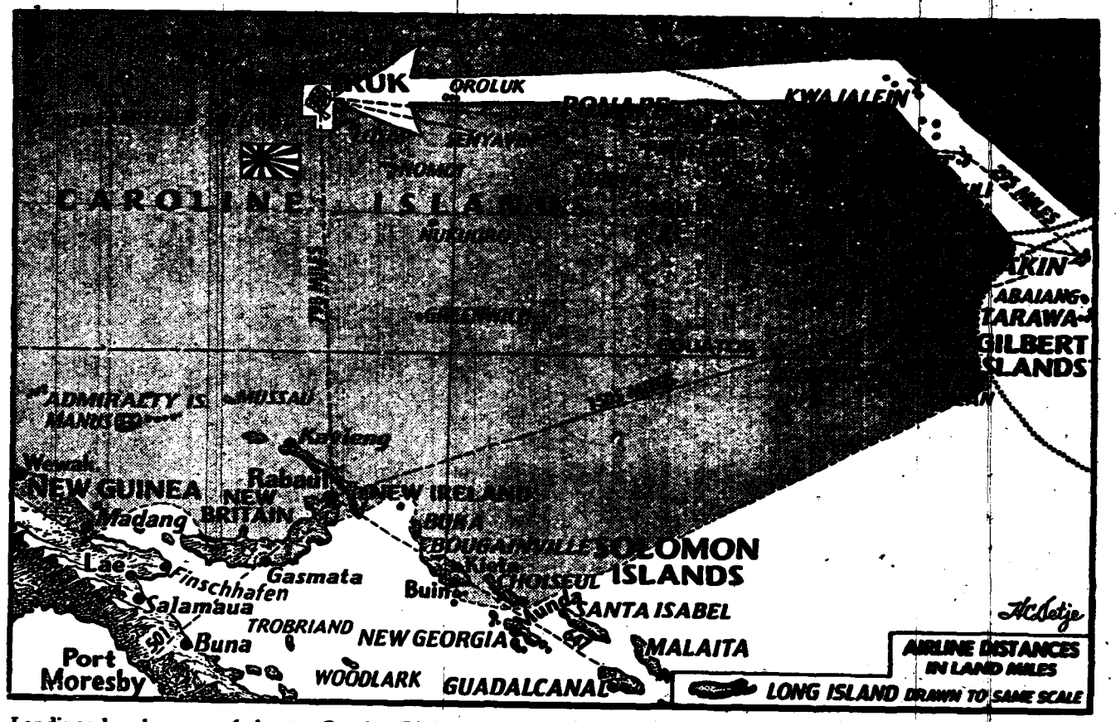
In the Enemy Rear. In contrast to the first stages of the war, the Jap is very nervous when anyone is operating in his rear areas. In fact, he is more worried about it than we are, as we are better prepared for it mentally. Apparently, the discipline of the Jap behind his lines, both in lights and talking, is poor, and to date it has been an easy job to ambush Japs without loss to ourselves.

Foxholes. Troops in Africa reported early in their campaign that the slit trench as such was worthless. The deep foxhole gives the man far more protection especially from shelling or bombing attack, and is an almost perfect protection from strafing. Troops have suffered needless casualties because they failed to put some kind of roof over their shelter.

Frontal Attack. Regardless of the principles of fire and movement, the small unit must be trained in the frontal attack. In the final stages, the ultimate assault will be to the front.

Leadership. During the attack, the subordinate leader must decide whether to lead or to urge his men. The determining factor will be the attitude of the troops themselves. Fresh, confident troops should be led by their officers, for the desires and inspiration of a leader will be impressed on them better by example than by any other means. The psychological reaction of the good soldier will be to try to surpass his fellows, and if the impulse is given him, he will drive the attack home.

Supply. It has been found that while the majority of junior officers become excellent combat leaders, their assumption of responsibilities of supply leaves much to be desired. Subordinate officers should be instructed that supply is a command responsibility which cannot be delegated.



Landings by elements of the 1st Cavalry Division in the Admiralty Islands, outflanked important enemy bases on New Ireland and New Britain. Los Negros Island, scene of the landings, is just east of Manus, principal one of the approximately 40 islands in the group which were mandated to the British by the Versailles Treaty. They had been a German protectorate.

Jungle Training. With observation in jungle terrain as difficult as it is, observers must be given special training in the use of tree climbing and in the use of the rope tied between their feet for climbing coconut palms.

The use of smoke for initial bursts is one of the best methods for spotting.

Machine gunners should be trained to use the caliber .50's to cut through the jungle, and once a lane has been made, to emplace a .30 caliber instead.

In instances already reported, our troops are far faster on the trigger than the Jap is. While the Jap takes some seconds to react, the American soldier can get off two or three shots before the Jap even gets into action. Our better rifles are of inestimable value in this sort of fighting.

Special Instructions. When time permits, a defensive perimeter should be surrounded by booby traps.

In all actions in the South Pacific, the use of the grenade is universal. Our troops have been carrying up to half a dozen in the mess kit holder in their pack or in an extra canteen cover.

When the impact area of mortar fire is soft dirt, the light shell detonates better than the heavy. Because of the close proximity between units, the bracketing system of adjustment is usually not possible. The creeping method is the generally accepted manner of getting the fire on the target.

If possible, fire support should be perpendicular to the direction of attack; there is less lateral dispersion.

In heavy kunai grass, it has been determined that the approximate penetration of the several weapons are as follows: caliber .30 MG—30 yards; caliber .50 MG —50 yards; 37mm gun (using canister)—40 yards.

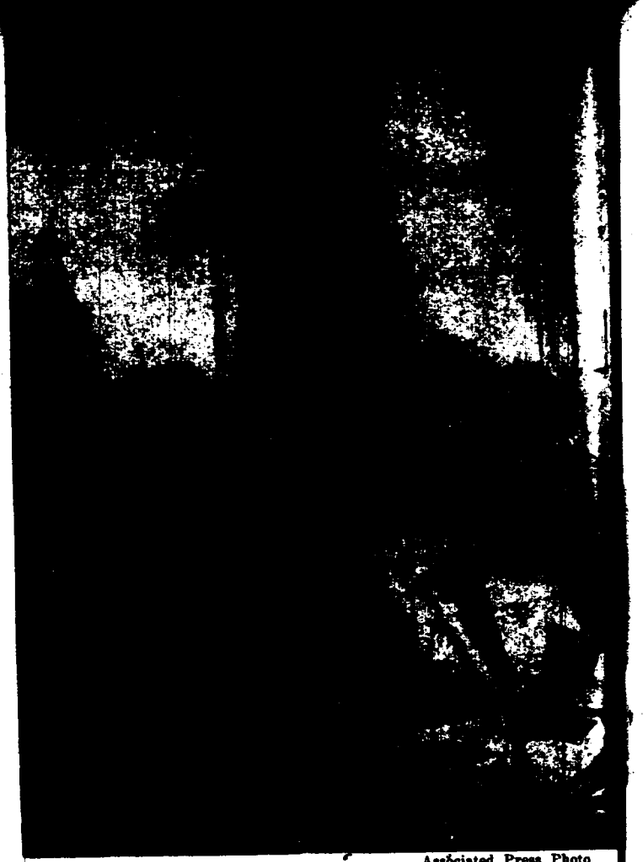
The three-man foxhole, with about ten yards between holes is the accepted standard for defensive works in jungle operations.

With the exception of a general attack, the BAR should be fired single shot in order to conceal the fact that it is an automatic weapon.

In conclusion, it must be emphasized that these notes are by no means the last word in jungle operations, and neither are they complete, for war is still an art rather than a science. It is believed, however, that they do add additional meat upon the basic structure of our tactical knowledge. The tactics employed for any one particular operation must be governed by the variables imposed by the situation. A complete flexibility of mind coupled with a willingness to accept the proven doctrines established by successful combat troops will insure victory.

U. S. Signal Corps

Germans: U. S. Soldiers guard a German pillbox captured on the beachhead near Nettuno, Italy, following the landing there January 22nd. During the two months of severe fighting on the beachhead, the Fifth Army has inflicted 40,000 casualties on the Germans.



Associated Press Photo

According to the German caption on this picture, received through a neutral source, it shows a heavy German mortar in the courtyard of a house in Southern Italy. Recent reports indicate extensive use of mortars by the Germans in Italy—including their six-barrelled "screaming meemies."

Canadian Army Photo

Blasted by mortar fire, the German mine-laying truck was left burning by retreating Nazis. Picture was made before heavy rains turned the road to mud.

Press Association Photo

Allied shell bursts mark the intensity of the January 15th attack on enemy positions over Mt. Trocchio. About 5,000 rounds were fired from over 200 guns. Following this severe barrage, Allied forces captured Mt. Trocchio, last mountain peak before Cassino bastion. The battle for Italy has been a battle for peaks.

German caption on this picture, received through a neutral source, says that it shows German sappers covering the "withdrawal" of German troops "into their new positions" by mining roads. Scene is on the Russian front.

91st Reconnaissance Squadron in Tunisia

*by Lt. Colonel Harry W. Candler**

ON 1 April, 1943, while stationed at Petit Jean, French Morocco, the 91st Reconnaissance Squadron received instructions to proceed at once, by rail and marching, to Hq. II Corps at Gafsa. Leaving at dawn on 3 April, the squadron made the march of 1083 miles in five and one-half days, bivouacked near Tebessa on 8 April, and nine days later moved to an assembly position south of Djebel Tabouna, about ten miles east of Djebel El Abiod.

Attached to 9th Infantry Division—18 April

From II Corps Hq., then in Beja, it was learned that the 91st was to be attached to the 9th Infantry Division for its first combat mission. Division CP, about five miles east of Djebel Abiod, was on the second floor of a large white house sitting back about a mile off the main road. The only entrance to it was by means of a ladder from the ground to the second-floor window. This expedient facilitated checking the identity of individuals coming and going. There, the commanding general directed that the squadron:

(1) relieve elements of the 9th Reconnaissance Troop in the area between Djebel Tabouna on the south and the main Djebel Abiod-Mateur road on the north;
(2) relieve Company G, "X" Infantry, which was holding the observation point, Djebel Tabouna (654) and the high ground (506, 415, and 429);
(3) relieve elements of the British 4th "Recce" in the area;
(4) maintain liaison with the "X" Infantry on the north and with the 26th Infantry on the south;
(5) push vigorous reconnaissance east on Mateur in the zone assigned.

The enemy's attitude, although defensive, was believed to be determined. His morale, particularly of the elite organizations, was high at that time.

Moving to Positions—19, 20 April

The maps (1/50,000) of the terrain proved to be very difficult to read. What appeared to be small hills and ridges actually turned out to be very steep, sometimes precipitous, slopes and ridges. Unimproved roads and trails shown on the maps were, in most cases, non-existent. A few were very rocky sheep trails.

The zone assigned the squadron was cut almost in half by the long ridge running from east to west and was further partitioned by a high ridge running from northeast to southwest.

*Staff and Faculty, The Cavalry School. Formerly, Commander, 91st Reconnaissance Squadron in Tunisia.

Returning to the squadron CP on the afternoon of 18 April, I issued the following orders:

"Commencing daylight, 19 April, the squadron will push vigorous reconnaissance to the east: A Troop, with platoon of tanks, on the right; C Troop on the left; boundary between troops generally along the east-west ridge; B Troop will establish observation posts on the high ground Dj Tabouna (564) and patrol road from Mine Dj Tabouna north to Dj Abiod-Mateur road; P&D Platoon, Headquarters Troop, will repair road to the east; remainder of squadron and command post, present location."

(Note: *It was apparent that considerable pioneer and demolition work would be needed. A detail from the 9th Infantry Division had worked for some time on the trail from Dj Abiod east for about ten miles, but it was still necessary to pack on horse for the last two miles the supplies needed by the company on Dj Tabouna. The 9th Division was using a considerable number of pack animals at that time and asking for 400 more.*)

At daylight, 19 April, accompanied by Captain Elgin E. Sanders, the commanding officer, Headquarters Troop, I went dismounted along the draw south of Dj Tabouna to the observation post on Hill 506. It was a steep climb from the draw up to Hill 506. Apparently no vehicle, except a ¼-ton, would be able to make it. Almost immediately upon reaching the observation post, I saw a peep and a ¾-ton truck making the grade. Already they were half way up. Asked if the whole troop was coming that way, the officer, Lieutenant Hudson, replied that it was. The remainder of Troop C, commanded by Captain Ted Douthitt, was at the foot. They were to spend the rest of that day getting up the hill and through the pass. Later, a captain and a lieutenant from the engineers said that they had been two weeks trying to find a way up that draw.

Meanwhile, Troop A, commanded by Captain Herc Ficklen, moved by way of the Dj Abiod-Beja road and then east to the northern part of the 1st Infantry Division's sector. Troop A relieved the British 4th "Recce" that evening and, with its CP at Farm, established one platoon on the high ridge just to the east of this farm, and sent one platoon east along the graveled road. This platoon, commanded by Lieutenant E. Stuart Wells, known to his platoon as the "Fighting Deacon," made first contact with the Germans in the vicinity of the Mine du Dj Semene.

The attached tank platoon, under the command of Lieutenant Dan E. Coffee, went to the vicinity of the Mine du Dj Semene. Stopped by impassable terrain (a wadi with vertical banks) about 1400 yards from the mine, Lieutenant Coffee ordered his turret 37mm's to fire on the buildings. He reported a great many Germans were seen to come out of the mine and go into position. Shortly thereafter, his platoon came under fire of machine guns and mortars. The latter threw white phosphorus, and Lieutenant Coffee withdrew his tanks without casualties to a position from which he could keep the enemy under observation.

About mid-afternoon, an officer mounted in a peep, started back along the trail (see map, page 16) from the farm to the squadron CP with a message. He had gone but a few hundred yards when the peep struck a mine. The vehicle was broken up. Thrown out of the vehicle by the explosion, both the driver and the officer were severely injured.

Troop B, commanded by 1st Lieutenant John M. Davis, sent two platoons, dismounted, to take over the high ground OP's (506, 415, and 429), and one platoon, Lieutenant Franklin in command, was ordered on mounted patrol along the road of Dj Tabouna and the main Dj Abiod-Mateur roads.

The P&D platoon, working with the engineers from the 9th Infantry Division, improvised a road around Dj Tabouna to tie onto the Mine Dj Tabouna road so that there was no longer need for the pack animals.

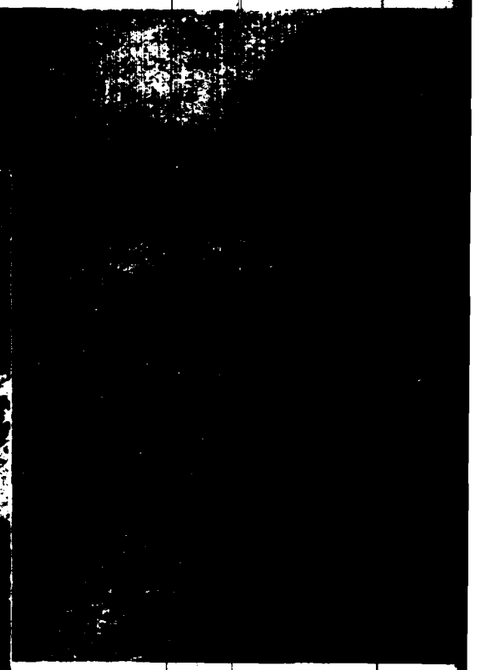
On this day the squadron liaison officer with the 9th Infantry Division, Lieutenant James T. Clark, and one of his messengers, both driving motorcycles, were returning to the division when a German ME dive-bombed them at the road junction just a mile from the command post. The bomb struck beside the messenger and just in front of the officer. Both were blown from their machines. They were evacuated to the hospital that evening through the division clearing station.

Patrols and Liaison—20-22 April

Troops A, B, and C continued their reconnaissance mission toward the east on 20 April. The remainder of the squadron moved from the vicinity of Djebel Tabouna to Farm. Contact was maintained with the enemy in the vicinity of Mine du Dj Semene.

On 21 April, an officer patrol from Troop A (mounted in four ¼-ton trucks), Lieutenant Harmon in command, was sent to reconnoiter around the enemy on high ground in the vicinity of Mine du Dj Semene. The patrol worked its way across the wadi but, because of the steepness of the slope, was unable to advance farther mounted. Commencing his dismounted advance, Lieutenant Harmon suddenly found his patrol surrounded by Germans. He, two men, and two ve-

From training film, "Mechanized Reconnaissance."



Above—A member of a mechanized reconnaissance unit observes enemy activity in the valley below this observation post. *Left*—Vehicle is camouflaged by shadows and branches, while crew makes dismounted reconnaissance.

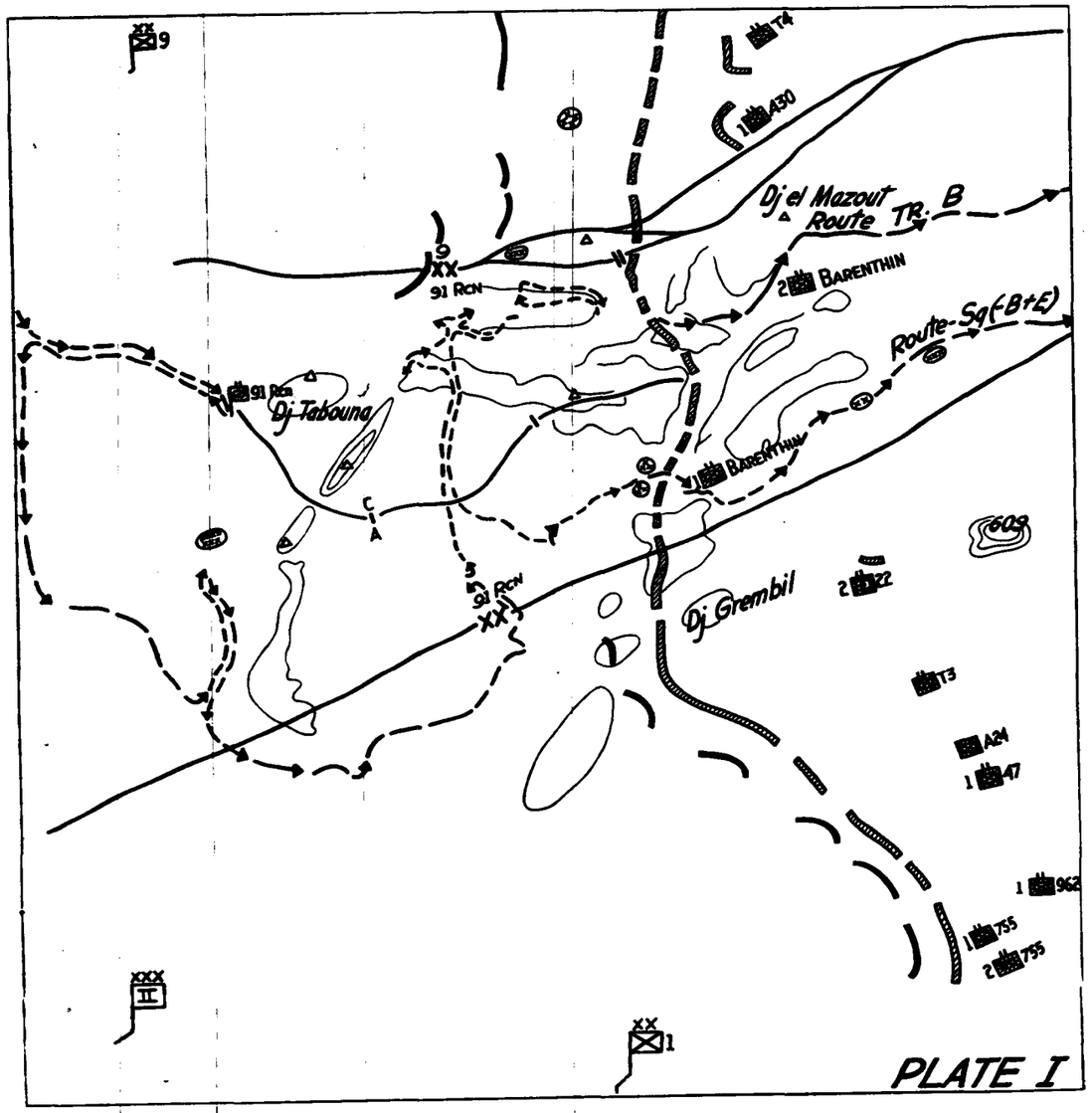


PLATE I

hicles were captured. Two of the patrol's ¼-tons and their crews got back to their troop late that same evening.

Learning of the capture, Lieutenant Wells, although he had had little rest for the past two days, organized a dismounted patrol to go out that same night to recapture the officer and the two men. The "Deacon's" patrol was unable to get into the German position, but brought back much valuable information and a third man thought to have been captured.

The squadron, less detachments, moved to a draw just north of the Farm. Patrols reported a large German infantry force in the C Troop zone. Several mines, laid by German patrols during the night, were removed along the Djebel Tabouna-Djebel Abiod-Mateur road. Most of the roads in this area, particularly where they crossed ridges, were under long and mid-range artillery fire during hours of daylight. (At this time the squadron had liaison details at the CP's of the 1st and 9th Infantry Divisions and "X" Infantry Regiment.) The 1st Reconnaissance Troop provided liaison between Troop A of the squadron and the 26th Infantry Regiment on the right. A patrol from Troop B occupied high ground (545 and 562) to provide liaison with the "X" Infantry Regiment on the left.

Troops A and B continued on their missions on 22 April. Rain was making difficult terrain still more difficult. Troop C moved north over the east-west ridge Djebel Tabouna (531—442—452). The squadron moved to the vicinity of the Mine de Razine.

Aggressive Reconnaissance—23 April-2 May

Reporting to the Commanding General, 9th Infantry Division, I received a copy of the order calling for a corps attack to be made commencing daylight, 23 April. The 1st Infantry Division was to make its main effort on its right (south) flank; the 9th Infantry Division, in conjunction with the French Corps, to make its main effort on the north; the 91st Reconnaissance Squadron, to push aggressive reconnaissance to the east within its assigned zone.

Back at the squadron CP, I issued an order to:

> "Troop A, to push vigorous mounted reconnaissance to the east; Troop B, to establish observation posts on hills and continue its previous mission; Troop C to leave its vehicles with drivers only and, attacking dismounted in its zone, seize and hold the forward end of the high ridge generally along the 33 grid; the squadron, less detachments, to remain in the vicinity of Mine de Razine."

At 0530, 23 April, amid a crescendo of artillery fire, both in front of the "X" Infantry on the north and the 26th on the south, elements of the squadron moved out. Troop A (south) was unable to get through the German position on the high ground. Troop C (north), advancing dismounted, did not come under fire until well along the ridges later that day.

About noon, I was called to Division CP. It appeared that the time was ripe for a German counterattack. Whatever the cost, the squadron was to hold the line to which it had advanced. I gave this order to each troop commander by going to his CP and actually drawing the line on his map. The line ran generally along 33 grid. Troops would not withdraw west of it.

(Liaison officers, carrying copies of the G-2 Summary and G-3 Operations Reports, usually returned to the squadron CP daily in the late afternoon and took back with them overlays showing squadron disposition and a summary of enemy information gained up to that time.)

For the next ten days—23 April to 2 May, inclusive—the squadron tried, by mounted and dismounted action during the day and by patrols during the night, to find a way through the enemy line on the high ground to the front. On the night of 24-25 April, Troop B was relieved from OP duty and ordered to advance mounted in the zone between Troop C and the "X" Infantry Regiment on the north.

The tank troop, in command of Captain James S. Greene, Jr., was detached from the squadron 23 April and sent north to assist the advance of the French Corps. It was not back with the squadron again until 6 May.

During the last four days of this period, all movement was by dismounted patrol under supporting fire of the artillery and the squadron's own mortars and 37mm guns. Troop B and Troop C (on the north) advanced in zones to a north-south line generally along the 36 grid. An artillery observer was obtained for the B and C troop zones.

Major John B. Donnell, the Squadron S-2-3, was with the leading platoon of Troop C when, advancing east along the draw to envelop the enemy strong-point, vicinity high ground, the platoon came upon and surprised a group of Germans in a draw. Major Donnell directed the emplacement of a light machine gun, which killed four or five Germans and wounded several others. The platoon was in turn brought under fire of German machine guns from a position on the high ground. Sergeant Nelson was killed and Major Donnell wounded in this action.

During this period the squadron command post and reserve were moved to a new location daily and normally to an alternate location after darkness. *It had been the experience of troops in the southern Tunisian operations that Germans were spotting such installations during the day and returning to bomb them during the late hours of daylight or early hours of morning.*

Advance—2-4 May

Patrols during the night, 2-3 May, discovered the Germans had withdrawn from their positions on Green and Baldy Mountains in the squadron zone; however, there was still the problem of reconnoitering for passages through this high ground to the front.

Late in the day on 3 May, Troop B moved forward mounted for a short distance past the position formerly occupied by the German infantry. Difficulty of the terrain dictated dismounted reconnaissance. Patrols were sent out during late afternoon and evening to find a route or routes in the direction of the enemy. The remainder of Troop B moved to an assembly area point.

Troop A found a pass just south of the Mine du Dj Semene, but it was doubtful that vehicles larger than a peep could get through. One platoon of Troop A, Lieutenant Gus Gabel in command, advanced dismounted through the position formerly occupied by Troop C.

Troop C, having been dismounted and in constant contact with the enemy throughout the period, was withdrawn to squadron support. Its performance had been magnificent. The entire troop, driven back from its position by German counterattack late one evening, had moved forward at daylight and retaken not only its former position, but successfully attacked and occupied the one previously held by the Germans.

The next day, 4 May, I went forward to the leading platoon of Troop A and found it halted in front of a mine field. The Germans had withdrawn in such haste that they had left in place the triangular yellow flags employed for warning their own vehicles. The platoon, after removing sufficient mines for passage through the field, moved rapidly on towards Mateur. The remainder of the squadron was directed over the route taken by the platoon and the column commander was given orders for his continued advance.

Attached 1st Armored Division—Mateur

Rolling into Mateur, I found the platoon from Troop A and all of Troop B had been there about two hours.

The 81st Reconnaissance Battalion, commanded by Lt. Colonel Charles J. Hoy, preceding the 1st Armored Division up the Beja-Mateur road, had sent its leading elements into Mateur ahead and had the city of Mateur and all roads leading thereto outposted when the leading troops of the 91st arrived. That evening the 91st received an order detaching the squadron from the 9th Infantry Division and attaching it to the 1st Armored Division.

The platoon of Troop A, directed to move on up the road to the north of Mateur and relieve a detachment of the 81st, reached the Sedjenane River and found the bridge at that point destroyed, but succeeded in establishing contact with the French Corps north of the river. The remainder of Troop A, when it arrived, moved on north to a position at Farm just north of Michaud. The squadron (less Troops A and E) went into an assembly position one mile west of Mateur. Patrols from Troop B were sent immediately to reconnoiter the high ground, Djebel Ichkeul. That same evening Combat Commands A and B, 1st Armored Division, moved into an assembly area a short distance south of the squadron.

The following morning, 5 May, I reported to the Division CP, which then was about eight miles southwest of Mateur on the Mateur-Beja road. The squadron was given the mission of liaison between the 1st Armored Division and the 9th Infantry Division on the north, and directed to protect the left (north) flank of the division. Squadron CP was to be at Michaud.

A new directive from Division CP added to the squadron's original mission the job of clearing what was believed to be a small detachment of Germans from the high ground of Djebel Ichkeul. Division artillery needed that high ground immediately. Consequently, no time was lost in sending out a bantam patrol from each of Troops B and C to reconnoiter routes of approach.

Viewed from the south, Djebel Ichkeul was a rocky ridge about one and one-half miles wide and five miles long, consisting of three high points, the highest approximately 1,500 feet above the flat marshy ground at its base. It was bounded on the north side and east end by a salt lake, and on the south side and west end by a marsh in which the depth of the water varied from ankle to waist deep.

Developments during the day included the arrival of forward elements of the 9th Infantry Division in the morning; movement into the squadron assembly area of Troop E, the tank troop which had been attached to the French Corps; and the arrival of Major Charles D. Ellis from Headquarters, Fifth Army, who was to act as observer with the squadron. A patrol sent back word that it had run into machine gun fire on the east slope of Djebel Ichkeul. The fire was delivered from the vicinity of the French mine. The report further indicated the apparent impossibility of reaching the ridge with any kind of a vehicle.

Attack—5-6 May

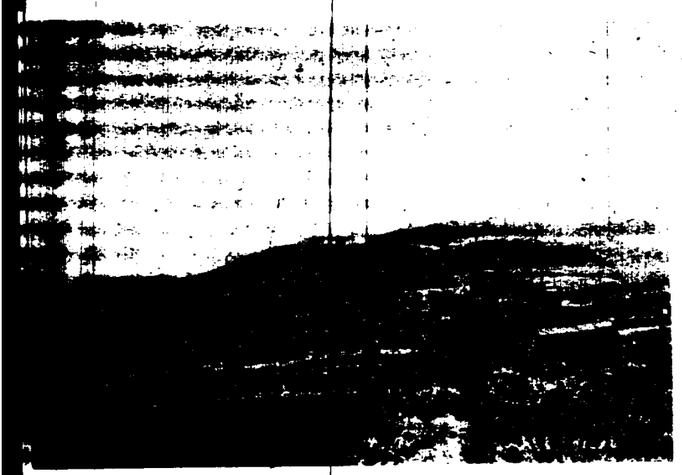
It was planned to attack the high ground from west to east, troops abreast, C on the left and B on the right, with Captain Douthitt, Troop C commander, directing the attack. The two troops were to be in readiness positions prior to daylight, 6 May. Vehicles were to remain in their present assembly position. The attack was to be supported by fire of the troop's own mortars, the AT platoon (37mm guns) of Headquarters Troop, and a battery of division artillery.

Troop C, on the left, first to cross the swamp, gained the base of the high ridge, and surprised and took about 30 German prisoners. Troop B, on the right, had almost gained the base of the ridge when it came under a veritable hail of rifle and machine gun fire.

Meanwhile, the battery of division artillery, plus squadron 81mm mortars and 37mm's, kept pounding away against the south slope. An order was sent to the commander of Troop B to come directly to position on the high ground; and to Troop A (less one platoon), to move up.

After dusk, leaving two messengers at the OP, I moved around the west end of the mountain, down the south slope, and past B Troop's position. Captain Douthitt, having reconnoitered down the south slope near the French mines, reported that the only remaining resistance was coming from the dilatory fire of a few snipers. Troop C was ordered back to its vehicles to reorganize. Troop B was to remain in position to be relieved later by Troop A, at which time it was to return to its assembly position.

An Infantry filled truck passes the wreckage of German tanks. Around Mateur, Tunisia.



Attached Combat Command A

The following morning, 7 May, the squadron received an order attaching it to Combat Command A for an advance on Ferryville. Troop A was ordered to continue the job of clearing the German snipers off the Djebel Ichkeul, and, while I reported to the commanding officer, the squadron executive officer, Major John D. Wynne, marched the squadron (less Troop A) to the designated assembly area.

The mission of the combat command, Carr's battalion on the left and Cole's battalion on the right, was to advance on Ferryville, and cut the roads leading into it on the north, and the Ferryville—Bizerte road to the east. The squadron's mission was to precede the advance of the combat command and cut the road north of Ferryville at the bridge of Oued Tindja, occupy the high ground northwest of Ferryville, and to cut the road at the bridge east of Ferryville. The German forces in front were estimated to be what was left of the battalions previously faced in the Djebel Tabouna area.

During the afternoon, artillery fire came from across the Lake El Ichkeul, west of Tindja, and from the high ground just northwest of Ferryville. The bridge across the wadi Melah had been blown.

The high ridge on the squadron's east and north flank extended right down to the edge of the salt lake, Garaet El Ichkeul. A road ran along the edge of the lake. Both sides of the road were occupied by German infantry.

Advance to Ferryville—7 May

A downpour during the night made it doubtful whether or not the heavy vehicles could lead the advance cross-country. The tank battalions of Combat Command A were in dispersed formation on the south slope of the ridge. The squadron's tank platoon, with reconnaissance platoon (bantams only) attached, advanced through the tank battalions and over the ridge. There was a steep-banked wadi between this ridge and the nose of Djebel El Zarour, about 250 yards beyond. At this point the two platoons came under fire of a 40mm gun at the head of the draw on the right, but bounded on across the wadi anyway.

On the slope of the nearby ridge, the platoon flushed and captured about thirty Germans. On the west side of the road about the same number came out with their hands up. The remainder of the squadron came on through and dispersed. The two tank battalions of Combat Command A (1st Armored Division) advanced. One turned toward the east around the ridge Djebel El Zarour; the other, preceded by the M10 platoon, turned north of the road.

The squadron tanks (Troop E), accompanied by one of the reconnaissance platoons, had advanced into a draw beyond the hospital. Two German batteries, one on the hill northwest of Ferryville, and the other west of Tindja, were going "full blast." One gun, reported to be an 88mm, opened up from a cactus patch about 450 yards in front and stopped the tanks on the left. Three of Troop C's 81mm mortars, positioned in the draw just in rear of the tank platoon, brought this German gun under fire. The tank platoon leader, from his "hull-down" position, observed the fire and directed the mortar crew by radio. The German gun was soon put out of action.

Over the radio, the group commander ordered that the advanced units push forward without delay. A bantam patrol of two men with an SCR-193 advanced down the road about 500 yards to a point where a road led east to the cactus patch from which the German gun had been firing. Men who appeared to be members of the gun's crew were seen "high-tailing it" across the wheat field toward an olive grove about 175 yards away.

The bantam stopped with its hood under the muzzle of the German gun. One of the patrol jumped out with his carbine to bring the retreating crew under fire. A German 88mm, perfectly camouflaged and silent until that moment, opened up from the olive grove and struck the bantam on the frame underneath the driver's seat. The driver was blown from his vehicle. We immediately opened up with everything we had. The wheat and cactus were fairly mowed down. I believe that it was a direct hit from one of the 81mm mortars that actually put the big gun out of action. There were five German soldiers dead at the gun when the CP vehicles came up later.

Firing at the Germans, who were then in full retreat, the light tanks (Troop E) advanced from wadi to wadi along the north slope of Djebel El Zarour. The leading platoon of Troop B, followed closely by Troop C, and the remainder of Troop B, covered on the right by the tanks, bounded up the road and into Ferryville.

The executive officer lost no time in sending a platoon from Troop B on to the high ground northwest of Ferryville, and Troop C to the east of the town. He then dismounted the remainder of the troops to round up German prisoners in the town. Carr's battalion passed around the high ground and turned east. Cole's battalion came up along the south slope of Djebel El Zarour, crossed the Ferryville-Tunis road and pursued the routed German forces. Both battalions were running low on ammunition and fuel.

Maintaining Observation and Contact

After directing one reconnaissance platoon toward the ridge at Farm with the mission of maintaining contact with the Germans, I returned to see what was delaying the tank troop and found that the executive officer, acting on the instructions of the force commander, had issued an order by radio for all elements of the squadron to assemble in Ferryville. The tanks were then directed to move off the road to an assembly position. One platoon was ordered forward to the ridge near Farm and was given the mission of maintaining observation and contact.

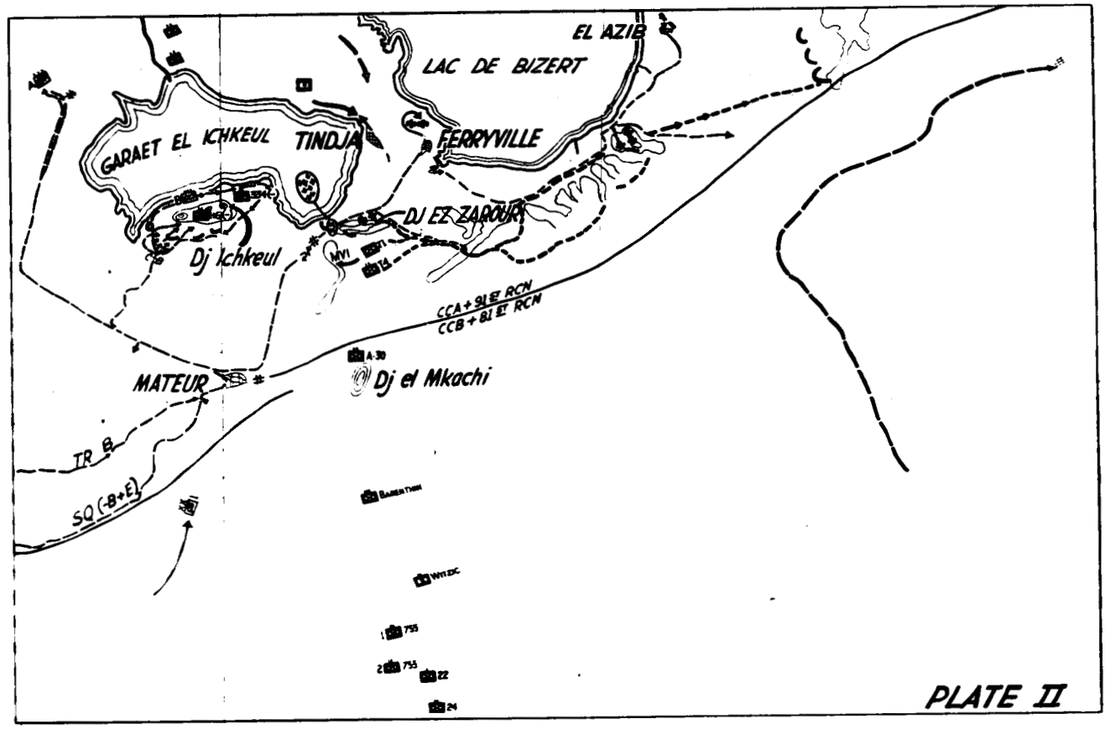


PLATE II

Continuing on into the town of Ferryville I reported to the force commander that I had just seen "thousands of Germans streaming over the ridges about five miles east of the town." The squadron CP half-track had not come up yet, so I went to the ridge in a peep. There, the first persons I saw were Major Ellis, the observer from Fifth Army Headquarters, and Lieutenant Coffee with his tank platoon (less two tanks). These two officers seemed to have "noses" for finding Germans.

Moving up the ridge toward the north to hit the Tindja-Porto Farina road, we came upon a German long-barrel 75mm gun with 10cm muzzle brake and a half-track prime mover. Lieutenant Coffee hooked his tow cable on the front of the prime mover (full of ammunition and equipment) and towed the half-track with its gun back along the ridge to the road, then north to a farm where an ordnance dump was being set up.

Flowing down the ridge and out on the Tindja-Porto Farina road was what appeared to be an "unlimited stream" of German vehicles. In a draw about 1000 meters to the south, were six large German tanks. About 1000 meters farther south there was a large assembly of Germans reorganizing, and nearby a large supply dump; in a draw to our right front was a battery of six large-caliber guns underneath camouflage nets. Cattle and sheep were grazing peacefully around the position. Over the tank radio, Ellis contacted the artillery and gave them the targets. An artillery forward observer went with him to the ridge, and they brought these very profitable targets under fire during the remaining hours of light.

Pursuit Toward Porto Farina

At dark, the squadron (less Troop A) was assembled about one and a half miles southeast of Ferryville. With one platoon of the armored engineer battalion attached, it was ordered to precede, commencing at daylight, the movement of the force east on the Porto Farina road and then north to:

Objective Right (Cole's) Column RJ (4½ miles south El Azib);

Objective Left (Carr's) Column RJ (El Azib).

A brief study of the terrain will show that for a distance of about six miles the Ferryville—Porto Farina road there is a narrow defile bounded on the north by the Lac De Bizerte and on the south by a succession of high ridges and deep wadis perpendicular to the road.

Troop C moved out. Troop E (light tanks) had not come up, so I investigated the delay. For the first time, gas and oil had been late coming up, and had arrived just before daylight. I stayed there until they were ready to roll. Seven miles up the road I came upon Hq. and Hq. Troop, and just ahead Troop C was being held up by artillery and antitank (40mm) gun fire from the next ridge. Captain Sanders reported, "German Infantry, machine guns, 40mm antitank guns, and eight 88mm guns in position on or just beyond the ridge."

An artillery forward observer went to the high ground

on my right to direct artillery fire on the German position. The tank battalion and the M10's came up on the left on the strip between the road and the Lac De Bizerte. Troop C positioned its mortars just behind the ridge and sent a platoon dismounted up the steep wadis to find a way around the enemy left (south) flank. Troop B was ordered up on the right of Troop C. The fire fight lasted until about 1530. By that time all of Troops B, C, and E were right up against the west slope of the ridge, Hill 151.

The movement forward was to be made in accordance with the mission and previous orders, except that Troop E (light tanks), less one platoon, was to lead going north to the Lac, thence along its edge to the objective on the left. Movement got under way as if started by the same button. Carr's Battalion and the platoon of squadron light tanks, led by Lieutenant Dave Termin, began to roll.

The ground for about five miles in front was flat, pocked by mud and shell holes, and covered by the fire of German weapons on the high ground to the south and east. Two of Carr's medium tanks were hit. The squadron, Troop E (less two platoons), and Troop C (all in order) bounded all the way across. It was the nearest thing to a mechanized charge I have ever seen.

Troop B, preceded by Stowell's light tank platoon, turned east toward the objective on the right.

Upon arrival at El Azib, about twelve miles south of Bizerte, the squadron immediately posted local security. On the left (west) lay Lac De Bizerte; on the east, a ridge stretched in a half moon from the edge of the lake; and to the north lay Menzel Djemil. The country to the south was flat and open but was covered by Troop B with two light tank platoons. Although late in the day, there still was considerable firing in the rear. Lieutenant Coffee's tank platoon (less two tanks), with Lieutenant Duntze's platoon from Troop C, attached, was ordered east to the ridge, and thence along it to Menzel Djemil to determine what was there. Carr sent a tank platoon to the east and south with a mission similar to Coffee's.

Coffee "came in" on the radio with, "Have captured a battalion, about 700 officers and men." Request was made via radio to Group Headquarters to send MP's to handle the prisoners.

Darkness and the captured Italian coast artillery battalion arrived at about the same time. The latter was led by a peep and followed by one of Lieutenant Coffee's light tanks. By themselves, ahead of the Italians, were about thirty German soldiers. In an improvised enclosure were about the same number of Germans, captured during the action around El Azib that afternoon. The wounded were placed on a captured truck and an ambulance, and the "on foot" contingent was herded into a march column and sent on their way back toward Ferryville. As before, the peep led the way with a light tank in the safety position. By then it was quite dark.

Lieutenant Coffee reported a large concentration of German soldiers, supplies, and a battery of six emplaced coast artillery guns in the vicinity of Menzel Djemil.

The Round-Up

That night the squadron received orders to "advance into the peninsula, reconnoiter the three roads, and report when the roads are clear of the enemy."

After passing Menzel Djemil, some Germans were found in a large olive grove, and Staff Sergeant Smith's platoon of Troop C stopped to round them up, search them, and start them to the rear under guard. These proceedings had to be dropped, however, not so much because of the time that would be lost as the fact that men could not be spared for guards. Afterwards, the pursuit moved by bounds, and when the Germans came toward the road with their hands up, they were just motioned on back towards Menzel Djemil.

The remainder of Troop C and its attached platoon were met at the tip of the peninsula just across from Bizerte.

A few rounds of medium caliber HE appeared to have been delivered from back towards Menzel Djemil.

Troop C and Troop E (less two platoons) took the road to the east. At the road junction, a report was sent back that the peninsula was now clear of the enemy, but that the roads were full of Germans moving toward their rear.

The road referred to ran right along the Mediterranean for about three miles, then "petered out" into a trail. A report from Troop C stated that deep sand made the trail impassable to any type of vehicle.

Having directed Troop C to hold its present position and prevent any further withdrawal of the enemy toward the coast, I returned with Troop E to El Azib, where, when Troop B arrived, I ordered it on toward Ras El Djebel-Porto Farina. Going was tough in this direction, too; sand proved deep here also. After going as far as possible mounted, Troop B dismounted and advanced all the way to the coast.

At about 1100 the division commander "came in" on the radio with "Stand by for an important message. . . . . Cease firing. Hold present position until further orders. Germans have surrendered."

The force commander issued the order that although the "cease fire" order had been given, the terms of surrender would be enforced by fire; *i.e.*, all German and Italian soldiers were to cease destruction of any arms or equipment and become prisoners of war. Those attempting to escape from the coast or coastal ports were to be shot.

Troop A was still fighting the "Battle of Djebel Ichkeul." When a copy of the surrender order, signed by the German commander, General Krouse, was sent in to the German captain in command there, he refused to acknowledge it, saying: "A German general would not sign such an order." When two days later he was confronted with the German general, he reluctantly

accepted the "cease fire" order and finally surrendered.

On 11 May, the 91st Reconnaissance Squadron was assembled for the first time in over a week at Ain Rhelal. For the entire operation, the squadron losses were one officer killed and six officers wounded; 15 men killed, and 59 men wounded.

Specific Observations and Conclusions

1. GENERAL.—*Irrespective of branch of service, our cavalry-trained officers and enlisted men are the equals of any in the world today.* On their initial mission in the first phase of this campaign, they filled a gap in the line and performed the dual rôle of cavalry and infantry. In the later phase, when attached to the 1st Armored Division, they performed the normal rôle of cavalry on reconnaissance in advance of Combat Command A.

2. MOBILITY.—*The principal reconnaissance vehicle was the ¼-ton truck.* The scout car's chief usefulness was as a means of transport for the radio communications between platoons and troops and troops and squadron.

3. FIRE POWER.—*The squadron was over-weaponed and under-manned.* Compared with similar units of armies of other countries having up to three times as many men, our squadron had more crew-served weapons—cal. .30 LMG's, cal. .50 MG's, 37mm guns, and mortars.

a. Based on ammunition re-supply figures, the squadron's principal weapon was the 81mm mortar. The mortar (and its crew), mounted in two ¼-ton vehicles, normally was in position early and delivered accurate fire.

b. Next in order of use were the 37mm gun and the caliber .30 machine gun.

c. The shield on the 37mm gun, M6, presented so high a silhouette that the piece normally drew fire quickly.

d. The caliber .50 machine gun (with its ammunition load) proved heavy for the ¼-ton truck on which it was mounted. However, it was easily and quickly positioned to fire on German machine gun positions. Mounted on the scout car, this weapon was employed similarly.

e. As an antiaircraft weapon, the caliber .50 machine gun mounted on the vehicle was most effective.

4. COMMUNICATIONS.—A question frequently asked is: "Did you have communications at all times with higher headquarters?" *The answer is yes, but not always direct communication.* The answer should be qualified further as follows:

a. The SCR-193, although proving itself one of the best in the field, went "out" on occasion. When no alternate set was available, messages were relayed.

b. The SCR-284, being subject to frequent breakdown, was replaced by the more reliable SCR-193 prior to the beginning of operations in Sicily.

c. The SCR-510, mounted in the ¼-ton truck, proved its worth for intra-platoon communication. Dismounted from the vehicle and set up on an OP, the 510 operated effectively for short ranges.

d. The ideal combination would appear to be a telephone at the OP hooked up by light wire to the SCR-193 mounted in a ¼-ton truck (or command car) at the base of the hill.

5. SUPPLY.—*Normally, supplies of all classes were pushed well forward by higher headquarters.* Only once were all vehicles not serviced and ready to move by daylight. On this occasion, the S-4 did not receive instructions relative to the place of delivery to one of the troops in sufficient time to allow him to move them up. At that, S-4 managed to get the trains up by midnight. The gas trucks of Troop E reached their area just before daylight.

6. LIAISON.—This proved to be a vital problem of unanticipated difficulty. During training, the Assistant S-2-3 had been counted on as squadron liaison officer. Tables of Organization did not provide him with a radio-equipped vehicle or messengers. *In combat, it was found expedient to have, in addition to liaison with higher headquarters, officer details with the units on the right and left. These officers and men had to come from the troops.*

7. PERSONNEL.—The personnel section, under a warrant officer, moved with the trains under squadron control. The adjutant remained with the squadron command post and alternated with the troop commander, headquarters troop, as headquarters commandant.

Immediately at the end of the campaign, the addition of one officer per reconnaissance platoon was recommended for the following reasons:

a. On reconnaissance, the platoon leader's job is to find out exactly what is in front of him, exactly where it is, and get that accurate information back to higher headquarters. He is kept plenty busy employing his light vehicles. In a fast-moving situation with surprise targets bobbing up, he must fight or fall back. Temporarily then, he ceases to function as a reconnaissance agency in order to bring the fire of his small arms and supporting weapons to bear on the enemy.

b. When properly coördinated and directed, the weapons of the reconnaissance platoon are formidable. They should be under the command of a second officer in the platoon who is free to spend his entire time studying the terrain with a view to the best possible employment of his weapons on short notice.

c. With a second officer employing the platoon's weapons, the platoon commander (reconnaissance officer) can search continuously for enemy positions and installations, and continue to make his reports, even while his platoon has become engaged.

d. With a second officer, the platoon leader is afforded a relief when the platoon is on a detached post, observation post, or other mission away from the troop. In combat, as on maneuvers, the platoon leader is "on the go" all of the time that his platoon is out.

Comments from Combat

As fighting on all fronts progresses, the opinions of enlisted men, as well as officers, on lessons learned in action, including mistakes and new ideas, are being received on practically all phases of battle. The following comments and bits of advice, received from different theaters of war, furnish much valuable information for troops who have not yet met the enemy.

An Infantry Captain who fought in Sicily:

To have battlefield leadership a company officer must build a legend about himself. He must take calculated risks. He must, on the other hand, do what he expects his men to do. He must always dig in, always take cover. His men must know that when he ducks, they must duck. On the other hand, they must not believe that when the officer ducks, they must run away. The officer must come through every barrage and bombing with a sheepish grin and a wry remark. Masterly understatement of hardship and danger endured plus a grin always pay dividends.

An Operation Report from the Seventh Army, which fought in Sicily:

During an attack officers and noncommissioned officers must never allow men to lie prone and passive under enemy fire. They must be required to move forward if this is at all possible. If movement is absolutely impossible, have the troops at least open fire. The act of firing induces self-confidence in attacking troops. The familiar expression "Dig or Die" has been greatly overworked. Attacking troops must not be allowed to dig in until they have secured their final objective. If they dig in when momentarily stopped by enemy fire, it will take dynamite to blast them from their holes and resume the advance.

An Infantry Colonel who fought in Sicily:

Fear is normal. Fear of being afraid is the greatest obstacle for men new in battle to overcome. There is no reason for shame in being afraid. Men who have had excellent battle records freely admit they are scared stiff in battle. The important thing is that every soldier must be taught all he needs to know so well that battlefield thinking is reduced to a minimum. Automatic, disciplined reactions to battlefield problems must be the rule.

In battle the worst element is mental and nervous exhaustion. There is no real rest under fire. The ability to withstand fire is more important than all the knowledge in the world.

A General Officer:

Action on Attu indicated that standard Japanese infiltration tactics can be offset by a system of "anti-termite" patrols organized behind our lines to protect our artillery, command posts, and supply lines.

Wherever troops know that these friendly patrols are behind them, fire in their rear will mean to them simply that our patrols are exterminating the infiltrating Japs. This feeling was well expressed by General Nathan Bedford Forrest (Confederate cavalry commander, Civil War), when one of his staff officers approached him in great excitement and said, "General, the enemy is in our rear." Forrest calmly replied, "If they're in our'n, we must be in their'n."

A Report from the South Pacific:

Aggressive action is necessary. Never relax the pressure. The serving of hot meals in jungle fighting is often impracticable. A hot drink or hot soup serves the same purpose and is much more within the realm of possibility.

In jungle patrolling, any shine from the smallest metal surface, such as a belt buckle, or a watch, must be avoided. A luminous watch constitutes a real danger. A white skin is most conspicuous, and the practice of some patrol members marching stripped to the waist is inviting trouble. Any noise, such as talking, coughing, spitting, etc., has to be treated as the greatest of all dangers.

A Lieutenant Colonel who fought in Tunisia:

Many men were lost by using squad patrols. The Germans used stronger patrols and just gobbled them up. A patrol should be either a sneak patrol, small enough to escape detection, or a combat patrol, large enough to fight its way out of difficulty. Never allow one man to go out alone.

An Infantry Company Commander:

Thorough training in hand-to-hand fighting is invaluable. At Biscari Airport in Sicily I used my trench knife twice. One of my men got three with his bayonet. He shot one; then another tried to grab his bayonet. He got this one with the bayonet. That got him started, so he got three in all before it was over.

An Infantry Lieutenant:

At Biscari Airport, a German officer tried to capture our "Bazooka" man, but the latter gave the officer an uppercut and then killed him with his helmet.

An Infantry Private who fought in Sicily:

Don't Gawk. Several times in Sicily, German planes pretended that they were involved in a dog-fight in order to secure the attention of the ground troops. Then they swooped down on a strafing run.

A Lieutenant Colonel Commanding Rangers:

Rangers use the "Buddy" system in their work. The men always work in pairs. They live in pairs, eat in pairs, do guard in pairs—even do KP in pairs. Confidence in each other is developed. They can pick their own buddy from within their platoon.

A 43rd Division Officer on New Georgia:

We effectively cured the Jap of his liking for sniping from trees by the command, "Fire Mission. All Battalions . . . Fuse Quick. Three Volleys." The quick fuse resulted in bursts in the tree tops. After a week of this treatment the Jap sniper moved from the trees to the ground.

A Seventh Army Report from Sicily:

A German Luger pistol was left "booby trapped" on a table. A new replacement picked it up. Two were killed and fourteen wounded in the resulting explosion.

A 1st Division Report:

A Luger pistol was found lying on the ground in Tunisia. An American infantry lieutenant carefully tied a long cord to it and then, getting into a hole, pulled it to him and put it in his pocket. Later in the day while examining the pistol he attempted to remove the magazine. The explosion killed the lieutenant and two other men and wounded six soldiers.

An Infantry Private who fought in Sicily:

The enemy abandoned his tanks with motors running. When we tried to stop the motors they blew up.

Report from the 43rd Division, which fought on New Georgia in the Solomons:

Of the basic infantry weapons, the M1 rifle is doubtless the best all-around weapon possessed by our troops.

The fragmentation grenade was used frequently against suspected areas of heavy jungle growth and on some occasions for the destruction of booby traps around perimeter defenses.

In spite of its handicap of sounding like a Jap .25 caliber light machine gun, the Thompson submachine gun proved very satisfactory for specialized personnel such as linemen, artillery forward observers, vehicle drivers and reconnaissance personnel.

The Browning auto-rifle gave excellent service. This weapon has high jungle mobility and provides excellent fire power for short-range targets frequently encountered.

The light machine gun proved very effective in the night security of bivouacs. At other times, it was used to cover the advance of attacking echelons by placing heavy fire in the direction of suspected pillboxes.

The heavy machine gun was used for the defense of beachheads and water passageways; also, to some extent, in the defense of regimental and battalion command posts.

The 60mm mortar unquestionably contributed to the demoralization of the enemy. Its exceptional accuracy made it valuable in close support, and its use during the assault on the revetments and shell craters at Munda Field and Kokengolo Hill is credited with saving many lives.

The 81mm mortar proved to be one of the most important single weapons contributing to the success of this offensive.

While the 37mm AT gun is admittedly a weapon of opportunity in jungle warfare, there were occasions on which it served us handsomely. The Nips had a field piece located where it could interdict our beachhead at Laiana. Scouts located the gun, but our mortar fire could not silence it. We disassembled a 37mm gun and carried it forward under cover of the dense foliage. The gun was then assembled under cover and moved rapidly to a point in the open from which it could command the target. Three accurately aimed rounds destroyed the gun and killed its crew.

Numerous reports indicate the effectiveness of the "Bazooka." It has been used successfully against pillboxes, machine-gun nests and personnel.

An Infantry Officer:

As for infantry-artillery teamwork in Sicily, our division artillery was never out of support for more than five minutes throughout the whole campaign. We have a wonderful set of battalions in our division artillery, and we have worked so closely together that they are as much a part of our outfit as our own battalions. We just can't praise them too much. They were always right there when you needed them.

In one place, where we just couldn't get forward because the Heinies were on superior ground and had us pinned down with rifle, machine gun, and mortar fire, the division artillery massed nine batteries on them and plastered them with 1,500 rounds in less than 30 minutes. We then walked through that position without a scratch, and the German dead were all over the place.

Prisoner of War Fund

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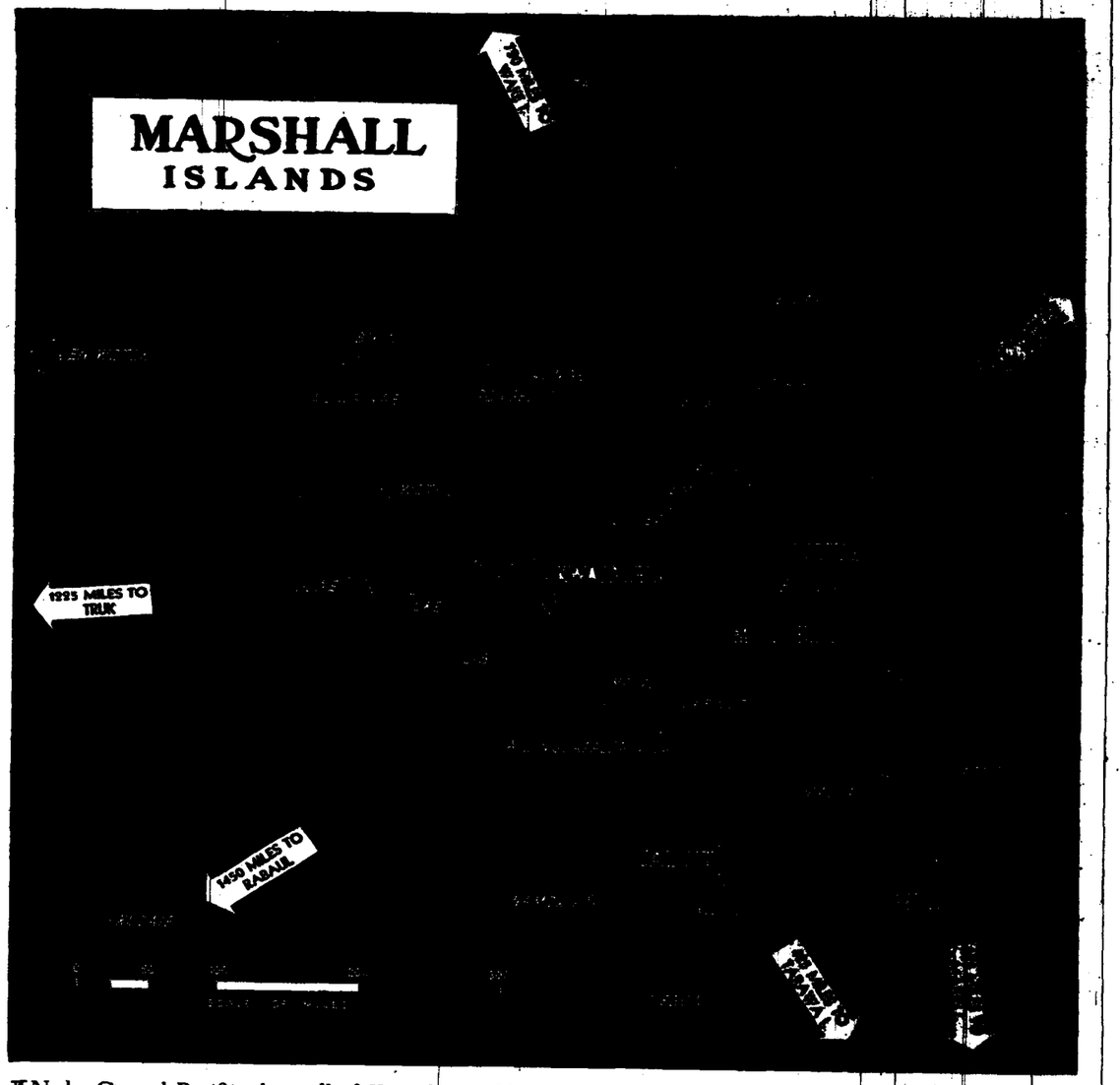


IN the Central Pacific, the atoll of Kwajalein is like a curving necklace of pearls. Its coral islands sparkle above a string of reefs enclosing a broad anchorage. It lies near the center of the Marshall Islands, which were in Japanese hands from the end of the first World War until they were taken by U. S. Army and Marine forces during the first week in February. Previously, those islands were links in the outer defenses of Japan. They lengthened Allied supply routes, limited military operations, and formed a buffer for the Japanese base at Truk.

Prior to the invasion, Kwajalein and other Marshall Islands were bombed day after day for a month. Then beginning January 29th an intense two-day bombardment preceded the arrival of the surface forces, which poured another 14,500 tons of Naval steel on the atoll. It was reported that flames were so intense the invasion forces experienced difficulties in landing. The bombardment also put out of commission Jap air bases on other atolls.

Tactical surprise was complete. It appears likely that the Japs anticipated attack upon their more eastern and better known and perhaps more strongly held island bases, such as Jaluit and Wotje—which were by-passed.

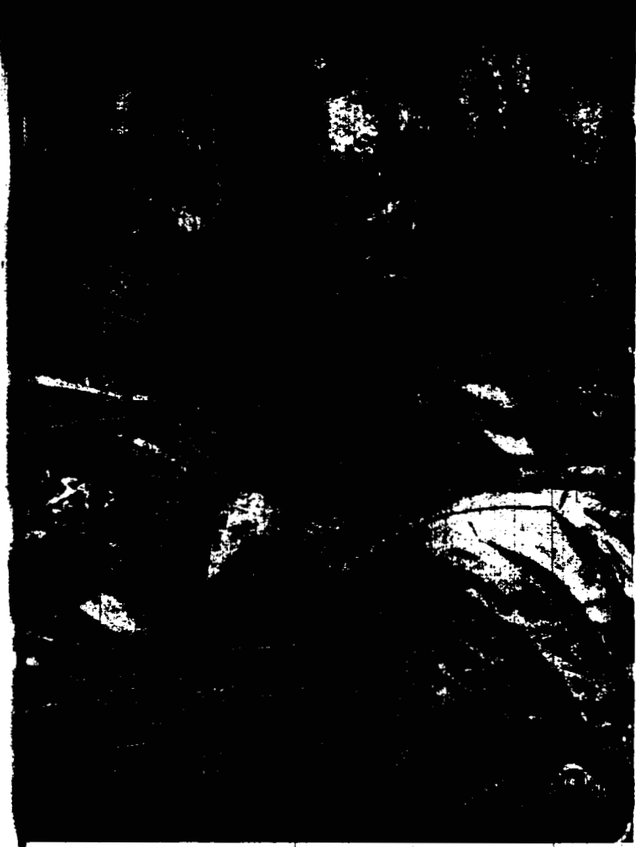
By February 6th eighteen of the islands had been conquered, and the Battle of Kwajalein Atoll was over. The U. S. lost 286 killed against 8,122 Japs dead.

During the whole engagement, the Japanese fleet did not appear.

The rehabilitation of air fields on Kwajalein will help to keep the Jap bases useless. The effective isolation of Jaluit and Wotje is indicated.

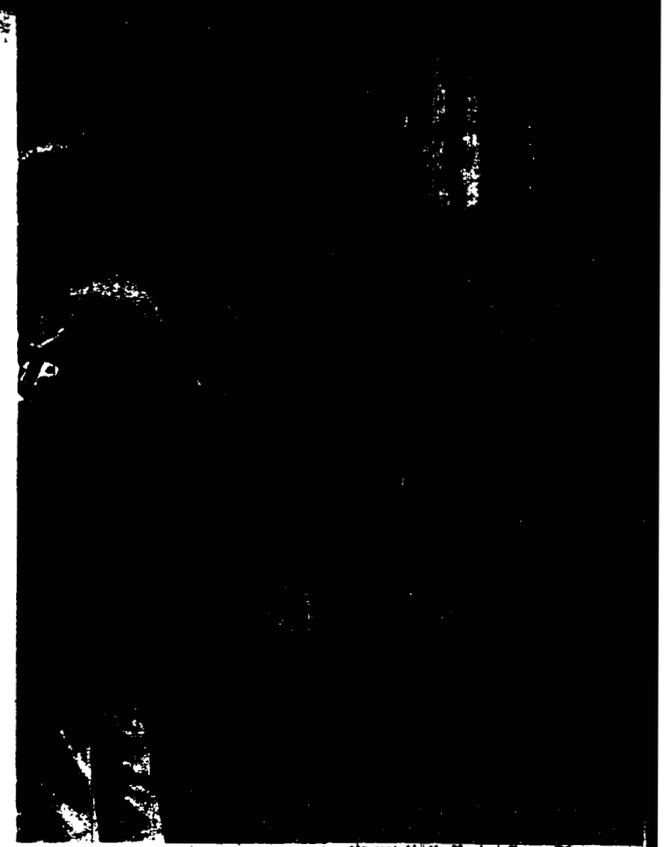
Official U. S. Marine Corps Photo

Japs: Thirty-six hours after Namur Island, Kwajalein Atoll, Marshall Islands, was "secured" this supposedly silenced Jap blockhouse blew up, bursting a steel door. A Jap soldier stumbled through and three more were found inside. There had been 20 Japs inside the blockhouse before the explosion. The building was roped off and specially trained bomb disposal men assigned to the job of checking a large supply of aerial bombs said, by the prisoners, to be stored inside.



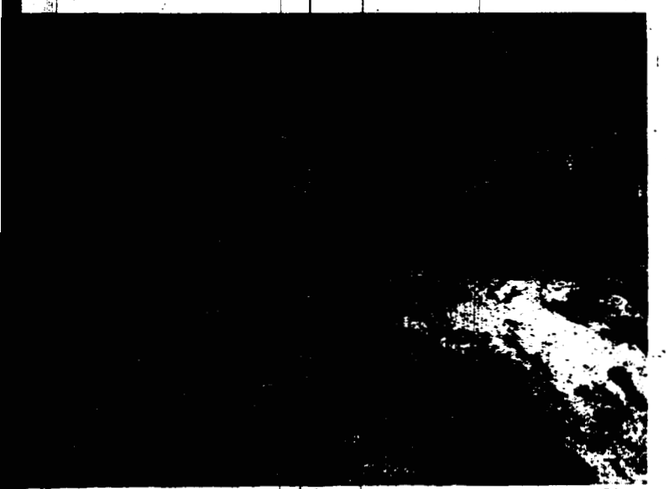
Press Assn.

This Japanese dual-purpose antiaircraft gun was wrecked by shells of the American Navy pumped onto the beach at Cape Gloucester, New Britain, as a preliminary to invasion of the island.



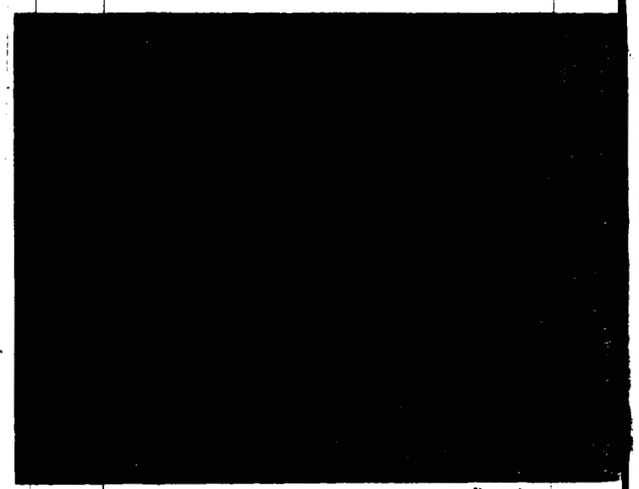
Official U. S. Marine Corps Photo

Subdued and stolid, these Jap prisoners were photographed standing near their enclosure on Guadalcanal. More prisoners have been taken in recent fighting than in earlier action on Guadalcanal.



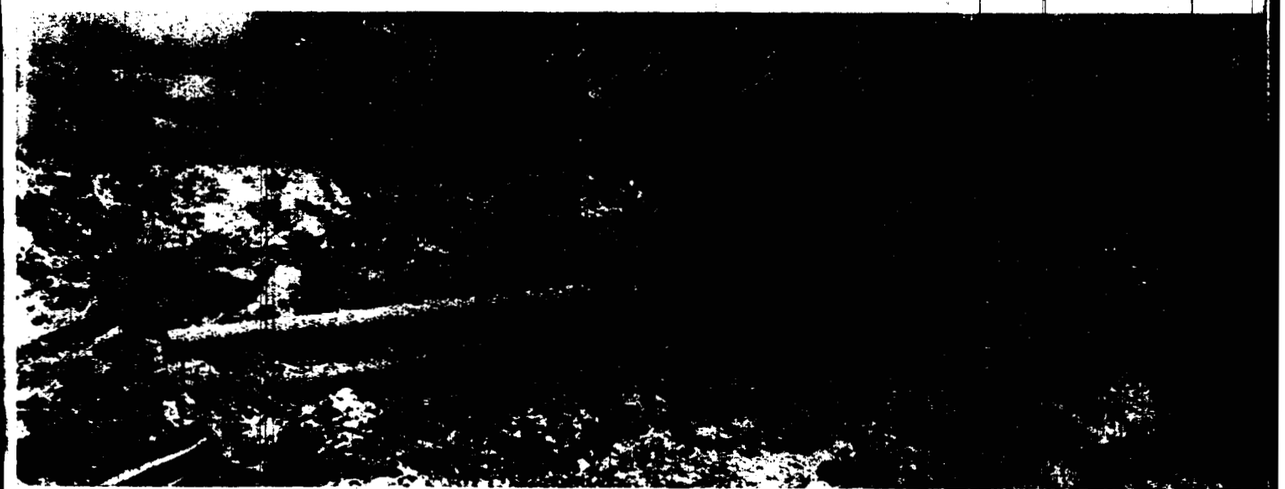
Official U. S. Marine Corps Photo

Dead Japanese soldiers strew the sands of Tarawa as Marines continued their "mopping-up" operations.



Press Assn.

After the struggle at Cape Gloucester, New Britain, troops examine wrecked Japanese equipment. A wrecked truck at left; dual purpose antiaircraft gun at right.



Press Assn.

This large Jap gun lies blasted among the rubble of dirt and concrete, victim of the terrific U. S. bombardment of Enubuj Island in the Kwajalein Atoll in the Marshalls.

FIRST YANKS ON JAP SOIL

7th Reconnaissance Troop takes islands in the Marshalls and plant first U. S. flag on Nip soil.

by Sergeant Merle Miller

AT 0430 on D-Day of the attack on Kwajalein Atoll in the Marshalls, Captain Paul B. (Red) Gritta and 84 of his men eased their rubber boats up to the low, dark shadow that was the beach of Gehk Island. They were the first American troops to set foot on Japanese soil in this war.

They landed on Gehk by mistake; they had been scheduled to hit Ninni Island, another pin-point three-quarters of a mile across a coral reef to the south. But in the darkness most of the islets of this atoll were mistaken for black-capped waves, and Captain Gritta decided that, as long as they were on Gehk, they might as well clean out any stray Japs before moving on.

In four days of fighting, the 7th Reconnaissance Troop (Mecz.) of the 7th Infantry Division took Gehk not once, but twice, and wiped up the three other islands of Gea, Ninni and Bigej.

When they returned to the converted destroyer that served as their troop carrier at the end of the Kwajalein operation, they had killed 106 Japs, not counting probables, and taken three prisoners. Only two of their men were killed and 22 were wounded, none of them seriously.

Gehk

The first part of the operation was easy. Their landing on the south beach of Gehk was unopposed, and they lay in the sand without even digging foxholes, just talking in whispers and waiting. As the sky grew light, just before sunrise, they started up the island, spread out like a fan, each man three feet from the next GI.

They had advanced 600 yards, halfway up the island, before Jap rifle fire started to sing out over their heads from a clump of thick undergrowth about 10 yards ahead. They threw themselves on the ground and opened up. . . .

After that the clump of bushes was silent, but the entire American line paused for at least five minutes to throw in a few hand grenades and a bazooka blast or two, and to pepper the area with rifle fire. When they moved into the bushes, they found four dead Japs and two others still alive, lying a few feet away. The two Japs were evacuated.

By 1000 the job on Gehk was finished, and Captain Gritta's men trekked back cautiously to their landing beach, certain that there were no live Japs left on the island. In the lagoon they saw a large Jap tug, silent and apparently deserted, and next to it a small barge. Then Captain Gritta thought he saw a man move on the deck of the tug, but he couldn't be sure and it did not seem worth while finding out; he and his men had been ordered to proceed to Ninni.

But there was still time for one small formality. Captain Gritta . . . and Sergeant Martin stopped the men on the beach and raised the Stars and Stripes on a pole the Japs had thoughtfully rigged up on top of a ragged coconut palm. It was the first American flag to be flown in the Marshalls.

Ninni

Then they climbed back into their rubber boats, paddled across the reef and made their second beachhead of the morning at Ninni. There were no Japs on this island at all, but the men discovered a freshly chopped pile of wood on the beach, a few boxes of small crisp Jap crackers and a confusion of fresh footprints on the faint, irregular path leading to a deserted lighthouse.

By 1600 a flag was flying on Ninni, and there was nothing more to do that night except bivouac on the beach. The next morning Captain Gritta and his men returned to their destroyer, where they had a hot meal, a bath and a shave, and cleaned their weapons. "It was a gentlemanly way to fight a war," said a squad leader.

Gea

Meanwhile, on Gea Island, 56 men of the reconnaissance troop under 1st Lieutenant Emmett L. Timer had landed at 0530 on D-Day.

Tiner's men made their beachhead just south of the pass leading into the lagoon. A few yards to the north, the lieutenant saw four Jap buildings—small frame structures with thatched roofs. At dawn a search of the

*Reprinted by courtesy of *Yank*.

buildings disclosed they were deserted and had been used for storage.

Then the men started up the island, two platoons abreast. The first platoon advanced up the seaward side, along the edge of the thick coconut grove that ran through the 400-yard square islet. The second platoon pushed through the grove on a thin center trail. As expected, they encountered no signs of Japs for about 20 minutes.

Suddenly, a scout saw two close-set eyes staring at him through the underbrush. He fired his M1 twice, and a wounded pig ran squealing down the beach.

Not more than two minutes later Lieutenant Tiner, a few yards in advance, heard someone shout his name and Private Toomey leaped ahead toward the door of a one-story house. Just inside the door he could see a Jap marine lying on a straw mat, asleep or dead. Toomey fired twice and the marine was unquestionably dead.

Lieutenant Tiner and a rifle squad searched the house; they found no other Japs but discovered the remnants of stale food in the kitchen.

When they had scoured the seaward side and the center of Gea, the two platoons circled back on the lagoon beach. Corporal Riccio, a squad leader about 10 yards in front of his men, searched the thick tangles of undergrowth. Suddenly he shouted, "There they are, men—look out!" and threw two grenades. Both missed their mark, but his warning had saved the lives of the two scouts directly behind him.

Private Johnson (one of the scouts) threw himself on the ground and plugged one of the Japs in the underbrush. Then Sergeant Brink rushed ahead with his tommy gun and motioned to two privates to follow him with their two heavy machine guns.

They placed their guns in the fork of a tree and commenced firing. Brink "spotted" the Japs for them, and then, as they fired each burst, Brink would jump under the machine guns, fire his tommy and throw grenades. Once, just as he was about to hurl a grenade, he looked up at the foliage of a palm not five feet away. There in the shadow was a Jap drawing a bead on him with his .25-caliber. Brink let the Jap have an entire 30-round clip.

The whole battle in the underbrush lasted no more than 10 minutes, but when it was ended, 19 Japs were dead. After that there was no more resistance on Gea. It was only 1000.

Gehk Again

Just following afternoon chow, soon after Lieutenant Tiner and his men returned to the ship, there was a report from the defense troops on Gehk that enemy small arms fire had been observed as they moved through on their way to Ninni. Two of their men had been killed.

So at 1700 1st Lieutenant Glenn P. Carr and his second platoon made the 7th Recon's second landing on Gehk, after a destroyer had peppered the beach area. They dug in for the night and heard only occasional distant rifle fire.

In the morning, the Japs kept quiet as the troops started up the island—about half of them making their second push up this same strip. As in the first landing, there was no enemy fire, and none came until they had gone almost 800 yards. Then they heard an indescribably eerie yell.

Almost at once the Japs, hidden in small freshly dug holes covered with undergrowth, let loose with everything they had. That was plenty—at least one Lewis gun, 60mm mortar shells thrown as grenades, regular hand grenades and rifle fire.

Corporal Krueger fired three bazooka shots into the Jap position. Meanwhile machine guns had moved up on every side and were firing at point-blank range. Lieutenant Carr and Private Larkin, a scout, crawled under the fire to hurl grenades. Carr threw five and Larkin three.

In 45 minutes—the hottest of the entire operation—the opposition had been wiped out. Sixty-five Jap sailors and marines were dead.

Before leaving the island, Captain Gritta and the first platoon boarded the Jap tug still in the lagoon, now flying a large ensign from its mast. There were 12 Jap dead below decks, all of them killed by the destroyer fire that had preceded the landing of Carr's platoon. . . .

For the second time the 7th Reconnaissance Troop was ready for a bath, a shave and a rest.

Bigej

The outfit took its final island, Bigej, across the lagoon from the others, on D-plus-four. Bigej was a Jap supply and storage depot, and little opposition was ex-

Men of the 7th Reconnaissance Troop display the Jap flag which they replaced with the Stars and Stripes.

pected. As soon as the troops had shoved their rubber boats out to sea again, they moved into the edges of the bushes and waited for daybreak before starting forward.

Sergeant Graham, Sergeant Martin and Toomey made up the advance party. It was Toomey who saw the pillbox first—a good-sized one, deep, with concrete reinforcements backing up the concrete logs. "It looked like a potato cellar with a ventilator," Toomey said. Herrara, crawling up to the entrance, threw two grenades.

As the other men drew nearer, a Jap officer charged out of the door, waving his saber in the air. That was as far as he got; when his body was examined it was found to contain 52 slugs.

Lieutenant Tiner and Sergeant Rafford tried dropping grenades down the ventilator, but the grenades were too large. Then Tiner tied three concussion grenades to a stick, pulled the pin and pushed them down with the stick. But they wouldn't go either, and Tiner ran like hell—not enough to avoid a slight side wound.

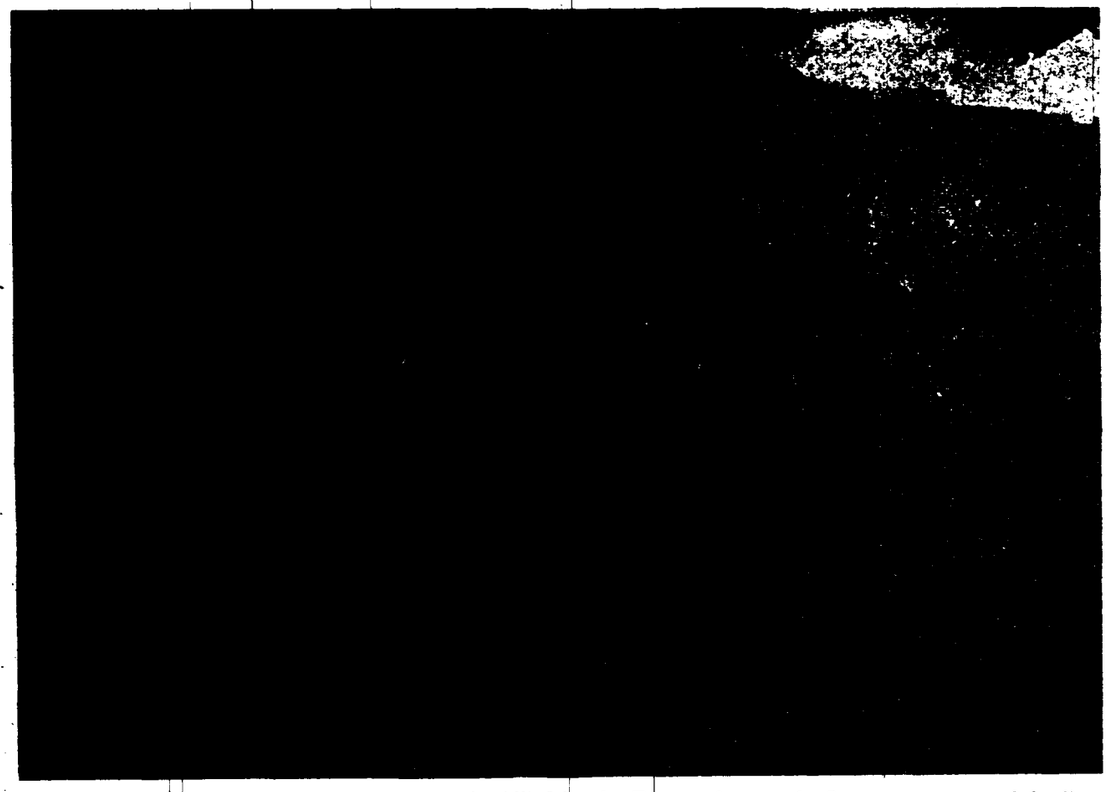
The lieutenant and Rafford could hear shooting inside; they thought the Japs might be committing suicide, but they couldn't be sure, so they started a fire in the entrance. It burned slowly at first but soon caught on. No one knows how many Japs died inside.

Up ahead, Graham, Toomey and Martin spotted a single line of Japs at the opposite side of a small clearing in the palm grove. Martin counted 15; the closest was hardly 10 yards away and walking toward him. Sergeant Pettey and Private Flaa moved up with their machine gun and opened fire.

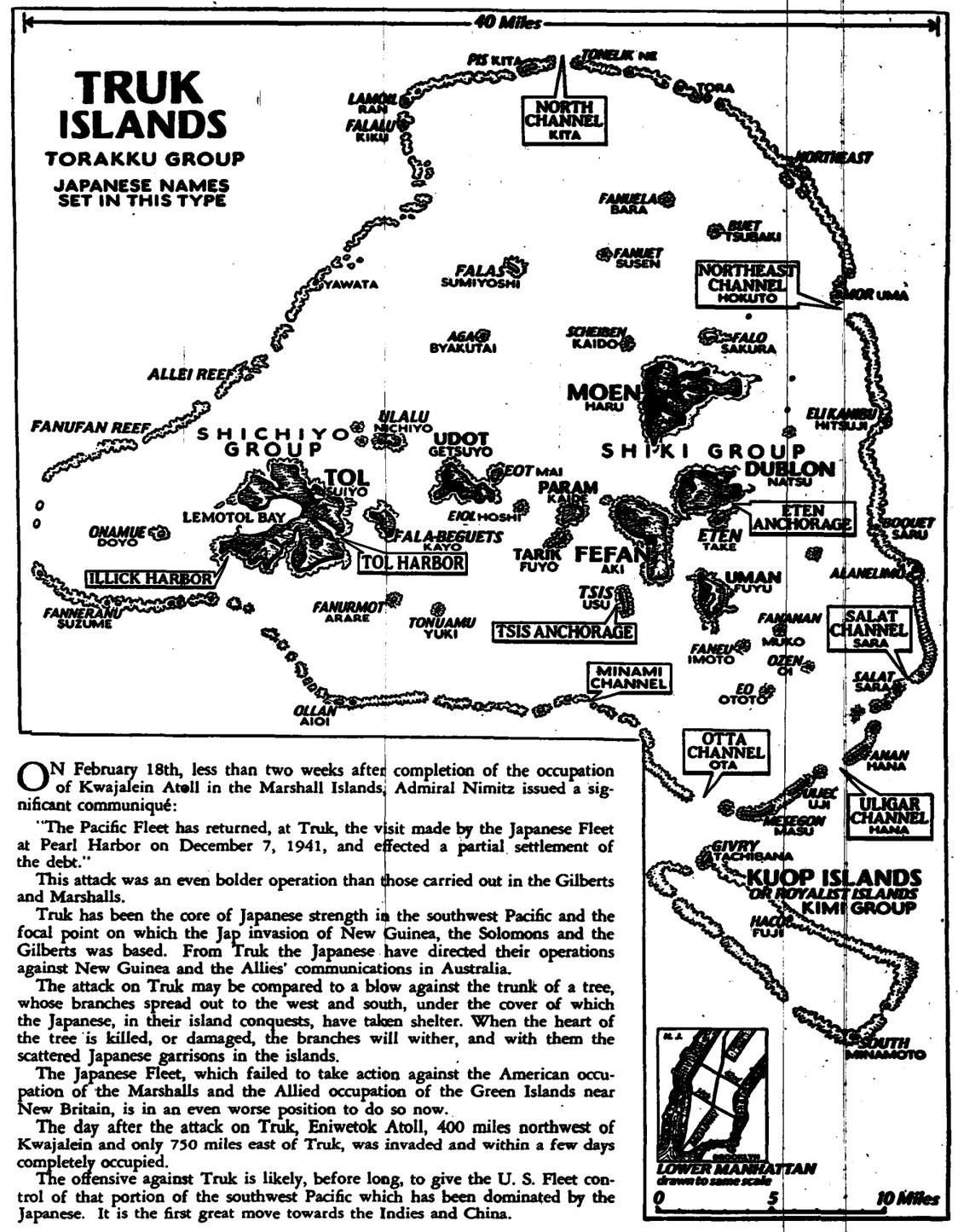
Under cover of the fire, Graham and Toomey edged forward. Not four feet in front of him Toomey saw a Jap light machine gun. He could see that the Jap who had been manning it was dead now, with a bullet hole in his head. He crawled up and grabbed the gun. It was jammed.

Toomey cleared the jam, fiddled with the gun a minute or two to see how it worked and then ran off a sharp burst. In all he fired 25 rounds with the Jap gun and killed four Japs.

By that time medium tanks were on their way in, and infantry troops were moving up. For the first time in the Kwajalein operation, the 7th Reconnaissance Troop was brought to the rear. Its job was done.



Zone 1 on the map embraces the area now back in Allied hands; Zone 2, the area the Japs are at present defending; Zone 3, the central defense area set up by the Jap military, its line anchored on vital Truk, and Zone 4, the inner area protecting the Japanese islands.



ON February 18th, less than two weeks after completion of the occupation of Kwajalein Atoll in the Marshall Islands, Admiral Nimitz issued a significant communiqué:

"The Pacific Fleet has returned, at Truk, the visit made by the Japanese Fleet at Pearl Harbor on December 7, 1941, and effected a partial settlement of the debt."

This attack was an even bolder operation than those carried out in the Gilberts and Marshalls.

Truk has been the core of Japanese strength in the southwest Pacific and the focal point on which the Jap invasion of New Guinea, the Solomons and the Gilberts was based. From Truk the Japanese have directed their operations against New Guinea and the Allies' communications in Australia.

The attack on Truk may be compared to a blow against the trunk of a tree, whose branches spread out to the west and south, under the cover of which the Japanese, in their island conquests, have taken shelter. When the heart of the tree is killed, or damaged, the branches will wither, and with them the scattered Japanese garrisons in the islands.

The Japanese Fleet, which failed to take action against the American occupation of the Marshalls and the Allied occupation of the Green Islands near New Britain, is in an even worse position to do so now.

The day after the attack on Truk, Eniwetok Atoll, 400 miles northwest of Kwajalein and only 750 miles east of Truk, was invaded and within a few days completely occupied.

The offensive against Truk is likely, before long, to give the U. S. Fleet control of that portion of the southwest Pacific which has been dominated by the Japanese. It is the first great move towards the Indies and China.

RIGHT—General Stilwell permitted ten minutes rest during each hour of the march, which averaged between 15 and 22 miles per day. The group is shown resting during one of these periods.

BELOW—General Stilwell's party reaches the Chindwin River and walks across the long stretch of sand leading to the river's edge.

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The Fifth and Sixth Chinese Armies in Burma

The Chinese were very chagrined that they had been unable to get to Hong Kong fast enough to help defend the British, and were determined to participate in the defense of Burma without counting any cost in men or money. Two of China's best armies, the Fifth and Sixth, were dispatched from the defense of the vital Burma Road down to the Burmese border.

Not until the main Burmese port of Rangoon had fallen, that is to say, not until the Japanese had opened up a free line of communications into Burma and had the situation well in hand, did the British decide to let the Chinese help them after all. It was then too late, but the Fifth and Sixth Route Armies moved into Burma and stayed there to the last man. Only the two replacement regiments in China remained of a fine, well-equipped fighting force. The army and divisional commanders and their staffs were definitely lost, together with most of the equipment. This caused bitter disappointment.

Survivors of the Fifth and Sixth Armies, instead of straggling back to China, remain active in guerrilla warfare in Burma. They are abetted if not aided by the Burmese, who are not notable fighters and may have shown little grief at the passing of English rule, but who prefer the honesty of Chinese regular army troops to the rapacity and lawlessness of Japanese soldiers.

—"Hong Kong," *The Tank* (British).

OUT OF BURMA WITH STILWELL—1942

by

Major J. V. Davidson-Houston, M.B.E., R.E.

AFTER the fall of Rangoon, Chiang Kai-shek sent his Fifth and Sixth Armies into Burma in order to operate on the left flank of the Burma Corps and to cover the famous road which was the only remaining land link between China and her allies. Each army consisted of three divisions, but a brief description is necessary in order to avoid giving a false idea of their strength. To begin with, the Chinese in Burma had no air component of their own, but relied on the R.A.F. for air co-operation. The divisions were weak in artillery. The heavier supporting weapons consisted mainly of mortars, with a rifle strength that varied from 2,000 to 3,000 per division. The proportion of light machine guns to rifles approximated British establishments. The Chinese Fifth Army comprised some of General Chiang's best trained and equipped troops, and was provided with a high proportion of motor transport; its rôle was to oppose the Japanese advancing north against the line of road Mandalay-Lashio. The Sixth Army was intended to cover the Chinese left and fulfil a primarily defensive rôle in the Shan hills opposite the Siamese frontier, where communications were poor and where a Japanese attack was not, unfortunately, expected. The Sixth Army was consequently inferior to the Fifth in the quality both of its personnel and equipment, and the whole of the Chinese expeditionary force was hardly equal to a single division in the modern sense.

Lieutenant-General Stilwell, Chief of the U.S. Military Mission to China and commander of American forces in that country and in India, was 59 years of age and had previously served as Military Attaché in Peking. On account of his military qualifications and his knowledge of the language, he had been selected by Chiang Kai-shek as adviser.

General Stilwell's position, and indeed the entire system of command, was somewhat nebulous. It was at first understood that Stilwell had been appointed commander-in-chief of the Chinese Expeditionary Force, acting under the orders of General Alexander who was in supreme command of the Burma theater. The Chinese General Lo Cho-ying, however, was subsequently designated C.-in-C., with Stilwell as chief military adviser. General Lo, theoretically subordinate to the British commander-in-chief, was able to communicate direct with Chiang Kai-shek, who had the last word as to the employment of the Chinese troops. The formulation and execution of any operational plans were thus liable to difficulties and delays.

In order to carry out his task, General Stilwell proceeded to Burma with an advanced echelon of his Mission, and remained throughout in close touch with the Chinese G.H.Q. and with General Alexander.

On 20 April 1942, I flew from Chungking to Lashio and made contact with General Stilwell's transportation representatives at that railhead. Matériel was still being forwarded to China through Lashio and along the Burma Road, but the Rangoon terminus of this route had been lost and communications across the frontier were liable to interference from the air. The aircraft in which I travelled had perforce to fly low among the mountains to reduce the risk of hostile observation. It was at Lashio that I first encountered men of the Chinese Expeditionary Force, a detachment of line-of-communication troops, which added one more ingredient to the international mixture already existing in the cantonment. It was here, moreover, that I began to experience that uncomfortable sensation of operating in a country where the bulk of the population was apathetic, if not actually unfriendly. The outbreak of fire in a large wood-yard on the evening of my arrival was generally attributed to the fifth column.

By their policy of consistently bombing the native quarter of towns occupied by our forces, the Japanese succeeded in depriving us of practically all local labor and civilian assistance. In a tropical climate this added greatly to the difficulties alike of staffs, services and fighting troops.

It was also evident that the enemy was possessed of means of obtaining information which were denied to ourselves and which we were unable to deny him. This was partly due to his growing air superiority and partly to the thoroughness with which his Intelligence and subversive agencies had permeated the country over a number of years.

I left Lashio on the 21st in a car belonging to the U.S. Mission, and reached Maymyo the same evening. There I found G.H.Q. Burma accommodated in huts in the cantonment, but preparations were being made to move them back to Shwebo, on the Mandalay-Myitkyina railway, and most of the administrative offices had already gone. General Stilwell and his staff had established themselves in the evacuated buildings of an American Christian mission, but on the day of my arrival the general was at the Advanced Headquarters in the village of Kyaukse, where I followed on the 24th.

Next morning a conference took place there between Generals Alexander, Lo Cho-ying and Stilwell, assisted by English-speaking Chinese officers and Chinese-speaking members of the American Mission. The differences in language and mentality, inevitable among Allies, were sufficiently pronounced in this Far Eastern theater to complicate and protract the conference. Resort was had to the technique of a preliminary exchange of views between Stilwell and the British C.-in-C., fol-

Veteran forces of China's armies poured into Burma to help resist the invader.

Rawson

*Courtesy, *Journal Royal United Services Institute*, London.

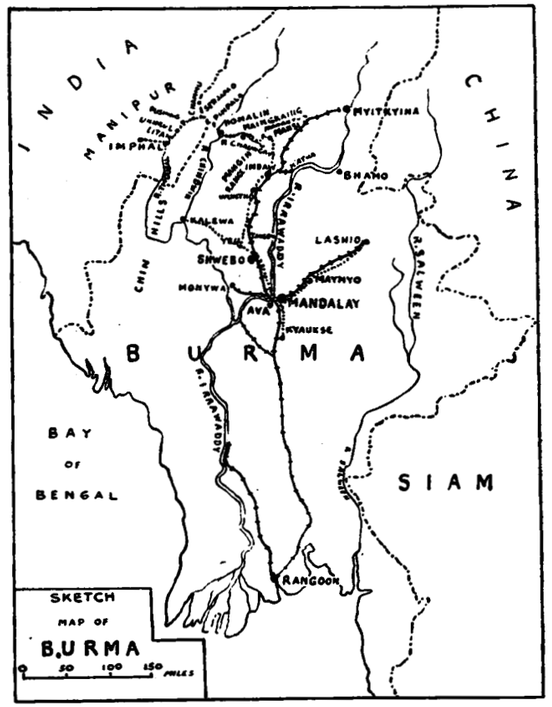
lowed by the presentation of their agreed conclusions to General Lo. The outcome of this meeting was the decision to execute a general withdrawal to a line running roughly east and west covering the bridge over the Irrawaddy near Mandalay. This involved a jump long enough (about 60 miles) to enable our forces, and especially the exhausted Burma Corps, to disengage and reorganize the defense.

News of this conference had probably reached the enemy through the usual channels, for Kyaukse was bombed shortly after its conclusion, fortunately without damage to Advanced Headquarters. Orders were immediately issued for the withdrawal, and at 4 A.M. the following morning I left Maymyo for Shwebo with the bulk of the American Mission. Passing Mandalay in darkness, the column of cars and lorries turned north over the Ava bridge and joined the main column of troops and transport crossing at this point to the north bank of the Irrawaddy. Unluckily the great steel road-rail bridge at Ava was the only available route over the river, and presented a dangerous defile which it was intended to pass before daylight. The structure had been prepared for demolition, but it was not possible to destroy the abutments owing to lack of engineer resources. A rearguard mainly composed of the 38th Chinese Division had been left on the south side, and it was therefore important that the bridge should remain intact until the whole of the force had crossed. Away to the right the water was lit up by the dying flames of Mandalay, and the sky above them was already growing lighter with the approaching dawn. The crossing was heavily congested with vehicles, and with men so exhausted that many of them seemed to be moving about in their sleep. It was consequently broad daylight before the troops were across, and the absence of air attack can only be ascribed to good fortune, since by this time the Japanese had almost complete air superiority.

At 7:30 A.M. we reached Shwebo, where G.H.Q. and Chinese Headquarters had established themselves in the numerous huts and bungalows which were well dispersed outside the town.

The Japanese soon applied their technique of scaring away the civil population and embarrassing the troops. The native quarter was set on fire and many of the roads through the town blocked by burning trees or buildings; the Burmese staff deserted the civil hospital and the unfortunate casualties were left without any treatment save what could be given them by military personnel and the ladies of the Headquarters cipher office. It was now plain that the Burma Corps, deprived by lack of communications both of supplies and reinforcements, would have to withdraw into India, and the evacuation by air of non-essential persons began. The few aircraft available for this purpose arrived and took off at uncertain intervals, usually preceded or followed by an air attack on the landing ground; the two operations never seemed to coincide.

On April 27th eight enemy aircraft bombed the area



occupied by one of the G.H.Q. Branches, and a few military casualties were caused. It had not been possible to arrange for air warnings, defensive air action or ground defense, although shelter trenches had been dug in some places. On the same day thirteen Japanese fighters machine gunned the town ineffectively from a height of 3,000 feet. On the 29th, G.H.Q. was attacked by twenty-one bombers with negligible effect. Next day a single reconnaissance machine, emboldened by the absence of opposition, flew low over the lines and was received with a burst of fire from some light AA guns which had just been brought up.

This display of resistance, however, was a swan song so far as Shwebo was concerned, for by the evening of the 30th G.H.Q. had moved westward to Ye-u in order to keep in touch with the two exhausted divisions of the Burma Corps which were retiring in the general direction of Kalewa. This town, situated on the west bank of the Chindwin, was the terminus of a motorable road originally conceived as an overland link with India but completed only just in time to facilitate the withdrawal of forces from Burma.

Chinese Headquarters were to retire up the railway towards Myitkyina, so that they could remain in touch both with the Chinese divisions and with China itself. Owing to the insufficiency of rolling stock and railway personnel, there was considerable congestion on the line, and accidents often occurred due to the breakdown of the signal system. An unsatisfactory feature

was the existence of divided control of rail movement. Although this was in theory coördinated by the Movement Control Staff of G.H.Q. acting through its local representatives and the Transportation Directorate, the transportation chief of the Chinese forces gradually assumed control of the railway and dealt direct with the civil management. This was inevitable, as the British and Chinese routes diverged, but the difference between their ideas on rail movements frequently led to misunderstanding and difficulties.

The combatant echelon of the Stilwell Mission, wishing to retain its mobility as long as possible, moved off in its motor transport; but as there was no recognized motor road to Myitkyina, it went first to General Alexander to Ye-u, hoping to travel parellel with the railway by any passable routes that might be found. Major Dykes and I secured a goods van on General Lo's train, which was due to leave Shwebo on the night of April 30th, but a collision of two other trains just north of the station delayed our departure for the whole of the following day. During this time a uniformed gang composed of enlisted Chinese railway employees succeeded in throwing the locomotives off the line, repairing the track, and clearing it for traffic.

The enemy were, as usual, well informed of our movements, for at 10 A.M. on 1st May twenty-seven aircraft, kept at a moderate height by light AA fire, passed over Shwebo and dropped bombs on Ye-u. On the same day the 38th Chinese Division began to retire across the Irrawaddy, and its commander arrived at Shwebo in the evening to secure what rolling stock he could. The Ava bridge was successfully demolished on the night of May 1st, but the Japanese attempted to turn the western flank by attacking at Monywa on the Chindwin and, although they were on that occasion repulsed, the approach of stronger enemy forces left the Burma Corps no option but to make for Kalewa.

Lo Cho-ying's train eventually left at 3 A.M. on May 2nd. Movement was retarded by the absence of signals and the necessity for caution on sections of line recently relaid over bomb craters. On reaching Tangon the alarm was given by an air sentry on the train, which was halted and evacuated. Half a dozen bombs fell several hundred yards from the track, and our progress was resumed. Constant alarms began to react on morale, and the train was frequently stopped and deserted for no apparent reason. At many points we passed heaps of abandoned equipment and dumps destroyed by air action, testifying to the impossibility of moving matériel with the inadequate means at our disposal.

On the day after our departure we reached Wuntho, where we remained until evening. The place was a village of wooden houses surrounded by low tree-covered hills, and here contact was made between Lo Cho-ying and General Stilwell, who had succeeded in getting through with his trucks and cars. Having passed out of the Dry Belt into wooded country, our train continued its journey in thick forest, while the Americans proceeded by motor transport. The discipline maintained by the Chinese commander on the train was sufficiently strict to result in the summary execution by shooting of several soldiers, who were quietly taken into thickets beside the line and disposed of.

The Anglo-Indian engine drivers were deserving of the highest praise. Piloting their trains for long, uncertain hours under conditions of discomfort and personal danger, without signals or knowledge of traffic conditions ahead of them, they were often urged by the Chinese military to do the impossible. It is small wonder that some of them did not survive the campaign.

On the afternoon of the 4th we reached Indaw, where a collection of Government bungalows stood in a large clearing, with low hills and jungle on either side. At this point we regained touch with the Stilwell Mission and received reports which added considerably to the difficulties of command and of movement. The Japanese were advancing into Upper Burma by every available road, and one of their formations had succeeded in breaking through the Chinese Sixth Army. They had captured the Lashio railhead, and menaced not only our left flank but the riverhead at Bhamo and all land communication between Burma and China. Moreover, further northward, movement by rail had come to a standstill, owing to an accident which threatened to block the track indefinitely.

It was fortunate that the enemy air forces failed to take advantage of the defenseless target presented to them at Indaw, but it was evident that the two weak Chinese divisions retiring behind us up the line would be unable to organize another defensive position, and General Lo decided to withdraw into India with all the troops he could muster.

General Stilwell now considered that his only course was to make for India as soon as possible and to return to Chungking eventually by air. On the afternoon of May 5th, therefore, the U. S. Mission set off in its motor transport along a rough road which led northwards to Mansi. In addition to the American officers and enlisted

Soldiers and Burmese nurses crossed the Chindwin River in dugouts.

Acme

men, the column was joined by several small parties of a heterogeneous nature, and its final composition was approximately as follows:

19 British, including personnel of G.H.Q., Anglo-Indian civilians, etc.
40 Americans, including General Stilwell and Major-General Sibert.
31 members of Major Segrave's and the Friends' ambulances, including a number of Burmese nurses.
12 Chinese officers and men, including Major-General Tseng, a liaison officer with the Mission.
15 mechanics and followers, including the Mission's Madrassi mess servants.

The party, travelling in seven lorries and twelve Jeeps, moved under cover of the tall forest trees and crossed a number of small rivers. The cars were able to negotiate most of these crossings by means of the existing wooden bridges, the heavier vehicles by fording. In the majority of cases the lorries experienced no difficulty, as the bottoms were usually firm and sandy, but when one of them stuck, a Jeep was used to pull it out. We overtook parties of Indian refugees, police, Frontier Force and officials, most of them moving on foot and endeavoring to live as far as possible on the country. General Lo and the 38th Chinese Division were marching by the same route behind us.

Climbing the Mangin Range, we reached Mansi on the following day, but local information revealed that there was no motorable route thence towards the frontier. The lorries were therefore abandoned. A minimum quantity of kit and a maximum of rations were piled on the jeeps and sent ten miles farther by a woodland path to Nanantun, on a tributary of the Chaunggyi. We camped outside the village and a final message was sent to New Delhi, by means of the portable wireless set, to the effect that the Stilwell Mission was making for India and would be out of touch with civilization until further notice. The wireless set was then broken up.

With the help of a missionary and a Burma forest officer who were travelling with the party, we hired sixty Shan porters and twelve mules and ponies. A few days' supply of rice was obtained, and tea, sugar and a reserve of tinned food were also carried. Practically every man had a pistol, rifle or Tommy-gun, together with his water-bottle and haversack; in addition it was possible to load a few blankets and extra kit upon the transport. The column had to be as mobile as possible in order to pass the Chindwin before the enemy, who had already attacked the Burma Corps at Monywa, could block our route by pushing up a small force by land or water.

Preceded by a native guide the column moved in single file along the bed of the Chaunggyi. At this time of year the river is shallow, with a sandy bottom. It winds between steep wooded slopes, and the path continually crosses and recrosses the stream. The weather was hot, but there was no shortage of pure water for drinking and bathing, and the American medical officers carried iodine tablets for sterilizing water-bottles. In spite of the fact that the daily ration comprised little more than 1 lb. of boiled rice, and that it was necessary to spend nearly every night in the open, the health of the party was good. Mosquitoes were not as numerous as in the monsoon season, and many of us had retained our mosquito nets. Only two cases of malaria occurred during the march, though of course others may have developed afterwards. There was one case of amœbic dysentery and two of heat-stroke, but the most generally troublesome afflictions were foot ailments and the attacks of leeches, which attached themselves to the legs while one passed through long grass or water. In spite of these conditions, however, every member of the party completed the journey alive.

The Burmese-speaking missionary was invaluable in dealing with the porters, who would not travel far from their homes and had to be changed frequently. Shans, little people whose load was only 40 lb., came with us as far as the Chindwin; beyond that we were accompanied by the more stalwart tribesmen of the Chin hills, who could carry 80 lb. without difficulty.

A Japanese reconnaissance aircraft passed over us on May 8th, but the cover provided by the jungle prevented our being discovered. Next day we left the river and cut across some low hills and a cultivated plain to Maingkaing, lower down the Chaunggyi. With the help of native experts we made rafts out of bamboo mats, provided with palm-leaf shelters which proved effective against both sun and rain. A small raft went ahead with the "advanced guard," while the remainder were carried on four long rafts, each formed of three smaller ones lashed together. Flowing between flat tree-lined banks, the river was here wide and shallow, and navigation was rendered difficult by shoals.

The day after leaving Maingkaing we were visited by a British bomber, which dropped supplies of tinned meat and cigarettes on the river bank. These were eagerly collected by ourselves, refugees and the local villagers, but the quantity that could be carried was of course limited by the meager facilities available.

Three days' poling down river brought us to Homalin, a large village and cantonment near the junction of the Chaunggyi and Chindwin, and on the 13th the whole party crossed the Chindwin in small native boats and dugouts; animals were swum across by their drivers. There was no interference from the enemy, who had been checked by the Burma Corps below the Kalewa crossing, and the column pushed on up the steep jungle-clad slopes that rose from the far bank.

From now on we were in the Chin Hills, a thickly wooded area with peaks rising to 10,000 feet, and several passes at 6,000. Some discomfort was caused by the beginning of the light rains which precede the monsoon, and which necessitated passing the relatively cold

nights in wet tropical clothing; the steep mountain tracks also tried the endurance of those who had become used to mechanical transport or office chairs. Our Shan porters were changed for Kuki, who throughout the day cheerfully climbed the hills by the steepest routes while carrying loads of 60 to 80 lbs.

Following a track through the hamlet of Pinpala, we were met on the 14th by the Assistant Political Agent of Manipur State, who had been sent to make contact with and assist the Stilwell Mission. Our march thereupon became progressively easier. Passing through the Naga country, we crossed a 6,500-foot ridge which separates Burma from India and followed the route Serjapao-Chammu-Pushing to the Manipur hill station of Ukhrul, garrisoned by a detachment of Gurkhas. On this section, grass huts had been built at daily stages for the reception of refugees, and were eagerly made use of by our party.

On May 19th the hamlet of Litan was reached. This place, situated on the east bank of the Thoubal, is connected with Ukhrul by a road fit for animal transport, but on the opposite side was the terminus of an earth motor-road to Imphal, the capital of Manipur. The monsoon, breaking on the day of our arrival, turned this road into a rutted strip of mud, so that the motor transport which had been sent to meet us on the following morning took six hours to cover the twenty-four miles to Imphal.

The lessons to be derived from the Burma campaign of 1942 can hardly be examined in detail within the compass of this personal narrative, but one fact emerges very strongly. Land communications between India and Burma were inadequate for the maintenance of our defensive forces in the latter country and, conversely, would not of themselves enable a strong Japanese force to invade India. The fall of Rangoon made our withdrawal inevitable, and the reoccupation or neutralization of Rangoon is an essential to reconquest.

Stilwell's Army Returns to Burma—1944

New Delhi, March 11, 1944 (AP).—Lieut. Gen. Joseph W. Stilwell, bubbling with enthusiasm, predicted today "the entire Hukwang Valley will soon be ours" as columns of tanks manned by Chinese and American soldiers cut a wide swath through Japanese ranks in that northern Burma sector and killed 500 to 700 of the enemy.

"The fight for Manigkwan and Wallawbrum is won, and only isolated mopping-up operations remain," General Stilwell said. "I believe we have killed 2000 Japanese in this operation alone, which should be good news in any language except Japanese.

"Military elements of two Chinese divisions, a unit of tanks, operated by Chinese and commanded by an American, and American combat troops worked smoothly together in the happy job of exterminating the common enemy.

"Although I have often been wrong, I am willing to hazard a guess that the entire Hukwang Valley will soon be ours."

Stilwell's press bulletin today was the first mention permissible that tanks had plowed into the bands of fleeing Japanese already badly upset by the sudden appearance of American soldiers far in their rear and opened the way to pour more supplies into China.

The tanks were accompanied by bulldozers which themselves carried machine guns so they could blaze away at the enemy even while chewing through the bamboo thickets.

Added to Stilwell's statement was a press note summary of the results of operations in the Hukwang Valley during the last few days.

"Of 2000 Japanese estimated to have been killed, 800 were credited to the American infantry force headed by Brigadier General Frank Merrill while a tank column under Colonel Rothwell H. Brown wiped out about 500 and the remaining 700 enemy dead were accounted for by the Chinese Twenty-second Division and the Thirty-eighth Division," it said.

Other fronts, meanwhile, are becoming increasingly active. A communiqué from Admiral Lord Louis Mountbatten's command said British troops had advanced on the coastal plain South of Maungdaw and into the foothills leading toward Akyab.

Our Chinese Ally in Burma

Below: An American-trained Chinese gun crew mans an antitank gun near the Northern Burma frontier.

Above: Using American weapons, this unit of Chinese mountain artillery trains for action in the difficult terrain of Northern Burma.

Below: Under a U. S. Army instructor, Chinese soldiers learn to pack and transport modern weapons. Note Phillips pack saddles.

Above: Using American jeeps, these Chinese troops move along a jungle road in the Naga Hills section of North Burma.

Right: An American trained Chinese Army infantryman prepares a junji pit—split bamboo—sharpened and stuck in the bottom of a pit, which is then covered over with natural camouflage—a ready trap for the Japanese in Jungle fighting. The scene is near the Northern Burma front.

Right: Given air cover by an American made P-40, Chinese Infantrymen, wearing American helmets, slog along an American built road in the China-Burma - India theater of operations.

The "Ace in the Hole"

There is no doubt that Marshal Stalin would make an excellent poker player. It cannot be denied that he holds good cards; in fact, he usually holds five aces—air, tanks, infantry, artillery, and cavalry.

Converting this idea to terms of military strategy, it is rapidly becoming apparent that every time Von Mannstein "calls" the hand, Stalin comes up with "aces back to back."

Stalin's fifth ace seems to have been his big force of cavalry—for the Nazis lose every time he turns it face up. That fifth ace may not be legitimate in a poker game, nor popular in all armies—but note who is winning the "pot"!

From Radio and Press—

Raymond G. Swing, March 13th:

Moscow dispatches said that the entire German position in the Ukraine is crumbling, and that the Nazis in withdrawing are abandoning arms and equipment in the celebrated Ukrainian mud. Why mud should turn out to be a help to the Russians is explained by a quite old-fashioned word—cavalry. The German army, not old-fashioned, is mud-bound. The Russians have not given up cavalry, and many of their victories are to be attributed to the reconnaissance of cavalry and to cavalry raids deep in the enemy's rear. That must not detract from the valor of the Russian infantry, which has shown remarkable stamina in trudging through mud on foot, often carrying machine guns, or to the aid of the Russian guerillas behind the German lines. *But cavalry, using the cover of woodlands, has been an advantage that the Germans have not been able to match.*

Drew Pearson, March 12th:

Once again I and the military experts were wrong about Russia. Last week I said that the Red Army would have to slow up because of mud. However, they are ploughing ahead in a miracle advance in the Ukraine—right through the mud—Cossack cavalry taking the place of tanks. This Ukrainian advance is one of the most important of the war, because it is getting down close to the Roumanian border. It was revolution in the Balkans that ended the last war. You can expect revolution in Roumania and Bulgaria any minute.

Colonel V. Krautsov in Moscow:

On other sectors of the front the cavalry has found extensive application. Much more mobile under given conditions than the infantry, it enters a breach after the tanks, consolidates their success and holds

from *The Louisville Times*

Making a Mudder of him.

the captured terrain until the arrival of advanced infantry columns—as was the case in the encirclement of the Korsun-Shevchenkovsky grouping of Germans, and in the Rovno direction.

Stalin's Wardrobe for a Mild Winter

In Russia, where the temperature frequently reaches 30 to 40 degrees below zero (centigrade) and snowstorms last for days, winter operations are never easy to conduct. The Red Army, however, has been able to adapt its soldiers and matériel to these conditions. This year the late and milder winter, with its accompanying rain, brought the Russian Army unanticipated difficulties even more serious.

A large portion of the fighting in this winter's campaign has been in swampy and wooded terrain, with probably only one-third of the front in open country.

With the temperature rarely dropping under five degrees below zero (centigrade) and alternating with frequent thaws, the rivers and lakes have been covered with only a thin layer of ice. When hidden by snow, this has become at every step a trap for the advancing Russian units. Even more dangerous have been the snow-covered swamps, where an incautious step away from the road may send a man crashing through a thin layer of ice into quicksand. Water from melting snows

has saturated the earth; the roads, particularly in the lowlands, have become a gummy mass of mud and snow in which carts and motor vehicles have been mired.

Despite all of these difficulties of terrain and weather, the Red Army has continued its offensive and moved steadily westward.

How has the Red Army been able to adapt its operations to these unexpected conditions? The answer to that question goes back some fifteen or twenty years. General Gorodovakov explained it in detail in his exclusive article in THE CAVALRY JOURNAL of July-August, 1942. Suffice it is to say briefly that when the Blitzkrieg was "tops" in the world's military fashions, the Soviet strategists continued to maintain a balanced wardrobe suitable for wear under all kinds and conditions of weather and terrain. More than that, they proved quite definitely that the Blitzkrieg alone has become outmoded. In all wars, weather, and its effect on terrain, has always taken a big toll in time consumed and time has ever been a vital factor in battle. In many theaters of war, weather has slowed up or completely stopped a campaign, but recent reports indicate that Stalin has the necessary elements, trained and on hand, not only to combat the weather and terrain but to cause Von Mannstein to lose both ground and personnel.

Many of the ether strategists had the Red Army stopped cold "as soon as the spring thaws and rains would start," but the current Red Army successes conclusively belie that prediction.

Where Is the Japanese Fleet?

The capture of the Momote airfield in the Admiralty Islands by an amphibious force (1st Cavalry Division) of General MacArthur's Southwest Pacific Command has outflanked—and, to a great extent, isolated—the Japanese garrisons in New Ireland, New Britain and the Solomons.

This move is characteristic of General MacArthur's operations, which have been effected by brilliant strategy and with the minimum loss of American lives. It is described as "the final phase of the great swing move pivoting on New Guinea."

The communiqué states that, in addition to the troops "trapped" in the Solomons, some 50,000 of the enemy, largely in New Britain and Rabaul, are now enclosed.

It is difficult to see how this large force can be supplied; and it is impossible for it to be evacuated with all its equipment unless the Japanese Fleet is prepared to fight for the reopening of the sea lanes.

The question of where the Japanese Fleet is thus comes again to the fore. Last Sunday, the Tokyo radio asserted that the reason the Japanese had avoided battle with the U. S. Pacific Fleet was that it wanted to disappoint and baffle America's "Amateur strategists."

This is obviously a face-saving explanation. The real truth is that the Japanese believe that it is better to keep a "fleet-in-being" rather than risk it in action.

Accumulated experience, however, has given little support to the "fleet-in-being" theory. In the last war, the Germans kept their fleet in port only to have the crews finally mutiny and the ships ignominiously handed over intact at the time of the armistice.

The Italian navy in the present war was bluffed by Admiral Cunningham's very weak force in the Mediterranean, and remained inactive, finally to be surrendered to the British.

The whereabouts of the Japanese fleet is doubtful, but it is certainly not resisting the very active attack being carried out by the U. S. Fleet in the Central Pacific, and its morale is bound to suffer in consequence.

--BRIGADIER GENERAL HORACE SEWELL.

Mailing Addresses

Before any recent issue of The CAVALRY JOURNAL has gone into the mails, hundreds of envelopes have had to be readdressed by hand because the subscriber's organization had moved.

If your envelope was one of these, and if the address was changed correctly, you need not worry any more about it, as these changes will be made automatically in our files. (Don't depend on this procedure each time you move, as we may not know about it in time to change the envelope.)

If your organization moved, however, and you did not go with it, and if you failed to send us a personal correction in the designation of your new unit, the chances are that your CAVALRY JOURNAL will follow the organization. In the absence of a personal notice, there was nothing else for us to do. Please notify us if you change organizations!

Another problem concerns those subscribers who are in organizations that have been redesignated recently. The chances are that the unit is still at the same post, and copies of The CAVALRY JOURNAL are being delivered to individuals regardless of the new name of the unit. But in order to insure delivery when your new organization moves, won't you sent us your correct address *now*?

Please Send Us Your Back Issues!

We are constantly receiving, from libraries and other organizations, requests for certain issues of THE CAVALRY JOURNAL that are "out of print." We should like very much to comply with these requests, for in this way these issues are put to multiple use. If you have such an issue that you have finished reading, will you please send it back to THE CAVALRY JOURNAL office?

Back issues particularly desired are:

January-February, 1941	May-June, 1942
March-April, 1941	July-August, 1942.
March-April, 1942	

An Appreciation of Nicholas Corotneff's Article

AN article by Nicholas Corotneff entitled "The Tank-Cavalry Team," which appeared in THE CAVALRY JOURNAL issue for January-February, 1944, is one of the most interesting studies on the subject of cavalry that has appeared in the JOURNAL or elsewhere in recent years. It is recommended for careful reading and study. It contains some irrefutable statements of fact and principle that should not escape the attention of those who may guide our military doctrine for the future.

Perhaps I attach so much importance to this article because it reflects my own opinions so clearly and in such well written language. But the undeniable facts, so well stated, are so important that they should be widely known.

A summary of some of these facts are here presented for emphasis and future reference after reading the whole article. The article, however, contains so much meat in every sentence that it is difficult to summarize satisfactorily; and this summary should not be substituted for the reading and study of the article in full.

The author does not attempt to cover the whole subject of *cavalry* or its whole employment and training therefor. It is principally concerned with the *tank-cavalry team*, now so well established and recognized in the Russian army.

SUMMARY OF COROTNEFF ARTICLE

1. Combinations of tanks with cavalry are now recognized as independent formations of great importance.

2. The famous tank-dive bomber team has become decadent during campaigns of 1943.

3. The old idea that the best antitank weapon is a tank is disproved. The best solution lies in the use of antitank troops and the infantry-artillery team. The best use of tanks is in administering the *coup de grace* to the exhausted attacker.

4. The latest exploits of the tank-cavalry combat team prove that it is here to stay and has great potentialities for the future.

5. Tactics of cavalry should be based on depth, space and disregard of rigid formations. They should be opportunistic, shifty, fluid and based on decentralized conduct of combat and a high degree of individual initiative. The Russian *Lava* tactics embrace all of these principles.

6. One of the strategems of the old *Lava* cavalry tactics—in which swarms of horsemen, retreating in front of the attacking enemy on divergent lines, uncovered the support and then turned about to envelop and attack both flanks of the enemy, while the support made a surprise attack in front—presented a tactical method frequently employed later by large tank formations.

7. The German tank tactics, borrowed from the old *Lava* cavalry tactics, have two tendencies. The first is to draw hostile tanks into ambush. On a certain section of their front, behind the lines, they mass a great force of artillery, mostly antitank guns. They try to lead the hostile tanks into the trap by using small detachments of their tanks to fake a retreat on divergent lines, or sometimes the whole detachment retreats in one body in a direction to draw the pursuing hostile tanks into an area where they come under concentrated fire of the guns in the ambush. The second idea is the same as the first except that the retreating detachments of tanks turn about and envelop the hostile flanks, while the artillery and antitank guns are punishing the enemy from the front.

8. In the First World War, the reason that cavalry in Europe played a less conspicuous part than it had done formerly was that cavalry fell behind other branches in fire power. Whatever fire power cavalry had was almost exclusively used in dismounted action. To make the old tactics click again, a new combination of fire and movement was needed. That did not appear until the Russian Civil War of 1918-1920, when machine guns mounted on carts and ready for instant action, appeared in the cavalry ranks and started the rejuvenation of *Lava*. These machine guns in the cavalry ranks also paved the way for the later inclusion of armored tank elements, and thus constituted practically a preview of the tank-cavalry tactics as prominent recently.

9. The lessons from the American Civil War were taken to heart by the Russian cavalry. The *Raids*, conducted by the American cavalry, belittled by European military writers, and indeed by subsequent American military writers, made a great impression on the Russians who were inspired by these examples to consider that Raids made by large cavalry forces could be of very great strategic importance.

10. In the operations around Stalingrad which resulted in the destruction of the German Sixth Army, both flanks of the German Army were enveloped and attacked with unqualified and decisive success by tank-cavalry teams. The main striking force on one flank was composed of three tank corps and two cavalry corps. The similar force on the other flank consisted of two tank corps and one cavalry corps. In one action

along a line of lakes, infantry, leading the attack between the lakes, was followed by tanks closely followed by cavalry.

In the early Russian accounts of these battles, cavalry was hardly mentioned because the Russians did not want to disclose to the Germans the tactics of the tank-cavalry teams.

The Germans began to show a lively interest in these teams and attempted to follow suit, but with only partial success because, having suppressed almost all of their former cavalry divisions, they did not have enough for any extensive operations of this kind.

11. Although Russian cavalry was used extensively in the year 1941 and helped fight the great delaying actions of that year, it was not until the campaign of 1942 that, after much experimentation, the tank-cavalry combat team was recognized as an essential mobile fighting force of much power and as having great potentialities for the future.

To quote from Corotneff's article: "For the first time, independent tank and cavalry formations were welded into one unified striking force, which replaced the motorized infantry.

"More than a year has passed since its birth, and in the course of this time the new tactical combination again and again has proved its remarkable efficiency and striking power under various sets of conditions. At its initial appearance, opinion was advanced that it might be only a seasonal combination, necessitated by the conditions of the Russian winter. After the latest exploits of the tank-cavalry team at Taganrog, Mariapol, and on the approaches to the Crimea, this impression has been dispelled as completely as the legend of the Russian incapacity for a summer offensive."

As indicated before, the author of these statements does not mean to say that the only usefulness of cavalry is found in a tank-cavalry team. The Russian cavalry has been used successfully in many other ways during the last three years. In view of the exploits of the Russian cavalry, one wonders why American cavalry has apparently been suppressed instead of increased since the year 1940. During the maneuvers of about that time our cavalry took part. It is not known whether it made a favorable impression. But it may be remarked that if the Russian cavalry, with all of its experience, great successes and exploits in this war, had been operating in those American maneuvers it would have made no favorable impression, because the maneuvers were started in such a manner and conducted in such a way that cavalry was given no proper missions and had no opportunity to show its real value.

The most serious mistake in regard to the use of cavalry is to expect it to compete in strategic marching with mechanized or motorized troops. Cavalry has its limitations and should be used only for those tasks for which it is fitted. Cavalry mobility in comparison with mechanized troops is tactical, not strategical. Strategical mobility may be attained by the use of railroads when they are available. But railroads can seldom be used for tactical mobility.

Tactical movements are generally made across country rather than on roads. Cavalry is more mobile across country than other troops. Even so, cavalry should not be expected to march for distances beyond its normal capacity if its strength is to be conserved for subsequent operations.

The fact that armored forces are making wide detours of many miles in one day should not induce army commanders to expect the same of their cavalry. Nor should long and wide movements of the enemy mechanized forces worry commanders into using their cavalry troops in an extravagant way. Forced marches are sometimes required of both infantry and cavalry, but a wise commander is not going to wear out his troops for some possible or fancied strategical advantage.

A commander must use his various kinds of troops within their powers and limitations if he hopes eventually to win a tactical victory.

In past maneuvers, cavalry troops have been required to march fifty miles a day for several days; and in one case, ninety miles in one day. Then they were expected to resume their mobile operations the next day. In other words, cavalry was forced to compete with its own and the enemy's mechanized forces in *strategical* mobility.

When contact with the enemy may be expected in a short time, all strategical or even tactical movement of fast-moving mechanized forces must be slowed down in the interest of reasonable caution and security. It is here that cavalry with its cross-country mobility for comparatively short distances becomes so useful. Therefore, even if the army troops or its mechanized forces have been moving on roads faster than cavalry can march, means should have been provided to bring the cavalry up, by railroad or motor vehicles, before tactical operations are begun. Usually, no offensive operations should be begun until the cavalry is available, for it is the tactical and battlefield mobility of the cavalry that is desired.*

Russian cavalry mobility has been so used that it is sufficient for combination with tanks for tactical, and sometimes even strategical, operations in the now famous tank-cavalry teams.

To those who are willing to be convinced of what cavalry can do, and what the Russian cavalry has done and is doing, but who cannot see *how* cavalry does these things, only a few brief explanations can be given in a short article of this kind.

Cavalry does not charge its horses into tanks, but it sometimes makes mounted attacks against crews of

*EDITOR'S NOTE: In the article, "Beyond the Jeep Line in Italy," January-February CAVALRY JOURNAL, it is noted that 385 head of animals were landed at Salerno and ported by truck fifty miles to the front. "Along the mountainous Fifth Army front in Italy, where men deal with realities, not theory" the strength of the improvised cavalry was conserved for its proper employment where its greater tactical mobility would be of most value.

injured tanks who have jumped out. Mounted cavalry has sometimes charged in company with friendly tanks against enemy tank formations; in which case, while its friendly tanks are blasting the enemy tanks in close-up combat the cavalrymen hurl grenades or incendiary bombs in the path of the enemy tanks, or shoot into the peep holes, and attack the crews escaping from burning tanks. Cavalry, when operating alone against armored forces, will generally do so with many independent commands not larger than squadrons.

Usually the mounted cavalrymen follow closely their friendly tanks, and at the proper moment they leap from their horses and engage the enemy tanks with antitank guns like the Bazookas, or .50 caliber machine guns or 37mm guns taken from pack horses. With this fire power, cavalry can harass and delay enemy armored forces by moving across country and attacking the enemy columns in flank. In this case, cavalry does not usually close with the enemy but remains within range of its guns so that it can fire at the moving tanks and their supporting vehicles from various positions. Always seeking to attack by surprise, first here, then there, and shifting their positions so that the enemy can never close with them, cavalry appears suddenly in front, in rear, or on the flanks. Its antitank guns can knock out a tank here or there and block the roads, cause delay and worry in various ways.

Cavalry does not charge up to enemy machine guns unless by surprise or while catching the enemy machine gun units in retreat. If the cavalry supporting fire, such as their own machine guns, artillery and antitank guns, is knocking the enemy machine guns and crews out of their nests or concrete emplacement, the cavalry can and does attack mounted. Otherwise, if the ground affords cover for advancing riflemen, the cavalry attacks dismounted like infantry with, of course, as much supporting fire as possible.

Cavalry defends itself against airplane attack principally by immediate and quick dispersion, and concealment or camouflage when in bivouac.

Cavalry makes many harassing attacks against the flanks of enemy marching columns. It does this by moving across country under cover or at night, and dismounting to use its numerous fire weapons at moderate ranges. If the enemy turns superior forces to attack such cavalry, then the cavalry withdraws in directions inconvenient for the enemy to follow. The enemy must resume his march in his desired direction, and the cavalry comes right back to continue its harassing tactics. It vanishes like a cloud of gnats and returns to sting again. In this manner, it can become a pest.

When dismounted, the horses are led off in very small groups to be concealed from sight of the enemy in gullies, water courses, patches of woods, reverse slopes, or folds in the ground or hills. These led-horses are kept as close as possible to their dismounted troopers so that they can be brought up quickly or that the troopers can run back quickly to the horses.

Thus the unit can resume its mounted advance or be off to the rear, like a cloud of gnats, in a very few minutes or even seconds. This ability gives cavalry great advantages over motorized infantry, because the latter must retire to the place where the parked trucks or carriers were left close to roads or else continue forward on foot. Cavalry does not move on roads and therefore has great advantages over motorized infantry in fighting delaying actions, which so often are of such vital importance.

Cavalry, in fighting defensively to hold a position, dismounts and digs in like infantry. But if it cannot hold against superior forces of the enemy it can stay longer and get away quicker. It can retire in any direction that gives it the most cover or shelter from observation because it needs no roads.

In commenting on the experience of a cavalry reconnaissance troop (mechanized) which spent four months in front line action Captain Alvin T. Netterblad, troop commander, said recently, "The troop's daylight missions were accomplished with mechanized equipment; those at night on foot. I wish we had some horse cavalry in our operations. When I left Italy, the fighting was in terrain so mountainous that mechanized units could not be used to best advantage, and the horse is to a cavalry reconnaissance unit what the mule is to supply units in mountain fighting."

Cavalry is invaluable for reconnaissance because it can explore the country in small detachments or assemble to smash through the enemy defensive screen. It can scout the country in front of and on the flanks of infantry and other troops, thus affording security. It is not impeded as much as tanks and scout cars are by natural obstacles of terrain, such as creeks, thick woods, marshes, mountains, etc. Not being confined to roads, cavalry cannot be ambushed easily. Given a little time, a little rest and care, rather than having useless demands made on its strength, and cavalry can perform a type of reconnaissance and over terrain impossible to other troops or means.

Cavalry can pursue and get in rear of a fleeing enemy with greater facility and less danger to itself than any other troops. Forming a team with tanks, it can move across country and appear on the flank or rear of an enemy. This team is very powerful. Cavalry can do this alone if necessary.

Infantry needs assistance by cavalry. Tanks or armored troops need assistance by cavalry. Artillery needs the protection afforded by cavalry. Under these circumstances, if properly appreciated, the supply corps will find a way to procure forage for the horses. When a cavalry force runs out of supplies in the immediate theater of its operations, it can go back to its supply trains or dumps and get them if the supplies cannot be brought up to the troops.

Considering all of these qualities, one should be able to understand the accomplishments of Russian cavalry.

Weakness of Nazi Strategy

I

Underestimation of Rôle of Modern Fronts

THE establishment, fortification and supply of the fronts, the choice of the direction of the main blow, the breaking-through and smashing of the enemy front, unrelenting pursuit aimed at crushing the enemy—that is the real, the vital content of modern strategy. It is the art of leading troops under conditions in which there inevitably arise continuous fronts cutting through the entire theater of war.

This formula arose from the experience of the First World War. It has been confirmed during the Second World War.

Super-Mobility

Modern military art is developing not only in a very complicated, but also in a contradictory form. The defenses of the continuous fronts in the present war are more powerful than in the last war. Yet modern technique provides unprecedented opportunities for the swift movement of masses of troops. A mechanized grouping, equipped with all arms and capable of solving tactical and operative tasks independently, in the most favorable conditions can cover as much as 125 miles in 24 hours—ten times as much as infantry and five times as much as cavalry.

Then take the air force, which has now been given its own infantry—paratroops and landing troops. It has become exceptionally important as a means of military transport. Moreover, the military air forces which exceed the speed of movement of infantry possess unlimited expanses for maneuver, at speeds dozens of times over.

Positional War

Unprecedented possibilities have been opened up for the war of maneuver. The art of leading troops has been given an entirely new basis. It demands that a general shall be competent to direct forces capable of moving at tremendous and at the same time varying speeds. And side by side with this colossal maneuverability exist stable fronts which confine all movement and underline the positional nature of certain forms of modern battle.

All these contradictions are solved in the strategy of the Red Army. The defeats which the Germans are sustaining are not fortuitous: they reveal immense discrepancies and miscalculations in the enemy's entire method of conducting the war.

The conception of "lightning war"—the famous *blitzkrieg*—arose from the predatory imperialist nature of German fascism. To carry out this wild plan the Nazis created a gigantic war machine, the basis of which was the mechanized force and the air force. The German command, relying on the destructive force of this army and its capacity for vigorous action, hoped to conduct the war in the form of swift campaigns.

Germany's Basic Discrepancy

The chief shortcoming of Nazi strategy, therefore, is the discrepancy between its objects and its means. The Nazis base their calculations on temporary, ephemeral factors: on outstripping their enemies in preparations for and speed of action, on creating numerical superiority in the different theaters of war. At the same time they display a complete disregard of permanent factors: the moral-political state of the troops and the home front; the correlation of forces and material resources on the tremendous scale of the World War.

The adventurist nature of German strategy inevitably gave rise to discrepancies and miscalculations regarding various operative-strategic and tactical questions, regarding methods of conducting operations and battles, regarding the structure and organization of the armed forces.

These miscalculations are many, but there is one that looms very large among them: *the underestimation of the rôle of the present-day fronts.* In 1941 the Germans were routed before Moscow. In 1942 they suffered still more crushing defeats at Stalingrad. When it passed this milestone the German-fascist army entered on the downgrade to final defeat. But even before Stalingrad something very significant had occurred, something which future historians will assess as an important symptom of the impending fiasco of German strategy: in the spring of 1942 the gigantic Soviet front

STALINGRAD

Cartoon by Kukriniksi

"On the Volga there is a rock . . ."

was stabilized over its whole length from the Arctic Ocean to the Black Sea.

It is not claimed that the German command failed entirely to foresee the possibility that continuous and more or less stable fronts might be established. Without a doubt, the Germans made a careful study of the experience of the First World War, and they knew perfectly well what fronts mean.

Blitzkrieg Machine Meant to Destroy Fronts

The Germans lost the last war precisely because they found themselves ringed by fronts: the Russian, Balkan, Italian and Western fronts. The outlets to the sea expanses were blockaded by the British Fleet. All attempts to break the blockade on land and sea were fruitless. After violent battles, Germany capitulated as a consequence of exhaustion and defeat on the fronts.

All this the Nazis knew. And they created their monstrous war machine as a weapon for the destruction of fronts. The campaign of 1940, in which they broke the front in something like a month, seemed to justfy their confidence in their weapon.

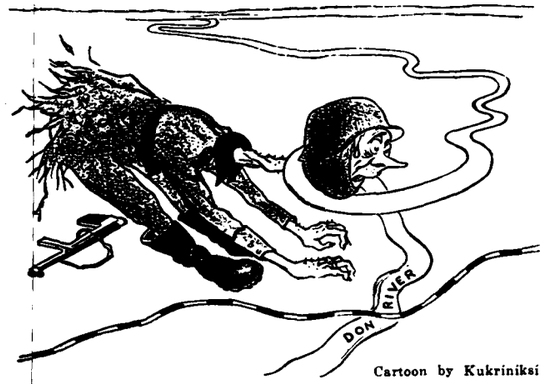
Matters took a different turn on the Soviet front. After Moscow they tried to console themselves by saying they had succeeded in halting the Red Army offensive. They protested that their army was prepared for defensive war. With feverish haste they erected engineering constructions along the fronts, and it must be admitted that they succeeded in building a powerful defense line.

Their fortifications before Leningrad were a model of their kind. In the forward lines they laid antitank and antiinfantry minefields 40 yards deep. Then they had lines of blockhouses, usually strong enough to stand 76mm shells. Some of the blockhouses, covered with rails and concrete slabs, were able to withstand even larger caliber shells. The embrasures were covered with steel screens as protection against hand grenades. These lines of blockhouses were protected by barbed wire entanglements, nucleus trenches, ordinary trenches, communication trenches and dugouts. The firing system created what the enemy believed to be an impenetrable barrier.

The very existence of this front bristling with fortifications signified one basic fact: that the Red Army had succeeded in halting the German war machine and had defeated the main purpose of this machine—the destruction of fronts.

By the spring of 1942 the front stood at Leningrad, for the Germans had failed to take that great city. It ran along by Rzhev, for the Germans had been driven back from Moscow. It ran west of Rostov, for the Germans had been expelled from that city. The three most important strategic objectives of the initial German offensive had been retained by the Red Army, which then proceeded to inflict the first powerful blows on the Germans.

The front lay in the interior of Russia, and its supply involved tremendous difficulties for the German



Cartoon by Kukriniksi

command, sucking dry an already weakened Germany. The Nazi hordes found themselves tied up.

In the summer of 1942 the Hitler clique once again plunged up to the ears in its adventurist strategy, which had collapsed in 1941. . . . After some temporary tactical successes the result was the same. In September, 1942 the main German grouping had been halted at Stalingrad.

And Berlin sent order after order to take Stalingrad. Hundreds of planes and tanks, and new divisions mounted innumerable attacks. Stalingrad was almost taken. But this "almost" was fatal for the attackers.

New fronts stretched from the invincible bulwark of Soviet defense on the Volga: to the northwest in the direction of Voronezh; to the south in the direction of the North Caucasus. The Soviet front stood invincible, barring the road to the north, the east, the south.

Feverishly the Germans fortified their side of the front. Winter was drawing near and the Nazi generals wanted to safeguard themselves against "accidents" like those of the previous year. They felt themselves safe behind the powerful defense lines of blockhouses, minefields, strongpoints. If the Soviet defense could prove strong enough to halt the German war machine, then the German defense, the latest word in engineering technique, would beat off the Soviet offensive. So thought the German generals. Once again they were wrong.

II

Underestimation of the Opponent

The Germans thought they had provided against everything. Yet, as we have seen, they most seriously miscalculated the character and rôle of fronts, as well as the method of conducting operations where fronts exist. We are now in a position to analyze this mistake of the German command.

The whole organization of the German army was adapted for the conduct of operations to crush enemy fronts. The Red Army had to contend with a powerful enemy who was thoroughly prepared for war.

Yet there was an organic defect in the whole of the

fascist system of waging war. This defect arose from the adventurist nature of German policy and strategy.

The "Invincibility" Myth

The Germans admitted the possibility that fronts might be established. Indeed, they even considered their establishment inevitable, as modern armies immediately spread out widely and protect themselves with fortifications. But they excluded the possibility that these fronts might be stabilized for any more or less prolonged periods. On what did they base this conviction? On the German war machine's supposed ability to break through swiftly and destroy any front, however strong; on the supposition that there was no defense capable of withstanding the onslaught of the masses of German tanks, aircraft and infantry.

This was an adventurist distortion of military theory. Now, from the experience of war on the Soviet front, it is clear even to the uninitiated in military science that it is quite possible for a situation to arise in which fronts become stabilized both on individual sectors and even over the whole theater of war. German fascism rejected this possibility.

The Germans based all their operative plans on the supposition that they would *always* be able to insure swiftness of operations. That, too, was adventurism. With present-day mobile forces, it is of course possible to operate at high speed. But that is not to say that there can arise no delays which reduce the tempo of military actions, and indeed bring them to a standstill for quite considerable periods.

Real War and Paper War

"Friction," says Clausewitz, "is all that, generally speaking, distinguishes real war from paper war." On paper, the German command planned to enter Stalingrad on July 25; in fact the Germans did not even approach the city until a month after that date, and there they were stuck until their complete rout.

Modern war operations may be slowed up for innumerable reasons: the resistance of the enemy, his counterblows, water barriers, supply difficulties. The "lightning" tempo of operations, which the German command considered normal, was an adventurist conception, strategically and tactically speaking, because it completely excluded the possibility of prolonged delays, or even halts by the attacking troops. When facts made nonsense of this conception, the German command was forced hastily to alter its plans; this, however, could no longer save it from serious defeat.

Reasonable risk has to be taken in war, but it must be combined with careful calculation, with a sober assessment of the situation. *A mistake in calculation is dangerous enough in tactical operations. But an organic mistake in strategy spells defeat.* The boldest generals—Suvorov, Napoleon—were always extremely careful to safeguard their operations against failure or unforeseen delay. Surprises are inevitable, but where proper safeguards exist, surprises should not lead to the collapse of one's plans.

"None so blind as he who will not see." The Nazi command, having created a powerful war machine and planned a lightning war, thought it had provided against every eventuality, that no defense would be capable of withstanding its troops.

III

Underestimation of Active Defense

The possibility of halting the German offensive implied the formation of a defensive front continuous and stable, for a more or less considerable period. This task was solved in a way unforeseen by the German command. Briefly, it was solved by active defense.

This active defense was in fact a most complicated system of measures. The heroic struggle of all arms was combined with the most intensive effort on the Soviet home front. In its strategic defense the Red Army took full advantage of the *great mobility and maneuverability of modern mobile forces*, combined with the defensive fire power of field fortifications.

The firm line of Soviet defense eventually evolved from an exceptionally swift and complicated struggle of maneuver, in which the Red Army constantly inflicted counterblows on the enemy and gained a number of brilliant victories.

The Germans Remember Maginot

The strategic defense of the Red Army was successful only because it was *highly active, imbued with the offensive spirit*. Passive defense, relying blindly on the strength of defensive fortifications, is doomed to failure. The irony of fate! The German generals who entered our land in full *blitzkrieg* armor are having to recall that in 1940 the Maginot Line did not save France.

The unparalleled defeat of the Germans at Stalingrad was the beginning of a number of consecutive offensive operations by the Red Army. Today an entirely new and original solution has been given to the problem of smashing the front. The strategic plan of the Supreme Command of the Red Army is the exact reverse of the adventurist strategic plan of the German command. In carrying out the smashing of the front strict account is taken of the true circumstances; it is done systematically, in a series of consecutive operations.

All the usual defense methods of the German command have proved worthless. The chief means of opposing break-throughs was considered to be rapid maneuvering with reserves in the rear of the front. But this method is parried by the subsequent operations of the Red Army, which extend the breaking of the front to adjacent sectors, with the simultaneous development of the offensive in depth.

Soviet offensive operations, which break open the front over an ever greater area, have disorientated the German command and bankrupted its whole system of maneuvering with reserves.

SOVIET TACTICS

Art of the Break-Through

by P. Smirnov

DURING the 1943 summer campaign, the Red Army first repulsed the German offensive at Orel and in the Belgorod district, then broke through the enemy's fortified positions and went over to a powerful offensive.

Further developing its operations, the Red Army then broke through the German positions on many other sectors. The Mius front fell, the Smolensk fortified districts were smashed, the Zaporozhye-Melitopol fortified district on the river Molochnaya crumbled before the Red Army's onrush, and lastly the Dnieper "wall" gave way.

The Germans had had two years to fortify these positions, which were formidable in the extreme. There were not only trenches, gun emplacements made of wood and earth and various obstacles, but also ferro-concrete structures and gun emplacements equipped with steel armored hoods. In some sectors the Germans used their own novelty "portable" steel gun emplacements. It is not surprising that Nazi propaganda should have shouted so loudly about the impregnability of the German lines and "walls." But to the Red Army they were not impregnable.

The Suvorov Tradition

The Russian art of attacking and breaking through enemy lines has its own history, traditions and theory. The Red Army is educated in the tradition of the great General Suvorov. It has made a serious study of Brusilov's offensive operations, and is now creating its own unsurpassed models of attack and break-through under modern conditions.

The Red Army's art of the break-through is based on clear, simple principles: the precise demarcation of operative and tactical tasks, the organization of interaction between troop units on an operative scale and between the Army services on a tactical scale. All this is based on flexible maneuvering, which is widely applied on both an operative and a tactical scale.

For instance, the capture of Kiev was achieved by a bold flanking maneuver. A little time ago, the same maneuver ensured the capture of Rechitsa. Their maneuvers invariably bring the Soviet troops to the enemy communication lines, which hastens the collapse of German resistance. The fear of encirclement forces the enemy to abandon one line after another.

Structure of Attacking Force

The nature of the operative task determines the scale of the operations—the width of the front to be broken through; the composition, grouping and tasks of the troops of the first and second echelons, of the groups appointed to develop the success, and of the air forces. Not one of these elements is constant. Everything is subordinated to the concrete situation.

The composition of the troops of the first echelon (the tactical groups entrusted with the initial break-through) depends on the density of the German fighting order, the strength of the German fortifications and their local disposition. In some cases the break-through is effected by motorized infantry supported by tanks, aircraft and artillery, but more often the task is entrusted to the infantry reinforced by tanks, artillery and sapper units.

The groups entrusted with the task of developing the success are made up as a rule of mobile forces—tanks, motorized infantry and cavalry. The Red Army, having preserved its cavalry, has reorganized it in conformity with the character of modern warfare, and now uses it to carry out the highly intricate and responsible tasks in the depth of the enemy defenses.

The nature of the operations which have to be conducted by the groups engaged in developing the success is extremely varied. In some cases they have to strike at the flanks and break-through in close co-operation with the forces advancing from the front. In other cases they make raids in the rear of the enemy to a depth of 60 miles or more. A characteristic example was the raid made by General Vasilyev's tank units, co-operating with the cavalry, on Askania Nova and Perekop from the Melitopol district. This action assisted in clearing the Germans out of the whole of the North Crimea.

The Red Army considers that the most important and most effective reconnaissance is reconnaissance in force. It provides more exact information about the system of German defense, confuses the Germans as to the Red Army's intentions, exhausts and demoralizes the enemy before the main attack begins, and compels the Germans to bring their reserves into action.

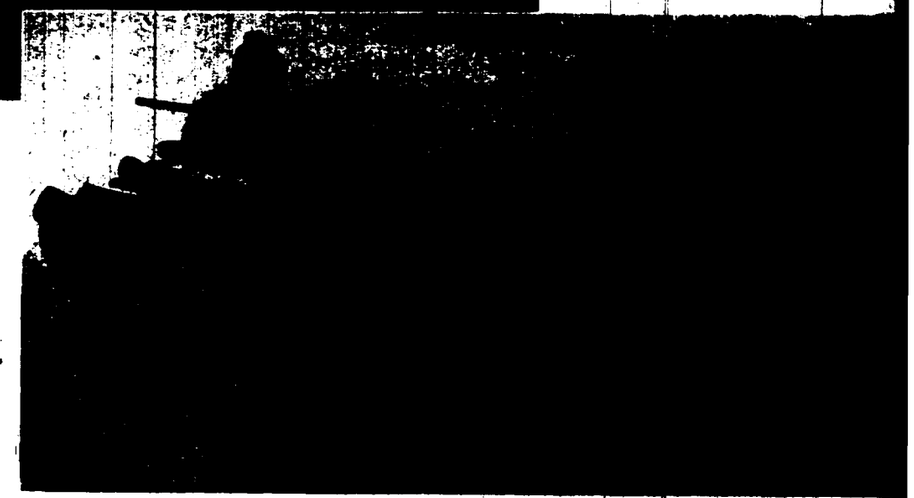
Long Distance Coördination

In the organization of tactical coördination, special attention is paid to the demarcation of tasks and the arrangement of mutual support between groups specializing in close-quarters fighting—for example, the infantry—with tanks, and artillery and mortars operating from a distance. The mass application of all means of "distant" fighting at all stages of the battle directs and coördinates, as it were, the blows of the infantry and tanks.

The mass fire of the artillery and mortars breaks the enemy's defense, disturbs his fire system, covers the attacking troops from German counterattacks and prepares their blows in the depth of the defense.

The air forces constitute an independent air echelon. They may be divided into groups whose job it is to facilitate coördination between the land forces operating near at hand and at a distance. The air forces secure the attacking troops against air attacks, help to prepare attacks, beat off counterattacks and support infantry and tanks fighting in the depth of the enemy defense.

Such are the principles of the art of the break-through, as applied by the Soviet troops. Of course, the chief of these principles is fighting quality. It is the fighting quality of all the services of the Red Army which gives them their undoubted superiority over the enemy, and makes possible their brilliant successes.



A recent photo of Soviet Cavalry exploiting a break-through.

Soviet Information Bulletin Photo

"The groups entrusted with the task of developing the success are made up as a rule of mobile forces — tanks, motorized infantry and cavalry." At right a tank, having just crossed the Dnieper, speeds to the attack.

Sovfoto

Tactics of Auxiliary Operations

by Major Milovanov, Red Army

Auxiliary operations by small Soviet forces were a prominent feature of the recent battle of Kiev. These minor Red Army groupings drew the attention of the enemy away from the areas where the main forces were concentrating for a decisive blow.

The capture of the village of Khodorov was the fruit of such an auxiliary operation by a Soviet division. The first problem was to breach the Nazi defenses. This initial success had to be developed by a further advance along the bank of the Dnieper to Khodorov.

On the eve of this operation, two battalions attacked the enemy's flanks. In the course of this advance, the supporting artillery spotted the German firing positions. Reconnaissance on the flanks and constant observation revealed that the three main enemy strong points were connected with one another by communication trenches. One Nazi strong point stood on an elevation, over which ran the forward positions of the German defense lines. The second strong point was farther behind, a little over a mile south of the first one. The last strong point was right in front of the village of Khodorov, a mile to the west of the other strong points.

River Bank Thrust

The Soviet divisional commander decided to deliver the main blow on his right flank, that is, along the river bank. After a brief but intensive bombardment the German infantry were forced out of their trenches. This hasty withdrawal was noticed by the Soviet artillery officers, who asked their general's permission to open fire on the more distant German positions ahead of schedule. This request was granted and the long range guns wrought havoc among the enemy. Soviet infantry detachments captured the German trenches with slight losses. The height was taken.

As soon as the forward German trenches had been cleared the batteries advanced. At this moment, the divisional commander brought up his antitank reserves, consisting of twelve motorized guns.

Events developed rapidly. Soviet artillery crews mopped up one German pocket of resistance after another. The enemy did not have time to bring up sufficient reinforcements. Immediately after taking the height, Soviet detachments attacked the second Nazi strong point. This operation secured the division's left flank and opened the road for the tanks.

The second enemy strong point was eliminated by a regiment moving on the division's left flank. The regimental commander ordered a battalion commanded by Captain Vorobyov to storm a height, and two other battalions to attack between the road and the river.

The artillery crews of the first battalion did a magnificent job of silencing the German guns, and the infantrymen soon captured the height. Meanwhile, Soviet tanks arrived on the scene. Russian tommy gunners mounted the tanks, which sped towards the last enemy strong point outside Khodorov. Tanks and tankborne infantry penetrated the curtain of enemy artillery fire and skirted the strong point from the south. At the same time, detachments of the division were advancing along the river bank, which flanked the strong point from the north.

The Germans had built their defense on the far slopes of the hills, so as to protect their forces from the point-blank fire of the Russian guns. Their trenches were protected by a large number of firing nests, particularly along the river, from which the Soviet division was aiming its main blow.

The enemy firing positions on the right bank could be well observed from the opposite river bank. A considerable number of German machine gun and trench mortar nests were spotted well in advance. Russian artillery crews got their guns right up to the bank without arousing German suspicions, and prepared to open point-blank fire. While the Soviet division attacked the strong points, these guns remained silent. It was when the infantry approached the village heights that the Russian batteries on the left bank spoke up. All the German positions on the right bank were captured within a few minutes.

Successful Diversion

As a result of these auxiliary operations, the Soviet division not only diverted the enemy's attention, and a considerable part of his force from the Red Army's main drive, but inflicted heavy losses.

Why was this operation successful? First of all, it was carefully prepared.

The Germans thought that there were few Soviet guns on the right bank. The skilful maneuvering of the Russian batteries on the left bank gave the impression that the main artillery forces were concentrated there.

Artillery crews and infantry detachments operated with precision, and in strict coördination with one another. The magnificent support rendered by the batteries and tanks advancing with the infantry was another important factor.

Finally, this success was the result of the outstanding maneuverability of all infantry and artillery units. While the bold operations of these small groups nailed down the enemy's attention, the main forces attacked in another direction.

Repulsing Mass Tank Counterattacks

by Major Agibalov, Red Army

Whenever a large group of Germans is threatened with a flank blow or with encirclement, they try to relieve the situation by the mass use of tanks. A large armored force, cooperating as a rule with infantry and planes, is employed as a spearhead to strengthen the sector that has been weakened. When there is no possibility of restoring the situation, they try, under cover of mass tank counterattacks, to withdraw the main body of their troops to a new line favorable for positional warfare. This mass use of armored vehicles on decisive sectors, and particularly against open flanks, is no new feature of German tactics.

Near Chernyakhov and Brusilov

The fighting in the Chernyakhov and Brusilov areas provided some striking illustrations. The Germans, for days in succession, attacked the Soviet positions, but the result was only a slight withdrawal by the Russian divisions. The enemy lost very heavily both in men and material, without gaining any appreciable success. As many as 200 tanks have taken part in some attacks.

It is much more difficult for advancing troops to beat back mass tank attacks than for troops who are on the defensive. During offensive operations the line of the front is often very uneven, with the result that enemy

Sovfoto

The self-propelled guns are given the signal to go into the attack. This gun crew destroyed a "Ferdinand" tank, a "Tiger" tank, four fortified points and 20 Nazis in one day.

tanks are able to strike flank blows and sometimes to drive to the rear of the attacking troops. Still, these armored onslaughts can be countered successfully. The main thing is to organize a powerful antitank defense on the flanks.

Rôle of Artillery

It is essential to strike at the counterattacking tanks before they reach the infantry positions. That is a job for the artillery, firing both from cover and over open sights. Heavy gunfire forces the armored machines to maneuver along the front in search of sectors where the artillery pressure is less intense. There must be an antitank reserve available to be hurled into any given sector, should the tanks get out of range of the guns.

Incessant reconnaissance and observation of the terrain is essential in order to prevent the enemy from launching surprise counterattacks. Experience has shown that the movement of motorized columns and their areas of concentration must be reconnoitered not only by stationary observers, but by reconnaissance aircraft as well. The planes can also strike at concentrations of enemy tanks, aircraft and long range artillery.

It is also very important to combine defensive operations on one sector with vigorous attacks on another. While the main body of German tanks was counterattacking on one sector of the battlefield, a series of blows were struck at neighboring points, with the result that the Soviet troops captured a number of inhabited places. This enabled the units assaulted by the German panzers to entrench themselves, fortify the inhabited points and dominating heights, and concentrate their heavy artillery for a strong counterblow.

Efforts should be made to encircle the tanks that have managed to penetrate the defense positions, and lure them into fire sacks. Here is an instance. After failing to achieve any success along the main direction of their attack, a group of 50 German machines turned aside and drove through to a village situated at the junction of two Soviet units that had gone over temporarily to the defense. The junction was covered by artillery fire, and the Soviet gunners were in a position to shift their fire to the road over which the enemy machines had just passed.

Armored Raids on Enemy Rear

The Soviet tanks, too, play an important part in repelling armored counterattacks. They raid the rear of counterattacking enemy groups and paralyze their activity. This requires thorough preparation, including heavy air attacks on the main German strong points.

The operation of the Soviet tank unit commanded by Popov shows what a well-organized raid of this kind can achieve. After the Soviet infantry had broken through the secondary German defense line, a tank unit entered the gap and made for a highway along which the enemy was bringing up ammunition and fuel for his machines. Meanwhile, Soviet planes were attacking a strong point on the highway. A group of tanks met a column of German fuel lorries and set fire to them, while other tanks attacked a concentration of enemy infantry in the village and destroyed about a hundred Nazis.

These developments forced the enemy to transfer a considerable portion of his tanks from the front line to the rear area where the Soviet machines were operating. But it was too late; by that time the Soviet tank unit had already rejoined the infantry.

Of course, the situation does not always permit tanks to carry out raids in the rear of the enemy force launching mass counterattacks. There is no doubt, however, that armored vehicles should always be kept at posts where the other arms of the service are showing the greatest activity, for tanks are always a powerful reinforcement for the infantry.

Past half-burned villages rumble Soviet self-propelled guns. This one is a 128mm mounted on a medium tank chassis.

Sovfoto

RIVER CROSSINGS*

IN the Red Army's 1943 summer offensive, its generals, officers and soldiers acquired immense experience while conducting operations under the most complex and difficult conditions.

The big obstacle in the Red Army's advance was the river Desna, the forcing of which undoubtedly will go down in military history. Swift movement, skilful maneuvering, and the unshakable fortitude of Soviet cavalry and mobile units helped them to seize the river crossings and to hold bridgeheads until the main forces arrived.

—Colonel V. M. Solovyov.

Fording the Desna

A tank formation under General Kravchenko was speeding toward the scene of the violent battle for Kiev. But its road to the Dnieper was barred by the Desna. Narrower than the Dnieper, but swift and with an uneven bed, this river presented a serious obstacle. Ordinarily, heavy pontons and ferries would have been needed to cross it. But time was short.

"We must get to the other bank and quickly," said General Kravchenko, and they did. The men went into the water, and diving and feeling for the ground with their feet, at last found a place where fording of the river seemed possible.

A course 300 meters wide was marked out by poles for the fording. In some places it was two meters deep. Kravchenko's tanks were not amphibians, but the Command decided to ford the river. All night the tankists prepared for the crossing by stopping up holes and crevices in their tanks. Of course the tanks were not hermetically sealed and water, lots of it, was bound to seep in. But the idea was that before the water reached the engines and stalled them the tanks would already be on the other bank.

At dawn the best tank drivers descended from the bank into the river. They steered blind, while the tank commanders, peering through the hatches of the turrets, gave them instructions. The water seeped into the tanks, poured over the drivers and penetrated the motor compartments, but strong blowers drove it out, and to the onlooker it appeared that whales were swimming across the river, ejecting water-spouts.

Finally the tanks reached the other bank. The first machines were over, then a tank battalion, followed by one tank brigade after another. Thus this unparalleled amphibian march was made. Not a single machine was lost in the crossing.

This daring raid had far-reaching effects. Right afterward the tankists forced another river, the Irpen, and striking out eastward through a forest tract, surprised a German group advancing northward from Kiev. The Germans lost thousands of men, abandoned 40 guns and scores of mortars and staff cars. The general commanding one of the routed German divisions fled in his underwear. Important staff documents were found in his headquarters.

As a result of this bold maneuver, the commanding heights on the right bank, north of Kiev, fell into Soviet hands.

Bridging the Dnieper

One tank formation emerged on the Dnieper while a motorized brigade which had previously forced the river, was defending itself on the other bank against vastly superior enemy forces. Although replenishments were continuously ferried over on boats, pontons, rafts, etc., this trickle could not sustain resistance against a vastly superior enemy. Immediate relief with large forces was imperative if the troops were to retain the bridgehead on the other bank.

The Command ordered the tankists to build a bridge over the Dnieper and to build it quickly. The task seemed almost impossible. The river in this place was wide and swift; the approaches to it were under enemy artillery fire; and lastly, there were too few engineers among the tankists. But the order had to be carried out. The tankists went into the water, located the shallowest places, marked them with poles and thus laid a line for a future bridge.

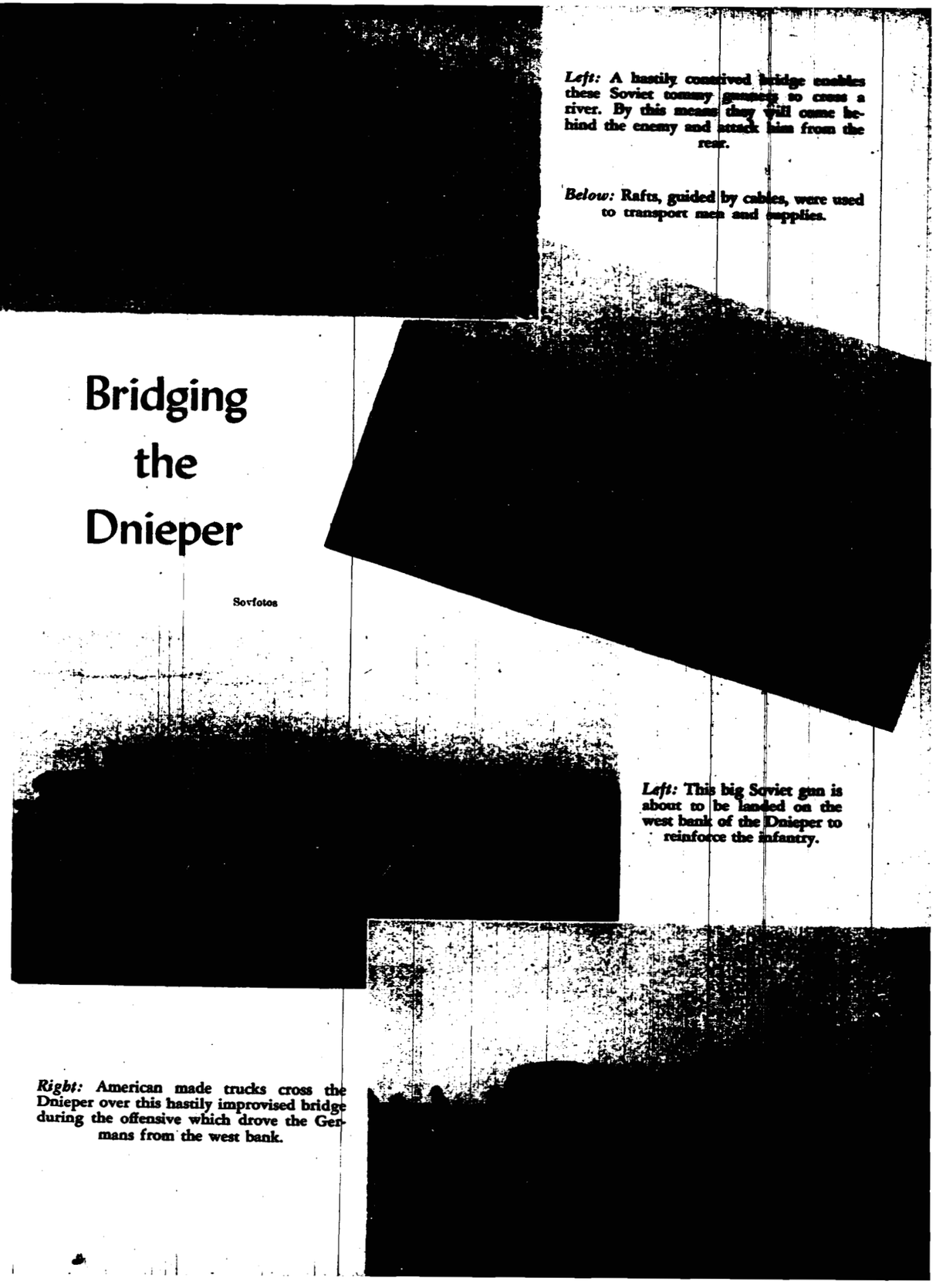
Meanwhile the Command issued an appeal to carpenters among the local inhabitants and with them began to fell giant firs and oaks. Right on the spot they shaped them into prefabricated links for a bridge. Then the tankists, on rafts made from empty German gasoline drums, sailed out into the middle of the stream and drove in piles for the future bridge.

It was a stupendous job. The swift current carried away the men; the piles would not remain straight. The men had to dive and by their own weight hold down the end of the pile while it was being driven in from above. And there were hundreds of such piles to be driven in. To make it more difficult, the enemy rained shells on the builders and planes swooped down, knocking out piles and men. But by that time, the work was already proceeding simultaneously in numerous places. Casualties in both men and piles were quickly replaced and the bridge kept growing. At last it was ready, and the tankists exchanged their builders' axes for the steering gear of their tanks and rushed to the other bank.

*Information Bulletin, Embassy of USSR.

Bridging the Dnieper

Sovfotos



Left: A hastily contrived bridge enables these Soviet tommy gunners to cross a river. By this means they will come behind the enemy and attack him from the rear.

Below: Rafts, guided by cables, were used to transport men and supplies.

Left: This big Soviet gun is about to be landed on the west bank of the Dnieper to reinforce the infantry.

Right: American made trucks cross the Dnieper over this hastily improvised bridge during the offensive which drove the Germans from the west bank.

BATTLES ALONG THE DNIEPER

Capture of Zhitomir

by a Correspondent of the 1st Ukrainian Front

FIGHTING heavy battles all the way, day and night, the Soviet forces covered about 80 miles from Kiev to Zhitomir under difficult conditions on roads washed out by rain.

The Germans had several fortified defense lines between the Dnieper and Zhitomir, and from each of these lines they mounted savage counterattacks, only to be overwhelmed by the Red Army's drive.

Zhitomir was very important indeed to the Germans. The vital railway connecting the northern and southern German groups, between which there is a considerable gap, passes through the town, which stands on the wide asphalted road to the west.

Cavalry and infantry bore the brunt of the fighting for Zhitomir. The advance of the 1st Guards Zhitomir Cavalry Corps from the Dnieper to Zhitomir was an epic of the highest courage, military skill and organization. They tackled the Dnieper crossing straight from the march, and established a bridgehead on the right bank in two days' fierce fighting.

After the defeat of the enemy at Kiev, the corps began its great advance to the west. The Germans defended themselves stubbornly on the intermediate river banks, but the cavalrymen, working in coördination with tanks and infantry, rode through them straight from the march. Avoiding protracted battles, they cut the Germans' roads of retreat, and destroyed enemy equipment and manpower in swift attacks.

Units of this corps soon reached the main Kiev-Zhitomir road. The Germans threw in tanks and aircraft, all to no effect. With the fall of Korostyshev, the cavalry advance became even faster. As they neared Zhitomir, the horsemen scourged a demoralized enemy who proved totally incapable of holding them.

After their defeat at Kiev, the Germans began to retreat along the Zhitomir highway. Using rearguard units to cover the retreat, the German command tried to withdraw its units beyond the Zdvizh River, which links up with other streams to form a series of barriers on the road to the west; and it was on the Zdvizh that the enemy planned to put up a stiff defense.

General Baranov's cavalrymen, supported by tanks, were sent to frustrate this plan. The horsemen moved west along the Zhitomir highway and other parallel roads, by-passed the German rearguards and reached the Zdvizh after making a fighting advance of 25 miles in one day. Racing neck and neck with the Germans, the cavalry reached the line where the Germans had planned to set up their defenses. At some points they got there even before the Germans.

Soviet successes that caused the Nazi withdrawal from river defenses

This time the enemy's favorite tactics, based on the defense of one water line after another, failed completely. Menaced continually by encirclement, the Germans were forced back farther and farther to the west.

Within three days, without being held up at all on the smaller rivers beyond the Zdvizh, the Soviet forces reached the Teterev. Hoping to draw off the Soviet forces, the Germans counterattacked strongly around Fastov, but the speed of the advance on Zhitomir did not slacken.

The town of Radomyshl, north of the Zhitomir highway (on which there was a great deal of guerilla activity), was captured straight from the march. The Germans also failed to hold the town of Brussilov, lying south of the highway.

They tried to put up serious resistance on the river Teterev, and had turned the town of Korostyshev into a strongpoint that locked the highway. From this town, they launched a number of strong but ineffective counterattacks, supported by artillery and aircraft, against the Soviet cavalry.

Soviet artillery moved forward with the cavalry, and was of great assistance in dealing with enemy counterattacks at Korostyshev, while the cavalry maintained a gruelling pursuit. Meanwhile, another Red Army unit, operating farther to the north, forced the Teterev and emerged on the right flank of the Germans' Korostyshev group.

The town was almost encircled, and the Germans were again forced to retreat. Twice after this they regrouped their forces, drew up reserves, and tried to restore the position. They mounted two counterattacks with large forces supported by planes, but achieved nothing. By this time their losses were so heavy that they were unable to embark on any kind of active operations. The retreat to the west began in good earnest. Korostyshev, "the padlock," was broken, and the Soviet forces resumed their pursuit of the enemy.

Giving the Germans no chance to recover, overtaking them and threatening them with flank blows, the advancing Soviet units emerged from the south through the forests on to the railway linking Zhitomir and Fastov, and straddled it. Thus the enemy was deprived of the most convenient means for any further regrouping of his forces on the southern flank of the breakthrough.

Meanwhile, Soviet units, operating north of the Zhitomir-Kiev railway, routed the German forces opposing them and straddled the Zhitomir-Koresten railway. They captured Chernyaki station and again cut the railway, this time from the north.

As a result, Zhitomir was surrounded from two sides. Developing their successes on the enemy's flanks, the Soviet forces advanced from the front and broke into the town. Street fighting continued until 4 a.m. By dawn the town had been completely cleared of the enemy.

The speed of the Red Army's advance saved thousands of Soviet citizens whom the Germans had rounded up for deportation to the west.

Beyond the woods lie the swamps, beyond these—a river, beyond the river—the enemy. During the capture of Zhitomir, Soviet Cavalry, by forced marches, made wide encirclements and attacked the enemy's rear.

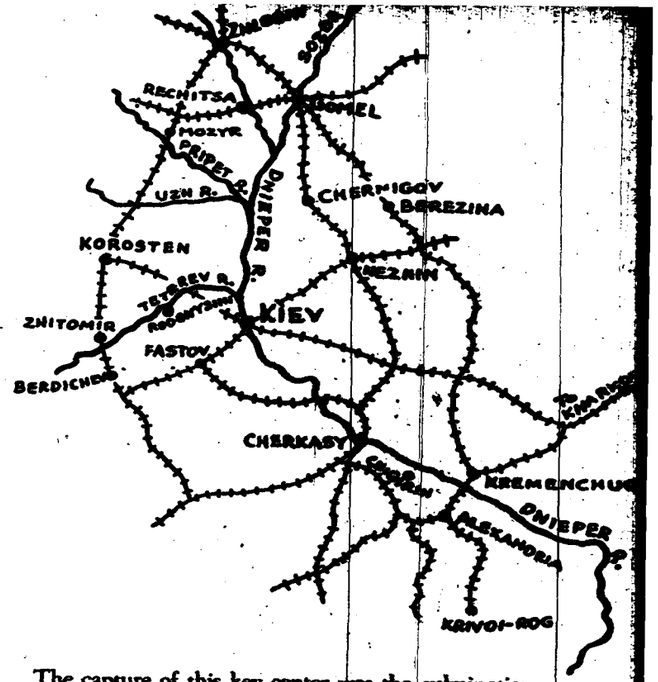
Soviet Information Bulletin Photo

Capture of Korosten

by a Military Correspondent

On November 15th, the Red Army was thirty miles from Korosten. This distance was covered in two days by units of the 1st Ukrainian Front. Together with Zhitomir, the important stronghold of Korosten formed a big bulge penetrating deep into the German defenses.

The loss of Korosten deprived the Germans of another important railway junction. Through Korosten, main lines radiate to Kiev, Gomel, Shpetovka and Berdichev. Whoever holds Korosten has every chance to maneuver with reserves and maintain connections with his bases.



The capture of this key center was the culmination of a close pursuit which continued unabated for twelve days and nights. The enemy, hounded remorselessly westwards from Kiev, tried several times to dig in, but was frustrated by the lightning action of his pursuers.

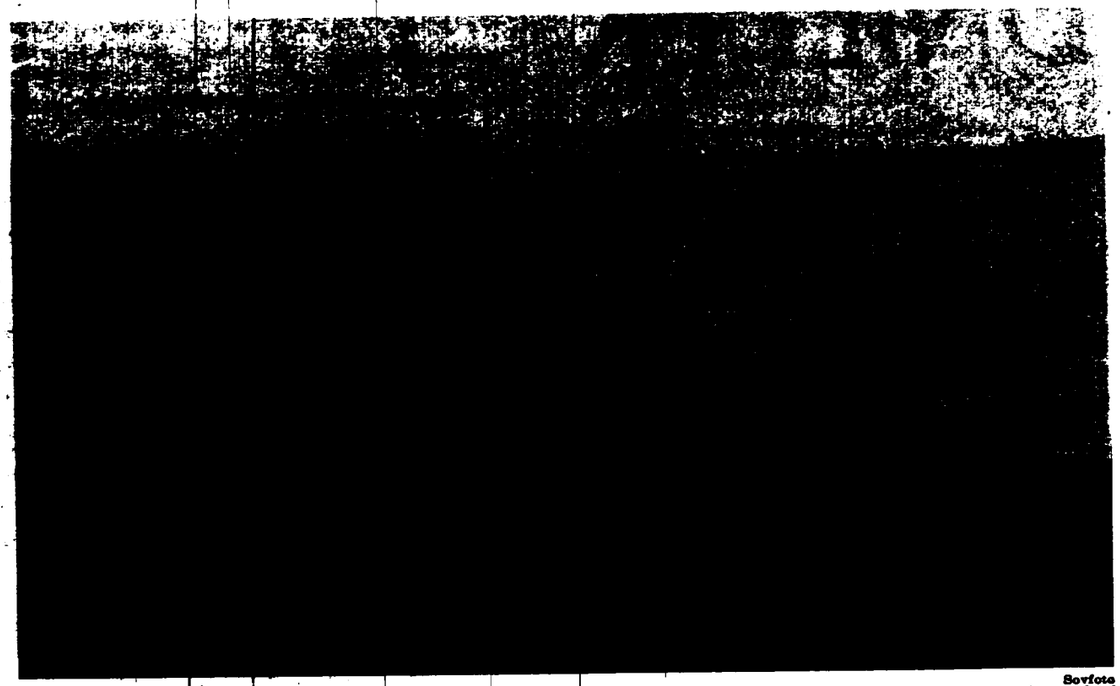
The Germans did their best to withdraw their main body under close cover from rearguards, but the Soviet forces, clinging to their heels, overcame the rearguards, threatened to encircle the main units, and forced them into action.

That was the pattern of the fighting along the whole 87 miles from the Dnieper to Korosten. The Germans fought back fiercely all the way. They tried to maneuver, counterattack, and ambush the Soviet troops striking at the pursuers' flanks.

The Soviet tactics of forcing the enemy to engage worked very well. Along the Ruver Uzh, the German defense was augmented with strong reserves, who were prepared for violent resistance. But the Red Army men, after probing for the weak spots, forced the Uzh simultaneously at a number of points, dislodged the enemy from the river line, and set out in pursuit without delay.

The Germans tried to regroup, but the advancing Soviet forces drove home two deep wedges, from which they launched decisive attacks. The fighting here cost the enemy large forces of infantry and artillery.

The approaches to Korosten were defended by well fortified strong points situated on the eastern bulge. Each of these villages had to be taken in bitter fighting. The war material captured in the Korosten area has not yet been counted, but there is evidence that the Germans have paid a big price for their attempt to hold the town. Large quantities of German army supplies and weapons were found abandoned at the railway station.



Sovfoto

Boats, logs, barrels, and even bushes were used by Soviet troops crossing the Dnieper. Above scene shows the arrival of a boat and barge at a beachhead on the west bank.

Battle of Gomel

by War Correspondent Makarenko

Gomel used to be called the second capital of Byelorussia. It was a most important industrial and cultural center, with a wealth of educational institutes and workers' clubs. Its metal, leather, clothing and food industries employed tens of thousands.

Judging by prisoners' statements, the German Command early in the summer of 1943 decided to fortify Gomel as one of their main rear strong points. Permanent defenses were erected. This town had a unique importance in the German defense system along the western bank of the Dnieper. Gomel was a vital supply center, commanding a highly developed network of good roads and a railway running due west.

The Germans defended the place with a determination proportionate to its military value. They clung to every hill, gully and railway embankment. The whole countryside is criss-crossed by small rivers, and there are big tracts of swamp and forest land. The enemy's intermediate defense lines exploited all these natural barriers.

The battle for Gomel began long before the Soviet troops came into direct contact with the town. The offensive was launched simultaneously from several directions, the Soviet troops advancing from northeast and east and from southwest and south.

The terrain demanded extremely flexible maneuvering. The Red Army units, skilfully outflanking fortified centers of enemy resistance and chopping at the German flanks, compelled the enemy to fall back. The situation at the approaches to Gomel became extremely tense. Soviet troops advancing from the northeast reached the Sozh River north of Gomel. Units on the offensive from the southeast reached the river to the south of the town. Those advancing from the east reached the line adjacent to Gomel itself.

The enemy found himself in a semicircle no more than 9-12 miles in radius. Within this small area, stiff with antipersonnel and antitank obstacles, a battle of extreme violence was fought out. The advancing Soviet units ran into heavy shelling and savage counterattacks.

The winding Sozh River, making an elaborate curve at Gomel, surrounds the town from north, east and south. The Germans held a strong defense line beyond its marshy banks. The Soviet troops had not only to cross the river, but to cut gates in the chain of enemy fortifications.

They succeeded in crossing both north and south of the town. All arms distinguished themselves equally. Captain Karipanov's infantrymen got themselves across on barrels, planks, logs and bundles of branches.

Once over the water, the Red Army men, penetrating deep to the southwest and northwest, threatened the Germans with complete encirclement. Stiff fighting de-

veloped to the north. The enemy brought up large forces and launched dozens of counterattacks, particularly near the strong points on the Khalcha River.

Desperately clinging to their "Byelorussian bastion," as they called Gomel, the Germans sent in tanks and self-propelled guns. The battle surged close to the town. Advancing from north and south and widening their bridgehead on the western bank of the Sozh, the Soviet troops gripped the town in pincers.

Fearing encirclement, the Germans echeloned their troops deeply and sent into action large tank and infantry forces, supported by self-propelled guns.

Meanwhile, other Soviet troops struck across the Dnieper near the town of Loyev, and launched a vigorous offensive in the Rechitsa direction. The advance of the tanks and motorized infantry along the Dnieper bank spelt danger for the German forces between the Sozh and Dnieper rivers.

Near Kholmech, and to the west of it, the Germans had powerful field fortifications in which they had concentrated fresh infantry and tank formations, and which were well covered by the surrounding swamps. The Soviet break-through of this fortified zone radically changed the situation on the entire bridgehead and created favorable conditions for the capture of Rechitsa.

The struggle for the bridgehead on the right bank of the Dnieper did not end with the capture of Rechitsa, however. As was to be expected, the Germans counterattacked strongly in an effort to recover lost ground and recapture communications, and so relieve the position of their troops in the Gomel area.

They sent in fresh tank units, and tried to cut the Soviet wedge by ramming the flank. The German armor struck southwest of Rechitsa along the Gomel-Kalinkovichi highway. German infantry units also counterattacked, but a rapid Soviet outflanking movement pressed them back to the Dnieper. They succeeded in hanging on to several strong points south of Rechitsa, and struggled hard to link up with the tanks and so cut off the Soviet elements fighting west and north of Rechitsa.

The fighting along the Rechitsa highroad, which lasted for three days and ended in victory for the Soviet troops, was marked by the utmost fury. On some sectors the Red Army men repelled ten, fifteen and even more blows in 24 hours.

Meanwhile, other Red Army units continued to advance to the west along the Gomel-Kalinkovichi railway, and in the north along the right bank of the Dnieper, towards the Berezina. Byelorussian guerillas coöperated. On the second day Gorval, a heavily fortified strong point, was captured, and the Soviet forces advanced further to the west. The operation was a triumph for the flexible maneuvering of the Soviet tanks.

The Germans were still further isolated from their rearward positions in the west. The Gomel fighting, which had continued for a long time on this sector, reached its final stages. Early on the morning of November 26th, units under Colonel Massonov and Colonel Bulatov struck on the northeast outskirts, while units from the southeast broke into the town from that direction.

Airborne Troops and Guerillas Attack Cherkassy

by Captain Gekhman, Red Army

Great importance is attached to the operations of Soviet airborne troops working in skilful collaboration with the guerillas and the regular land troops in the fighting at the approaches to Cherkassy.

Cherkassy is one of the biggest towns on the right bank of the middle Dnieper. The railway leading from Cherkassy to the west links up with various enemy communications. By establishing themselves in the area of Cherkassy, Soviet troops would be able to restrict the enemy's possibilities of maneuver.

The Germans, who regarded the defense of Cherkassy of great importance, had created a network of fortifications there, and had built the town into a powerful strong point adapted for all-round defense.

All the possible crossings were under enemy fire. The strong points created on the right bank were designed to direct cross fire against attacks. The divisions concentrated for the defense of the area were well adapted to the wide maneuver of tanks and motorized infantry.

The operations for the forcing of the river were planned with the support of guerilla detachments operating northwest of Cherkassy. The area they had cleared of the enemy and controlled was prepared for the landing of the Soviet airborne troops, which was successfully achieved. Together, the airborne troops and guerillas formed a strong grouping able to carry out the task assigned to them. They launched their attacks

Soviet partisans operating in guerilla detachments, cleared the Nazis from an area northwest of Cherkassy in preparation for the landing of airborne troops.

Sovfoto

against enemy strong points inside the lines of the German defense, with the two aims of (1) pinning down and destroying enemy man-power and equipment, and (2) drawing off German forces from the Dnieper defenses.

After stubborn fighting, the airborne troops and guerillas captured a big enemy strong point. The Germans, surprised by this sudden appearance of Soviet troops in their midst, brought up their forces of tanks and motorized infantry from their front line defenses. The guerillas and air-troops had achieved their main objective—the diversion of the main German forces concentrated in that area.

Taking advantage of the situation so created, the Red Army troops began forcing the river. Under cover of artillery fire they crossed the Dnieper and captured a bridgehead. But this bridgehead was found to be unsatisfactory. Space for maneuver was limited, but the area they already held was big enough to serve as a jumping-off ground for further action.

To capture a new bridgehead a simultaneous attack on the enemy from the front and rear was necessary. The airborne troops and guerillas made a forced march and began to fight for the populated places indicated. The Germans, pressing from two sides, suffered big losses and were forced to retreat. Thus this small bridgehead was transformed into a wide gate leading into the forests held by the guerillas.

More and more units crossed the river, passed through this "gate," and concentrated in the forest area. They began to threaten the communications of the enemy forces concentrated in Cherkassy. The Germans drew up troops from other sectors and also from their deep rear. They then launched several flank attacks in an attempt to close the "gates" and cut off the Soviet units which had crossed over, but they failed.

The Soviet troops, continuing to develop their success, captured several heavily fortified enemy strong points covering Cherkassy. Having taken Yelizavetovka, Budishche, Svidovsk and other places, they advanced to the city and fought through the defenses there.

Fighting for Znamenka Woods

by Captain Gekhman, Red Army

In the Znamenka woods and along the railway line from Znamenka to Smyela, the Germans planned a strong defense, based on a convenient wooded terrain. They kept the main roads under fire from commanding heights. In view of the enemy's tactical advantages, any assault on the German positions in this area would have been a difficult business.

The problem of breaking through the German defenses was solved in coöperation with the guerillas of the Kirovgrad region, who concentrated in the woods north of Znamenka and patrolled the road leading from Kirovgrad to the Dnieper. They drove the Germans out of a number of strong points, and entrenched themselves inside. After that, only a narrow line of fortifications separated the guerillas from the Red Army units.

Sovfoto

Tankists who have landed on the west bank of the river prepare to go into attack.

Coördinated local blows struck by guerillas and tanks cut this German defense line in half, and the way into the Znamenka forests lay open to the Soviet troops.

The line of the woods, which stretch from the Dnieper banks to north of Znamenka, divided the German positions in this area into two parts. The Soviet Command used the forest massif for the concentration of troops and as a base for their offensive operations.

The concentration took place in perfect secrecy. The Germans never suspected that a blow was being prepared against them in that area.

The assault began in the evening. Attacks were launched simultaneously in several directions, with maximum pressure directed at the weakest points in the German defenses, and against the enemy's lines of communication. On the northern sector, the Soviet troops captured a village which protected the approaches to the ancient Ukrainian town of Chigirin.

A little farther to the south the advancing units, having broken the enemy's resistance, captured the large populated places of Krasnoselye, Gutnitskaya and Tsibulevo, and cut the Znamenka-Smela railway line.

Near the village of Tsibulevo there was a most dramatic meeting between Soviet tank troops and a German train rushing military supplies to Znamenka. Several bursts from the tankmen's guns damaged the train, which stopped at once, and within a few minutes was in Soviet hands.

Successes were achieved on other sectors also. Northeast of Znamenka, advancing units forced the right Ingulets and captured the townships of Konstantinovka and Yasinovatka. Stubborn fighting developed near Alexandria, which was outflanked. The Germans counterattacked strongly, but failed to hold the town.

The Red Army's successful advance southwest of Kremenchug is primarily the result of skilful maneuver by mobile units. The tanks swooped, broke through and captured communications. The infantry followed close behind, and developed the successes in close coöperation with the armor.

Duel at Dnieper Estuary

by War Correspondent Nikitin

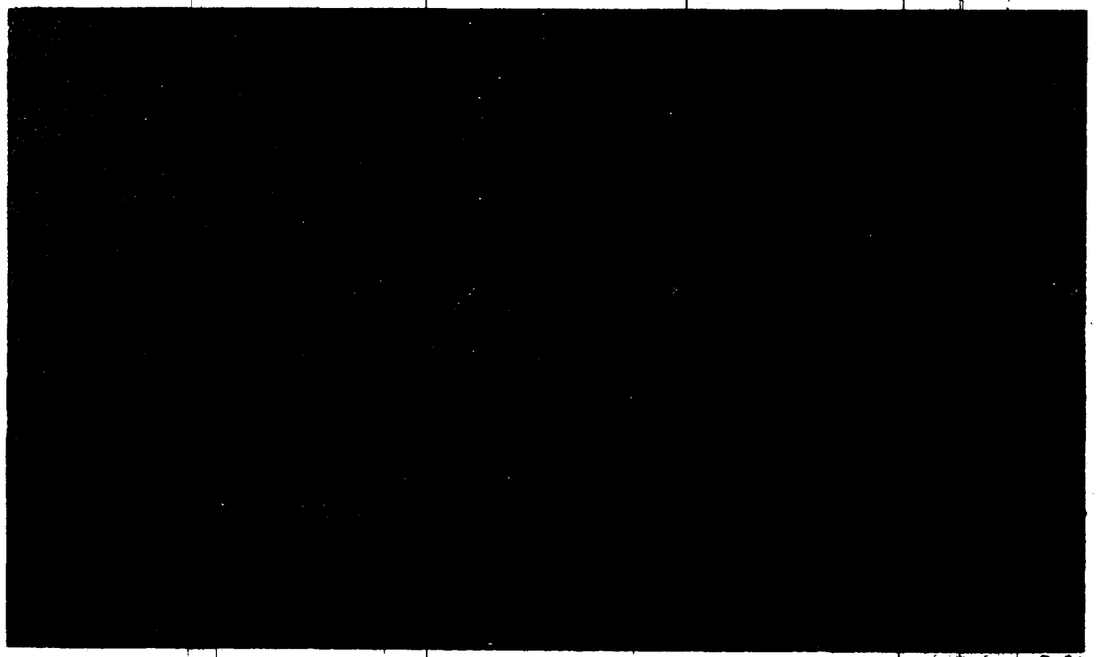
The German Command, worried by Soviet operations on the Kinburg Spit, south of the Dnieper Estuary, decided to put a landing party ashore and throw the Soviet troops into the water.

They approached in landing barges, and captured the waterside villages of Vorstadt and Pokrovskie Khutora. Troops of the "X" Soviet unit at once went into the attack, and heavy fighting developed. The German landing party had artillery support. They succeeded in entrenching, setting up barbed wire entanglements and mining the approaches. Although the soft sand, overgrown with bushes, hindered the movement of the Soviet artillery, the Kinburg Spit was soon cleared of the enemy.

One Soviet infantry unit began an assault in the Pokrovskie area. Another unit outflanked the enemy who was dislodged and pressed back from the outskirts of Vorstadt to the tip of the promontory.

The Germans tried to arrest the advance with artillery fire, but failed. The enemy batteries were silenced. The remnants of the landing party, scattered over the spit, resisted with their last forces, then began to give themselves up in groups. The enemy officers continued to hope for reinforcements from across the estuary, even when they had lost all but the last yard of the spit. They were disappointed. Everything that appeared on the water was sent to the bottom by the Soviet guns.

The Germans lost over 700 dead and 500 captured in this engagement.



Sovfoto

A wounded man is returned from the west bank of the Dnieper while the raft that brought him starts immediately on the return trip. Rafts attached to a cable were used as ferries to carry troops and supplies.

"Goums Marocains"

by Lieutenant Colonel W. C. Baxter*

WAR CORRESPONDENTS covering the Mediterranean Theater have frequently reported on the gallantry and high personal fighting qualities of a body of French native African troops, called *goums*. The privilege of occasional indulgence in poetic license is freely conceded to our able and superior corps of news reporters, particularly when dealing with so colorful a subject. The rather lurid nature of some of these accounts, however, has created a false and confused conception of a group of very excellent mountain infantrymen, who deserve more accurate, if less sensational treatment.

Shortly after the North African landings in November of 1942, thousands of American troops, making the long trek from the west coast of French Morocco to Algeria and Tunisia, encountered for the first time a picturesque but unmilitary-appearing type of native soldier. These were on line of communication duty, guarding important installations where this vital route passes through the rugged Spanish border country and the scenic Tlemcen Mountains. Every bridge, mountain pass, and cross roads throughout this area was guarded by these swarthy men in sandals, woolen socks, flowing djeballahs and turbans. Each one was armed with a long, bolt-action, bayoneted rifle and a curved 12-inch knife, carried at the waist.

Bivouacs were just off the road, where these native soldiers had established in conical tents or mud-thatched huts their individual domestic retinues, including dogs, goats, women and children. An indifferent attitude toward camp sanitation was apparent. Uniformly good-natured and friendly, their vocabularies had already been enriched by exposure to the American language. All questions and salutations were usually answered with several vehement "O.K.'s" and a wide grin, followed immediately and invariably by a request for cigarettes.

These were *goums*, we were told. But who were they and were they really soldiers? Could they fight? If so, were they of any use in the complicated warfare of the modern battlefield? Inquiry and experience have given the answers to these questions.

Centuries ago when the Arabs were extending their influence over all of North Africa, their penetration of Morocco brought them into contact with the proud and warlike Berber tribes. A bitter conflict followed. The Berbers were never conquered, but when they were eventually overrun they withdrew into the rugged Atlas Mountains. The Arabs gained control of the plains and continued to live there, but in a constant state of guerrilla warfare with the Berbers, until the period of French intervention.

Only after the most determined action on the part of the French Army was the turbulent region pacified and order established. Recognizing the unusual fighting qualities of the tribesmen, the French began recruiting them into the army. From the Arab tribes came splendid horsemen to form the colorful Spahi regiments, and capable infantrymen known as Tirailleurs.

An irregular light mountain infantry organized into companies (called *goums*) was formed for the wild and less amenable Berbers. Individual members of the *goums* are known as *Goumiers*. Each *goum* consists of 175 officers and enlisted men divided into three platoons. Four officers and six noncommissioned officers are Frenchmen who speak fluent Berber, in which tongue all commands are given. Some of the commissioned officers are Berbers but usually they do not rank above first lieutenant. Four *goums* constitute a *tabor* or battalion, and three battalions a group.

The *Goumier* is a hardy and primitive mountaineer, skilled in the arts of scouting and patrolling. He is definitely courageous and loves field soldiering for its own sake. His father and his father's father spent their active adult lives fighting; it was their livelihood. Thus when the *Goumier* of today enlists, he is seeking only pay and rations for the work he knows best. He excels in night raiding, where he can make full and grisly use of his versatile knife, as many a luckless German has found out. He can march forty to fifty miles in broken country practically without rest and on short rations.

The *Goumier* is a volunteer who enlists for an initial period of two years and usually reënlists several times. Except when on campaigns outside of Morocco, his family usually accompany him and minister to his personal needs. While a devout Moslem, unlike the Arab he is not polygamous. Until recently each *Goumier* was issued only a few basic rations and his individual arms. He was paid in cash and furnished his own clothing and other equipment. At present, however, all rations are furnished by the French Army and he is supplied in the same manner as the regular French troops. When recruits are needed, older *Goumiers* have no difficulty in obtaining friends or relatives from their home villages for whom they stand sponsor to their commanding officer. The supply of *Goumiers* always exceeds the demand.

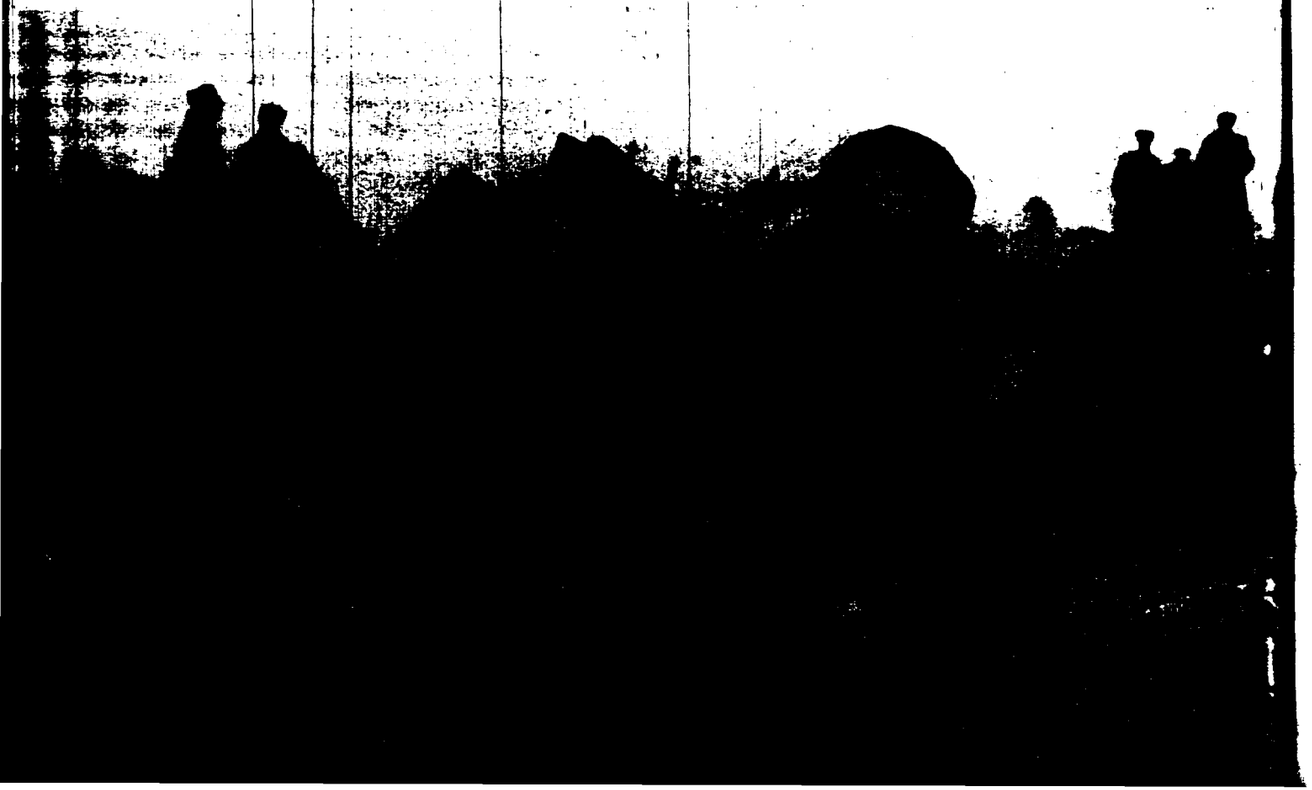
Lightness and simplicity are the chief characteristics of their equipment. The normal weapons are a rifle and razor sharp knife with which they are particularly adept. Recently, some of them have been equipped with British Sten automatic rifles and the US rifle M-1903. Their uniform consists of sandals, socks and the native woolen *djeballah* which is a loose robe with an attached hood worn thrown back, except in extreme weather. They dislike the steel helmet and prefer their woolen turbans. The pattern and color of the cloth of the *djeballah* and the turban are different for each *goum* and are designed by the commanding officers. *Goumiers* do not normally carry a blanket.

The *Goumiers* are foot soldiers. All officers and some noncommissioned officers, however, are mounted on horses. Each *goum* also has four mounted messengers. Mules are used for the transport of heavy supplies and equipment, including the light machine guns with which lately they have been furnished.

The organization, training, and equipment of the *Goumiers* is all directed toward taking the best advantage of their natural characteristics, by developing small groups of tough fighting men, lightly equipped, capable of rapid movement and swift action in broken, mountainous terrain. When employed with a full ap-

*G-3 Section, Hq., Seventh Army.

Goumiers—native Algerian tribesmen serving with French Colonial forces in Italy—have taken a great liking to American weapons, which they find to be more precise and efficient, and are seen here practicing with American machine gun parts. In the matter of clothing, however, they stick to their traditional tribal overgarment.



In single file, fighting Goumiers who landed with French units in Corsica, move up the Teghime mountain pass, October, 1943.

preciation of their capabilities and limitations they make excellent soldiers.

In the early stages of the Tunisian Campaign, it was deemed necessary to use several *goums* on defensive missions to hold important terrain features against the expanding German bridgehead, while British and American forces were being rushed eastward from Algeria. Much credit must be given these troops for delaying the advancing Germans, but this type of employment, due to their light equipment, proved to be costly when the Germans attacked with armor, supported by artillery fire.

In the final Allied assault on the Tunisian pocket, however, *Goumiers* together with other French forces were used with notable success on the north flank of the Allied Armies. This coastal country is wild and rugged, similar to their native Moroccan mountains. Here was a job for which their training and equipment best suited them. Night raids, in which they freely indulged their passion for "head-lifting," soon struck understandable terror into the heart of many a "superman," and it was here that some of the legends about them were born. There can be no doubt that their relentless ferocity and cold determination to find and silently destroy the enemy at night, materially assisted the advance. The *Goumiers* along with other French forces, triumphantly entered Bizerte on May 8, 1943 with the United States 9th Infantry Division.

The *4th Tabor of Goums* was part of the United States Seventh Army in the Sicilian Campaign. This battalion arrived on the island on D + 4 with 10 officers, 832 enlisted men and 243 horses and mules. It was attached to the 3d Infantry Division with the mission of protecting the division's right (north) flank. *In the drive on Palermo it marched and fought without rest over 72 miles of unbelievably difficult terrain in something less than four nights and days.* During the later stages of the campaign, it was given the difficult successive missions of protecting the left flank of the 1st Infantry Division and, following that, of the 9th Infantry Division.

The following account, extracted from the *4th Tabor's* own report, is illustrative of one of their numerous engagements with the enemy.

"On the night of 28-29 July, the *4th Tabor,* then attached to the 1st Infantry Division, received orders to occupy Monte Caniglio without delay. This mountain is 3,500 feet high with precipitous slopes falling sheer from the peak to a small plateau at an altitude of 3,000 feet. The descent from the plateau to the adjacent valley is abrupt, over rocky terrain pocked with small caves.

"The *66th Goum* was directed to make the initial attack. There was no moon and a low hanging fog covered the hills. Exact enemy locations were not known. Following a night march, the *goum* reached the base of the objective at 0645 hours. The *goum* commander was informed by a civilian that the mountain was occupied by the Germans in force. The advance was started at once in column of platoons.

"The 1st (leading) Platoon came under small arms fire immediately. The 2d Platoon was committed on the right of the 1st Platoon, and the *goum* advanced rapidly up the mountain, across the plateau and to within a few yards of the enemy position. Heavy losses were sustained by the frontal and flanking fire of enemy automatic weapons at close range. The 1st Sergeant was killed and the *goum* commander seriously wounded.

"The *goum* was forced to withdraw a short distance to the plateau.

"The mountain had been enshrouded in fog which lifted at about this time (0815 hours). The *68th Goum,* from a position on the right, immediately attacked the enemy left. The 3d Platoon of the 66th, which had not been committed, attacked the enemy right on the initiative of the platoon commander. This double envelopment was supported by the *tabor* mortars. The Germans attempted to withdraw but were unable to do so.

"The attack was pressed home, and the position stormed. Some of the enemy may have escaped. No prisoners were taken. Mission accomplished."

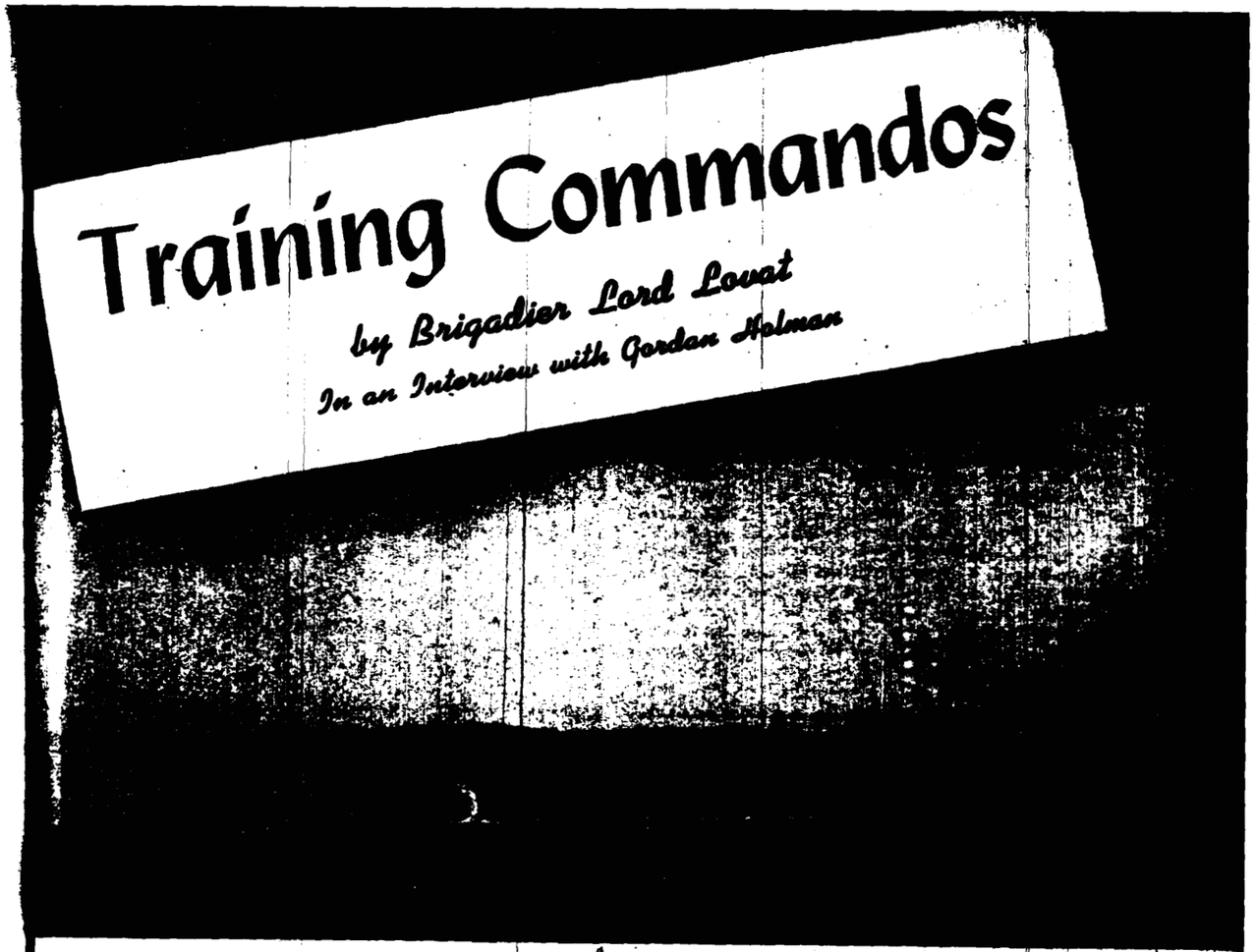
Three *tabors* of *goums* also figured prominently in the expulsion of the Germans from Corsica. *Goumiers* are distinguishing themselves in Italy. It is not necessary to romance in order to extoll the virtues of such soldiers.

In laconic military English the report of operations of the United States Seventh Army in the Sicilian Campaign reads:

"The *4th Tabor* of *Goums,* from the Goums Marocains of the French North African Army landed at Licata on 14 July and was attached to the 3d Infantry Division. Corresponding in strength to an infantry battalion, the *4th Tabor* fought with the 3d Division during its advance on Sciacca, and later was attached to II Corps for operations in the rugged country of northeastern Sicily.

"It gave a good account of itself throughout the campaign."

Goumiers come to war with their women, who do not seem to mind a few odds and ends of shrapnel. The group above was recently bivouacked near Casert, Italy.



Training Commandos

by Brigadier Lord Lovat

In an Interview with Gordon Holman

The naval bombardment shells burst among the shore batteries during the Dieppe raid.

THE problem of training is ever-present for Britain's Commando troops. Training may mean that the raw material coming into a Service has been taken in hand by officers and noncommissioned officers and given a degree of polish that appertains to the whole of that Service. With an occasional brushing up, that polish will remain for years. But the same word "training" can be used in an entirely different sense.

Perhaps the best way to explain this other meaning is by an example. In breeding and training thoroughbred animals, the aim is to bring them to the highest possible pitch of perfection. And that is the way Commando troops have to be trained. There is, however, an added complication. In training thoroughbred animals, one knows the moment at which it is desirable to reach the peak of perfection. Commando men must, on the other hand, be at the top of their form whenever required—which is often at very short notice.

The British Special Service soldier is so conscious of the importance of training that he would not object to this analogy. The greatest assistance in training a shock trooper, is the trooper's own understanding of the problem and his desire to help.

Much has been made at one time or another of the tough physical tests imposed in the British Commando Service. It is true that men swim rivers, climb mountains, live in the open in all weathers and cover distances across country which would be considered beyond the powers of first class infantry units. But this is the least important side of the build up. Plenty of men could be found who, after a short time, would do these things as well as the hand-picked Special Service troops.

There are other qualities that are of much greater importance—particularly, discipline, powers of leadership, initiative and self-reliance. These are the things looked for in picking the Special Service soldier and which are sought to be developed in the course of his training.

This might not work in the training scheme of an army, but applied to individual volunteers in a limited

BRIGADIER, THE LORD LOVAT, D.S.O., M.C.

Lord Lovat, 32 years of age, received his early military training in the Scots Guard. In July 1939 he joined the famous Lovat Scouts, a regiment locally raised for the guerilla tactics of the South African War.

When the Commandos were first formed, Lord Lovat volunteered and served with No. 4 Commando until he became Commander of the Special Service Brigade, which was then commanded by Brigadier R. Laycock, now the Chief of Combined Operations.

Lord Lovat was awarded the Military Cross for a singularly daring and successful raid in the Boulogne area, where he succeeded in inflicting heavy casualties on the enemy without loss to his force. At Dieppe he led No. 4 Commando, who had the most inspiring and successful record of any troops present in the Dieppe Raid. It was largely by Lord Lovat's efforts that No. 4 Commando became the highly trained body of men who succeeded in putting out of action the German battery at Varangeville so early in the engagement. For this most successful action he was awarded the D.S.O.

Now a Brigade Commander, Lord Lovat is an intensely practical soldier and many of the Commando methods of training are attributable to his fertile mind. His insistence on physical fitness and proficiency with all weapons is undoubtedly a contributable factor to the invariable success which has always attended any undertaking on which he has embarked.

and specialized force, it can produce remarkable results. I am prepared to take myself as a case in point. I was for eight years in the Scots Guards in peacetime, and no doubt passed for a typical and irresponsible young officer. It needed the demand on the individual, as imposed by the Commando system, to produce better qualities.

Brigadier (then Lt. Colonel) Lord Lovat, (left) Leader of No. 4, Commando, compares notes with another officer on returning to an English port after the raid on Dieppe, August 19, 1942. It was Lord Lovat's Commando that stormed the enemy defenses at Varengeville and carried out the vital task allotted to them of destroying the German howitzer battery on the silencing of which depended the whole success of the operations.

British Official Photograph

As a personal view, I would add that I favor the extension of training methods that make more of the individual. It is increasingly the British Army's practice to consider the soldier as an individual, instead of merely as a unit in a platoon. All recruits, whichever branch of the Army they wish to join, now go through the same Basic Training Centers. There they are watched for signs of latent leadership and individual ability. Selection Tests are given to each man to determine his skill or "trainability," and he is drafted to the branch of the Army for which he is considered to be most suitable as a result of these tests.

The many photographs that have appeared of Special Service troops returning from various forms of combat with blackened faces, torn and mud-stained clothing and wearing strange boots or shoes, have given a general impression of a freedom from that discipline and smartness that is expected in the good, orthodox soldier. It is an entirely false impression and I would like to dispel it once and for all.

The same standard of discipline is expected in a British Commando soldier as in the Guards. An order is never given as a request. A weak officer or NCO cuts no ice in a Commando unit, and he will never make the grade. Once fighting starts, there is instant obedience; and that the men will fight—and continue to fight—like wildcats, goes without question.

There is nothing in the dress of the Commando soldier that suggests ceremonial. He often wears a woollen cap in place of the usual steel helmet. There is a reason: so that he can run fast, move easily and make less noise at night. But I am prepared to wager that in the Victory parade, there will be no smarter soldiers than the Commando contingent in their berets.

Fieldcraft has been stressed in the modern training of Commandos, especially for scouts, snipers and patrol personnel. To some men, such as those from the Scottish highlands, it has been merely the application of what they already knew, to war conditions. To others, such as Cockneys, it is entirely new. It is then that quickness and the capacity to learn is essential. It is one of the reasons, too, why it is felt that the ideal age for Commando men is between twenty and twenty-five, although there are plenty who have proved themselves first class up to thirty.

Following are some typical fieldcraft notes:

Much can be learned by a correct interpretation of noises emanating from enemy positions at night. In training many of these are reproduced in order that they may become familiar to the ear. The tests are best carried out on a still, dark night. Among the noises easily reproduced are: a party of men crossing a wire fence or digging a trench; changing magazines; hammering picket and angle irons; opening or closing rifle bolts; posting of sentries, striking of matches, talking or whispering; cutting of barbed wire.

The sound effects with untrained men should begin at 200 yards. Then the distance should gradually be lengthened and any fully trained man should see the strike of a match at 600 yards. Smell, too, is important, and tobacco smoke and farm buildings should be easily detectable. The identification of these and other noises can warn good patrols that the enemy is assembling for a counterattack, that a counter patrol is out, that a post is digging in or being evacuated, and so on.

It is not difficult for highly trained men to differentiate between sounds of offense and defense. It should be impressed on all that of the many noises heard at night on an occupied coast or in No Man's Land, practically all may be accepted as coming from the enemy, because the position of our own patrols will be known. Commando men are trained to freeze to the ground when any unidentified movement is heard. They are taught that at close quarters, the first man to move is the first man to die, because he will have given his position away.

All night training is of the utmost importance and among the general points stressed in this connection are:

If it is possible, always move upwind. Apart from the advantages gained in detecting smells and sounds, there are the watch-dogs, which are frequently used by the Germans.

Always keep the moon behind you. Never fail to check the position of the moon before going out on patrol. It is as important to keep off skylines at night as it is in the daytime.

If you are wearing a leather jerkin, or any equipment that will offer the slightest reflection of light, wear it inside-out at night.

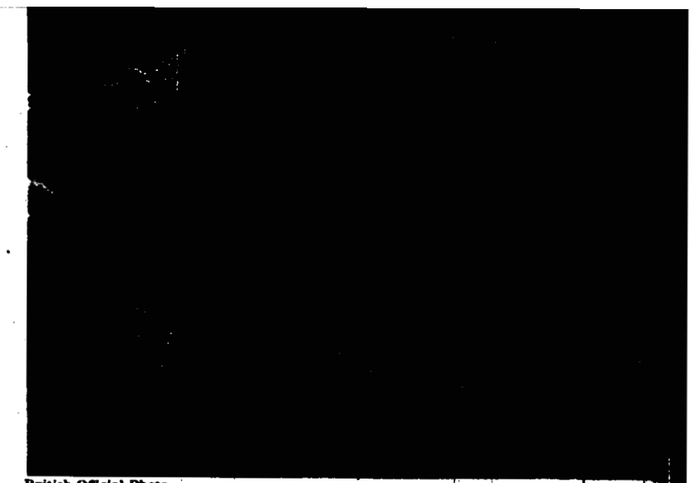
In fog—the most difficult of all weathers in which to operate—remember that sound travels very easily and yet the direction is more uncertain than at any other time.

Remember to halt and listen at frequent intervals. Never give way to the temptation (which seems to come to everybody at such times) to cough or clear one's throat. Unfit men, heavy smokers or those suffering from colds should never be permitted to do key work at night.

The aim of a first class scout should be to locate the enemy post and then either report its whereabouts or lead the patrol past it, unobserved.

In training, as at all times, officers have a tremendous responsibility in a Commando. All the officers under my command, I have chosen personally and feel that I could answer to the full for any one of them. Their qualities have been known to me in the past. They *must* have the complete and unquestioning confidence of their men. They do it by force of example.

Officers of a Commando do exactly the same as other ranks in their training, but are expected to do it slightly better. They sleep in the open, shoot straight, run fast, swim, prepare their own food and are given no more transport facilities than the Special Service soldier. They are part of the team—and the team spirit is fundamental to all Commandos.



British Official Photo.

This returning soldier lost the leg of a trouser at Dieppe. Taking part in this raid were Canadian and United Kingdom Special Service Troops, a detachment of a U. S. Ranger Battalion and a small contingent of Fighting French. The force was carried and escorted by the Royal Navy and air support was provided by the R.A.F.

From the first, it has been the aim to make every Special Service man "self-sustaining." He has no supply column behind him; every bullet counts, and he must fight and feed and rest as a self-contained unit. At all times he is left to fend for himself and, unless very special conditions arise, every night of his life he must provide his own food and resting place out of a small monetary allowance made to him.

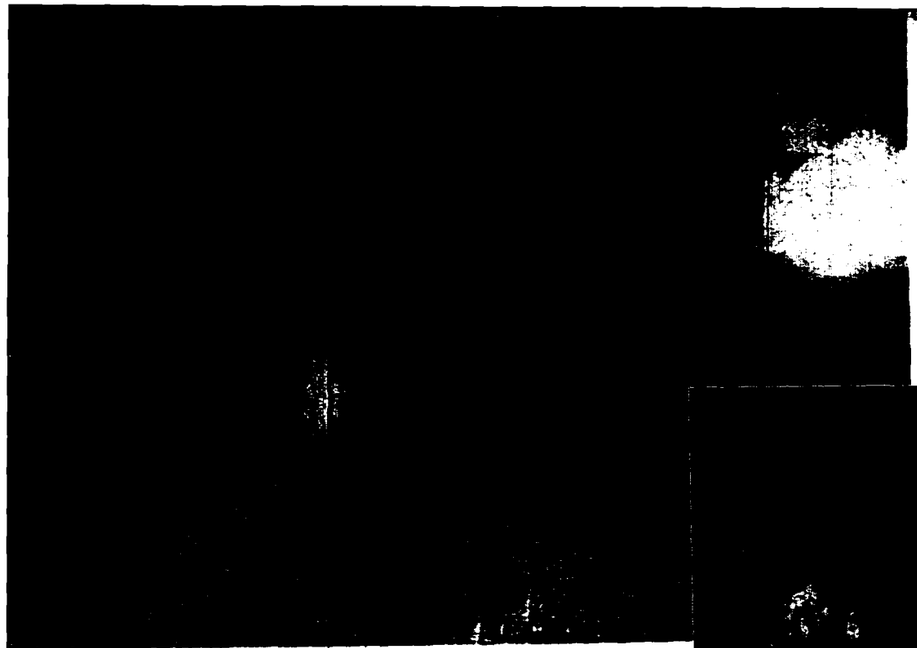
It is not unusual to be told over night that he must report early next morning at a point twenty or thirty miles away. (I have known it to be as much as eighty.) How he gets there and at what time he travels is his business, but he must be there on time.

That brings one to the question of punishments. There are hardly any punishments for the Special Service troops that could be taken as parallel to those which apply to the more regular units of the Army. There are no fatigues, for instance. It is my experience that, once the true team spirit is achieved, there are hardly any occasions on which a man knowingly lets his side down.

Generally speaking, I give a man three chances. Then the one punishment that all Commando troops —officers and men—dread, has to be applied. His papers are marked "R.T.U." and he is "Returned to Unit."

To a very large extent we can pick our personnel from all the units of the British Army. The Commando which I took to Dieppe had the representatives of 65 different regiments in it. Indeed, we were even more representative because United States Rangers fought with us there. One of the Rangers won the British Military Medal, and I believe he was the first U. S. soldier in this war to kill a German soldier at close range.

WAR AFTER NIGHTFALL



Gun cotton charges explode in the lake while tracer ammunition is fired within a few feet of trainees during night exercises.

British Official Photos

by Lieutenant Colonel T. A. Lowe
British Army

A RECRUIT'S training in the British Army consists of 21 weeks, but in the first six of these he stays in the vicinity of his barracks or camp and learns the basic subjects of drill and weapons training. Only for one short period each week is he taken out at night, and then he may march a few miles in silence, or stop on the way for a lesson in the recognition of silhouettes.

This first six weeks is called primary training, but later the recruit moves to a training center for a period of 10 weeks, and there he is gradually introduced to night work. The process is slow but thorough for the war has proved the necessity of movement by night under nearly all circumstances. Fear of the dark is a natural handicap to city men, but clumsiness in the dark is often the habit of the countryman. Both must be taught that their comrades may depend on their future *skill* in the dark, and this is the hardest of lessons.

In the early stages, a recruit is taught by daylight the formations in which he might have to move on patrol at night, and his first serious exercise in darkness is that of patrolling.

Britain's War Office demands that a standard of perfection in night patrolling shall be reached, because in this war there is often no "No Man's Land" in the sense of defined space between the opposing lines. A night patrol may cover 22 miles in a night, and the leaders, therefore, must be competent to march on a compass bearing without losing their way.

With faces blackened, troops await zero hour.

Leaders are "briefed" for their night patrols on a similar system to young pilots in the Royal Air Force. The commanding officer holds a patrol conference in the morning. The leader, who may be either an officer or a noncommissioned officer, is then given plenty of time to take out his section on a daylight reconnaissance from the best viewpoints.

After that, both the leaders and their patrols are fed and rested. When the hour of parade arrives they are very carefully inspected. There must be no identification badges, no equipment which rattles or shines. Weapons and ammunition must be in proper order. Steel hats are not used. Instead, the men wear woolen caps and they carry only an iron ration in their pockets.

They may be out for seven or eight hours; they may get lost; they may fall into rivers; they may get split up and separated. Indeed, their initial experience is often one of complete bewilderment and failure. This is expected at first, and it is not regarded with any great seriousness, but there is one thing the patrol cannot escape on its return, and that is a formal interrogation.

No matter how many the mistakes, the tale of them must be told faithfully, and it is this check-up which brings home to the patrol the importance of its night training. This is something new in military training and a great improvement on the old methods.

The next stage is a bivouac by night. For this, the equipment is the same as for a night patrol, but ground sheets are carried, and so are the new ration packs which are designed to provide a man with three hearty meals a day.

Bivouac training is important because it teaches men to look after themselves. The ground sheets can be linked together (preferably in threes), to form a perfect shelter for three men, and the food can be cooked and served palatably for small parties. It is at this stage that the helpless man is discovered—the man who cannot make himself comfortable outside his own bed at night, and the man who will do anything rather than cook himself a proper meal. He is marked down for extra bivouac training until he has mastered the essentials.

Next comes more serious night work—a platoon digging and wiring a defensive position and then occupying it for the night. Again, much responsibility rests with the leaders who have to post their sentries, organize rest and meals for the men, and then may have the additional job of repelling an "enemy" attack. At the end of this period, all concerned realize that they are learning a highly skilled craft.

Usually, about the sixth week at the training center, night firing exercises are staged. These include all of the platoon weapons—rifles, bombs, light machine guns and mortars. The technical name for this period is "battle inoculation." At first it can be a terrifying affair, as tracer bullets are used, and some of them come extremely close to the recruit night patrols as they work, but at least it is stimulating, and at this stage it has been noticed that the recruit is merging gradually into the status of a highly trained soldier.

During his last week at the training center, the recruit goes out with his platoon for three-day marches, covering 60 miles, and at the end of this, he takes part in another realistic field firing exercise with field guns used to support his movements in unknown country.

After sixteen weeks of training have passed, there are still five more before the recruit can be passed as a fully trained soldier. This period is spent in a reserve division.

The recruit is working with a company now, and his first experience will be a convoy drive with battalion transport of about 15-20 miles, with an ambush at the end of it. He is tumbled out of trucks and henceforth must foot-slog into battle. If he eventually reaches a comfortable billet, it is probably attacked to see if the sentries are properly posted.

On the next day, he may march for eight or ten miles and be settling down for a nice rest afterwards when told to get into contact by night with an enemy another 12 miles off. It is hard work for all, and the hardening-up process is severe, but at the end of these last five weeks, the recruit feels that he has done something great, and that he *is tough*.

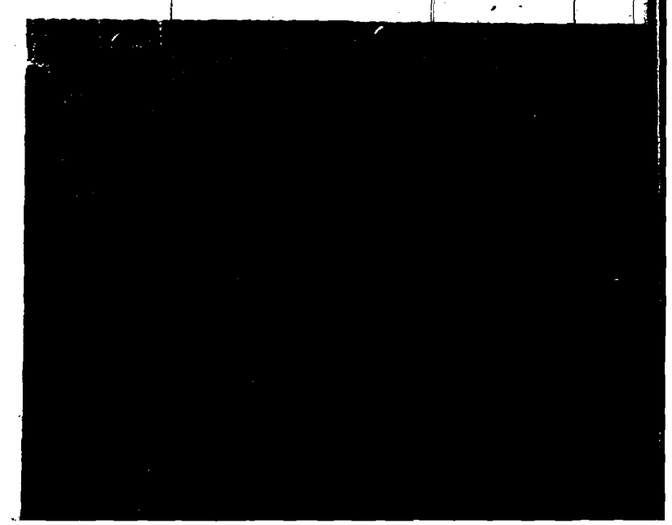
Actually, he is tough, and rapidly becoming a highly skilled fighting man ready to meet an equally highly skilled enemy. There is little sickness during this five weeks with the reserve divisions, though there are many blisters. Even those become fewer as the training gets harder.

The recruit I have been describing is an infantryman, but the system is similar for all branches of the service and is only modified for technical reasons. Convoy drivers naturally are faced with different problems involving mechanical breakdowns, wheel-changing, and so on as they do in daylight, and the same applies to the Royal Armoured Corps with their armored cars and light tanks.

In all courses, the system of interrogation is introduced. After a night patrol, the trainee is asked, "Were such-and-such bridges held? How deep was the stream? What route did you take on the other side? Any incidents on the way? What building did you pass? Was the objective held? How close did you get to the enemy? Were you fired at? What sort of fire and from where? Did you see anything else that was interesting?"

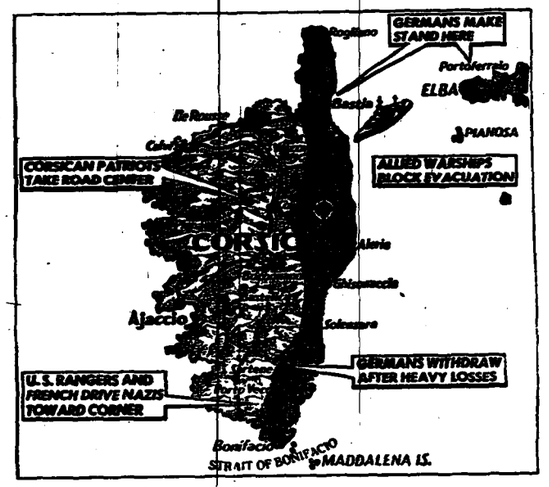
It is this sort of treatment that makes the dry bones of training and maneuvers live. Without it, they can be very dry bones indeed—and a bored soldier becomes a bad soldier.

N.C.O. instructors watch their students at work behind the "Moascar stocks," a device constructed so that they can handle different types of mines and booby traps in the dark.



The Liberation of Corsica*

—A Test Case in the Liberation of Occupied Europe



FOR the first time, enemy occupied territory has been liberated by its own people. Apart from an American commando detachment, which was landed from captured Italian destroyers on September 17th, the operation was a purely French one. The new French army, ships of the united French navy, the French air force and Corsican patriots combined in this first highly successful liberation operation.

Preparation

This was no hastily prepared landing. Forces in Corsica had been at work preparing for the arrival of the French army ever since General de Gaulle appealed for continued French war effort in June 1940.

The valuable preliminary work accomplished in the years 1940, 1941 and 1942 greatly facilitated the task of Captain Colonna d'Istria, the patriot leader who was landed in Corsica in February 1943 to unite the island's resistance.

Captain d'Istria came from an old Corsican family and knew the island perfectly. Dressed in civilian clothes, he travelled tirelessly up and down Corsica, established points of contact, gave out instructions, watched what the army of occupation was doing, and little by little raised a secret army.

By the first of September he had 15,000 followers. Many of them had left their homes and families and were living in hiding in the forests. Thanks to the radio, they were able to keep constantly in touch with Algiers headquarters. Deliveries of arms, landed secretly, made it possible to store machine guns, tommy guns, grenades, mines, explosives of all kinds, in the patriots' homes. All of these were brought from Algeria.

A price was set on Captain d'Istria's head by the German and Italian authorities, but the sinister O.V.R.A. was not able to lay hands on him. He lived like a wild creature in the heart of the woods and slept under a rock or at the foot of a tree. He was always kept well informed and was thus able to elude pursuit.

The Italians (then occupying the island) thought that Captain d'Istria's headquarters must be in the Sartene region where he was born. They searched the whole region a number of times, arrested about forty people, some of whom they tortured by burning their nails off with red hot coals. Every patriot except Colonna d'Istria was arrested, but this did not prevent the spirit of revolt from becoming stronger every day in Sartene.

Resistance went on organizing—children, women, old men, each doing his share as best he could. The women carried food to men who were hiding in the forests to escape the Italian Gestapo, and children were charged to take messages from one to the other. One youngster of fifteen was ambushed when he was carrying a note to an underground post hidden in the brush-covered country near Cutoli. He drew his revolver and shot an Italian, and then left his donkey behind and fled into the mountains.

French Moroccan Goumiers participated in the liberation of Corsica. Here one stands guard in a captured village.

French Press & Information Photo

At Salenzaro three Germans who had insulted a young girl were killed in the open.

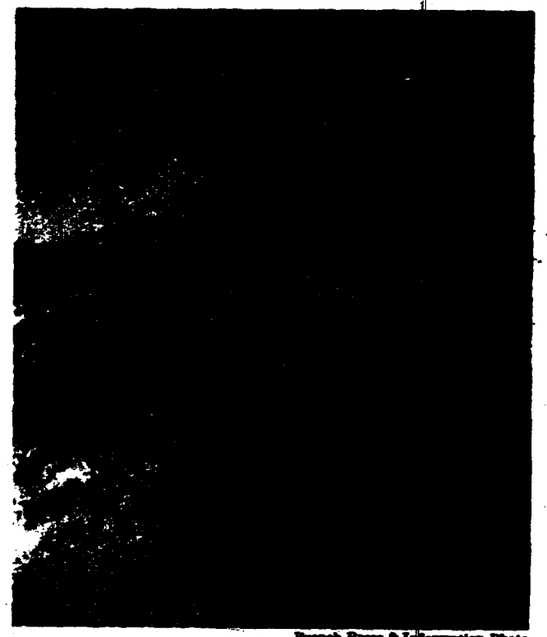
Italian *carabinieri* began to be afraid to show themselves in the streets. For every patriot arrested, an Italian was killed. But Italian repressive measures were enforced by the Gestapo, which was in great strength there, and more and more arrests were made.

To avoid seizure, supplies had to be moved quickly. There were also many difficulties about receiving and transporting arms, most of which had to be carried by mules, or even on men's backs. One day a submarine unloaded between two Italian posts—one 200 yards away, the other 500 yards.

Since the British were very busy in other places, the delivery of arms only began to take place regularly in July and August. Every night, five British planes would drop their cargoes by parachute, on landing fields which had been designated and which were well guarded. A British submarine also shuttled to and fro. On every trip it brought in 5 tons. The submarine *Casabianca* in two trips brought in 27 tons. In this way 150 tons of arms, mostly tommy guns and hand grenades, were brought to the island. Only a very small percentage was seized by the Italians.

Plans for action were thought out so that people would not have to leave the outskirts of their own villages, but could carry out orders wherever they happened to be. Since the partisans had no rear guard and no system of supplies, they could not operate like regular troops. Each village, however small, had an Italian garrison, and the plan was to cut the throats of the officers as they lay sleeping, to attack small outposts, to put snipers in ambush, clear the ground of mines, cut the telegraph wires, and meet and guide friendly parachutists.

After these first missions of surprise attack were accomplished, real operations were to begin; that is to say, groups of men returning from missions were to join together to arrange ambushes, to seize barricades, harass convoys of trucks, cause bottlenecks and then withdraw into hiding in the heath lands, without waiting for any counterattack—in a word, create a state of insecurity which would paralyze the enemy and permit the French troops to land.



French Press & Information Photo

Soldiers and patriots cut through Corsican Maquis (underbrush) and cut the German communication between northern and southern forces. Note the long line to the left rear.

Organized patriot resistance was to guarantee the French liberating forces free access to the port of Ajaccio. Without this help from within, the success of the landings could not be forecast.

The Patriots Take Ajaccio

On September 8th, thousands of men greeted the news of the Italian surrender by demonstrating in the streets of Ajaccio. A deputation from the National Front made its way to the Town Hall and demanded that Corsica should rally to Free France. A list of collaborators was drawn up, and the same evening 23 collaborators were brought by the crowd to the police station to be locked up.

The next day, September 9th, there was a new demonstration. Nearly 15,000 Corsicans assembled before the War Memorial. Afterwards the patriots went to the Town Hall to lay out their plan for resistance. They had one fixed idea, to get rid of the municipal council, and above all of the Mayor, who was notorious for his Vichyism. The National Front sent a deputation to the police station to explain to the population that the patriots would henceforth take over the direction of Corsican affairs until liberation. On September 10th, fighting between patriots and the Germans started, shots were fired, six patriots were killed, and a large section of the population went into hiding.

German tanks, concentrated around Sartene, attempted to launch an attack against Ajaccio. They got as far as Cauro and were checked there by the patriots.

*A compilation from "The Lesson of Corsica," *La Lettre de la France au Combat*, Vol. III, No. 9, and "The Liberation of Corsica," *Free France*, Vol. 4, No. 4.

French Press & Information Photo

The French Moroccan Goumiers in Corsica used native dress, American equipment.

who, carrying out their orders, cleared a large bridgehead at Ajaccio ready for the French army to land.

Troops Land at Ajaccio

The French were short of ships and planes, and since the operation in Corsica took place at the height of the battle of Salerno, and the success of this operation demanded that all available allied shipping and aircraft should be concentrated in that theater of operations, it was impossible to give any naval or air cover to the French landings. . . .

On the night of September 11th, the French submarine *Casabianca* made two journeys to the island and brought the first company of shock troops. Two days later the destroyers *Fantasque* and *Terrible* brought up the rest of the battalion, as well as the new military governor of Corsica, General Mollard, accompanied by Colonel Deleuze, Chief-of-Staff. The shock troops' orders, General Martin told them, were to hold Ajaccio to enable the French navy to use the port for disembarking troops, and to hold the Campo del Oro airdrome.

Once the airdrome was firmly held by French forces, the next job was to get it in working order so that planes could be based on the island. The commanding general immediately gave orders for antiaircraft guns and quantities of airplane fuel to be brought over from Algiers. By this time the destroyers *Alcyon* and *Tempête*, and the cruisers *Jeanne d'Arc* and *Montcalm* were all bringing up reinforcements.

Patriots and Troops Coördinate to Drive Out Germans

Meanwhile, patriots on the island, who had been fighting since September 9th, besides taking Ajaccio, captured Bastia in the north of the island, after a series of conflicts with German troops that resulted in a thousand dead to the enemy and the destruction of many tanks. After two successive attacks on Bastia, however, the Germans succeeded in retaking that town temporarily.

The patriots fought side by side with the Goumiers' shock battalion, the Moroccan Tirailleurs, and American Rangers. Soon the Germans realized that they could not use the main route from Boniface to Bastia for it was mined, mountainous, guarded by patriots, and very bad going for tanks. By then, all the enemy forces were concentrated in two areas of the island—in the south, in the triangle formed by Sartene, Porto-Vecchio and Bonifacio, and in the northeast between Ghisonaccia and Bastia.

Shock troops from Algiers went into action in the south on the 19th, and occupied Sartene, and the first signs of mass evacuation of that sector appeared on the 20th when the Germans began destroying their own supply dumps. The following day they evacuated Bonifacio, and two days later, Porto-Vecchio.

On the 24th, the position was considerably improved when the Allies provided the French Command with an L.S.T., and for the first time it was possible to bring over tanks and vehicles. The same day the steamer *Ville d'Ajaccio*, which had been recovered in Corsica, and the cargo-boat *Ville de Djidjelli* transported a large quantity of airplane fuel, and food for the civilian population.

The outcome of the operation was then certain. On September 25th, the French Command declared that

A Corsican patriot gives directions to a French reconnaissance car near Bastia.

French Press & Information Photo

three-quarters of the island had been liberated. That day the Germans evacuated Ghisonaccia, and the following day Oletta, just south of St. Florent. The enemy was driven into the extreme north of the island, and it became clear that the Germans only intended to hold Borgo airdrome, the port of Bastia, and the beaches on the east of Cap Corse, to enable them to evacuate some of their remaining troops. The attack on Bastia was launched on the 1st. Meanwhile, shock troops and Italian forces were attacking Borgo, which they entered on the 3rd. Bastia, the last Nazi point of defense, fell the next morning.

Corsica After the Reconquest

Corsica, which had been occupied by about 100,000 Axis soldiers, had received produce from France only very irregularly. When liberated, the island was faced immediately with two grave problems—one, the problem of supply; the other, the problem created by the continued presence of some 70,000 Italian soldiers on the island. These had taken no part in the military action against the Germans, although in some cases they had been used to keep open roads and communications, and the French population, which had had to put up with them as an army of occupation, felt very resentful toward them. As soon as Corsica was freed, however, the general services of supply were restored as they had existed in France in 1939, with a departmental director at the head; and on October 20, 1943, the French office of the Commissioner of Information, Algiers, reported on supplies to Corsica as follows:

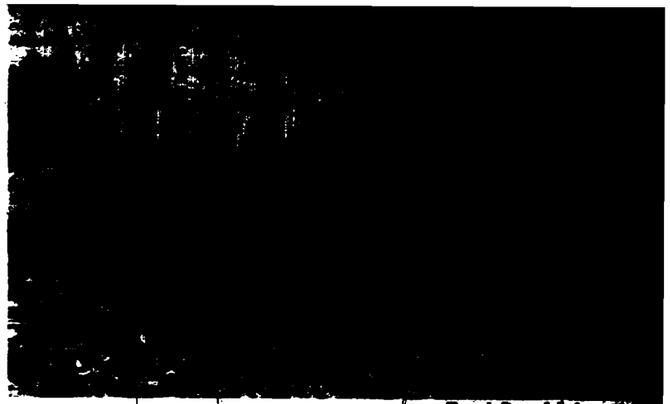
"Bread, which was almost lacking, will now be distributed in daily rations of 300 grams (about 11 ozs.) per person instead of only 100 grams (3½ ozs.) for a worker. Two thousand tons of flour will be sent monthly.

"Shipments of condensed milk will amount to 120 tons a month to provide the rations of 30 cans of unsweetened, or 24 cans of sweetened milk for children under 18 months of age, instead of the 14 cans a month formerly allowed by Vichy.

"One hundred and eighty-five tons of sugar will be delivered monthly, permitting children to receive about 1½ lbs. monthly, instead of the 8 ozs. allowed under the Vichy regime. One hundred and twenty-six tons of noodles will be shipped monthly, *i.e.* about 1 lb. for each person. These will be the first noodles which have been obtainable in Corsica for many months. There will also be 46 tons of oil a month, allowing the ration of 150 grams which was supposed to be available under Vichy to be increased to 255 grams; and 35 tons of soap will allow ½ a pound for each child under three, and ¼ of a pound for other consumers. This soap will contain 72% instead of 10% saponaceous matter.

"In addition, 10,000 hectoliters of wine will be shipped monthly. This will make it possible to open the retail market again at prices which must not exceed 10 francs a liter, whereas wine cost 120 to 150 francs a bottle a few weeks ago.

"The solidarity of the French Empire and of the Allies with the liberated province has been demonstrated. Condensed milk and sugar have been furnished by the Allies, flour by Algeria, fish and cooked meats by Morocco, oil by Tunisia, and coffee by French West Africa.



French Press & Information

German matériel destroyed at Bastia during the liberation of Corsica. Bastia was practically demolished during the fighting.

"Regular convoys will go to Corsica to bring the population the manufactured goods which were entirely lacking. Twenty thousand pairs of shoes have already been sent, as well as medical supplies, a number of ambulances, motor fuel, coal, cement, metals, chemical products, clothing, blankets, knitting wool, sacks of jute, needles, and newsprint.

"What is immediately needed for agriculture has been calculated, and seed potatoes and grass seed will soon be on their way to the island.

"An expert has been sent to Corsica to study plans for the rebuilding of devastated regions, particularly the town of Bastia, which has suffered severely in the war."

Summary from London

In the unfolding of the Mediterranean campaign, the campaign for the reconquest of Corsica has its own significant place. . . . The Germans who escaped from Italian Sardinia may well have hoped to have held French Corsica. From their point of view there were solid reasons why they should have tried to keep it or, if that was not possible, to have denied its effective military use to the Allies for as long as possible. Its close relation to the southern coast of France and the northern coast of Italy gives it a strategic and psychological importance which the Germans are the last to have underrated.

Whatever his intention may have been, the enemy seems both to have miscalculated the speed with which the French and Allied forces from overseas would act and to have misjudged the ardor of patriotic rally of the islanders, so long under the usurper and the invader: The resistance movement in France is growing daily in strength and stature and is being heartened by the near approach, after a long waiting and many anxieties, of the victorious French and Allied arms.—(London *Times*, September 27, 1943.)

MULE PACK TRAINS IN ITALY

*by Technical Sergeant Robert Geake**

HUNDREDS of Italian mules, roped together in pack trains, are filing day and night up and down rocky trails of the Appenines, carrying food and supplies to Fifth Army troops fighting above the "jeep line" in Italy.

Mule pack trains are the logical solution to the tremendous problem of supplying frontline troops who often must battle for days along trackless, wild mountain slopes, well beyond the end of tortuous goat trails.

One of the best of these outfits is the 3rd Infantry Division's mule train which has seen almost continuous action since the start of the invasion. Originally, the mules merely inspired wise cracks. Now the plodding creatures are an irreplaceable part of the division's fighting machine.

The mules were requisitioned or purchased in Sicily for use there in preparation for the Fifth Army's invasion. Lighter and "longer barrelled" than the familiar Missouri mule of the States, the Sicilian mule is nevertheless sturdy and surefooted for mountain work. The mules pay off by keeping men alive and bringing them bullets with which to fight.

When the division is in action, the mules are assembled at picketlines at a "mule head" established at the farthest point toward the frontlines that can be reached by jeep. Motor vehicles grind up hazardous roads to these points, dump their food and supplies. The mules take it from there.

The mules are fitted with Italian pack saddles. Boxes of food and ammunition and other supplies, such as raincoats, overcoats and "long johns" in season, are lashed to these saddles. When carrying food, for example, three cases of K's or two cans of water and one case of K's are tied on each mule. (K's are individual cardboard boxes containing a can of chopped meat or eggs or a tin of cheese and biscuits for one man per meal. There are 36 such "meals" in a case.)

Platoons of mules are assigned to each unit as needed—sometimes in particularly rugged country a platoon to a battalion. The mules are roped together in threes and moved along by drivers who accompany the train. Under ideal conditions a pack train averages about one mile an hour over the mountains and completes one round trip a day.

The trains move, day or night, rain or shine. Last fall, along the Fifth Army front, there was mostly rain both day and night.

Since the units are constantly moving, maps are of little value. Train leaders follow communications lines. Signal men always lay these over the worst terrain possible to obtain cover. The trip is a long, weary test of scrambling over wet, muddy rocks, often under fire. The animals slip, throw their shoes and often fall. The 3rd Division's outfit required, two days to make one pack; traveled seven miles on another. The average daily haul is a mile and a half.

Commanding this rugged company is Second Lieutenant George C. Costas of Shawnee, Oklahoma. Costas, now working with the oldest form of transportation, began with the newest—as a paratrooper. He is convinced the slow but sure method has its points. In his first combat mission as a parachutist he was shot down over Sicily. Mules always bring him back.

"The biggest kick in this job is seeing those frontline soldiers eat," Lt. Costas said. "Sometimes we're delayed by enemy fire, and when we finally arrive, the men are ready to throw kisses at those mules. Once we fed C rations to a group of men who had not had a bite of food in two days. One fellow gulped down three cans of cold hash as if it were hot fried chicken."

Three blacksmiths keep the mules' feet in shape. Most of the time these men are replacing the long, flat Italian shoe with the shorter American model, which gives the animals much better footing. Although blacksmiths before the war, the men on this job never expected to shoe mules in a mechanized army!

Any outfit that trails right into the frontlines on schedule every day is asking for trouble. The mule trains—always a good target—are frequently pinned down by mortar fire and snipers.

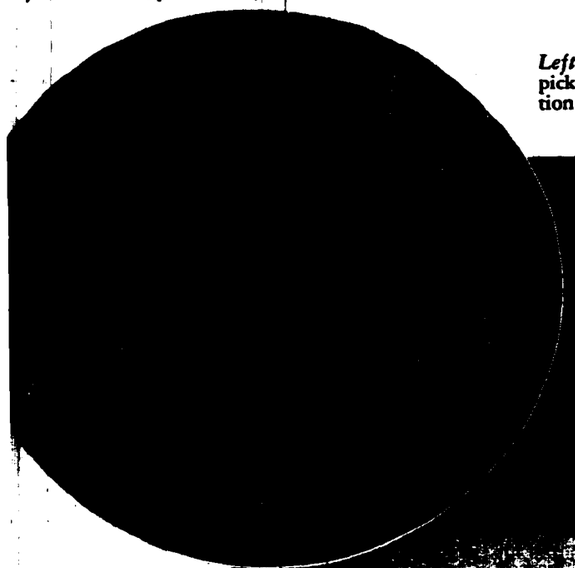
Curiously enough, the mules are never frightened by the noise of battle and completely ignore artillery shells which explode near by.

As long as the Fifth Army is in "mule country," its mule trains will be on the job, shells or no shells. Soldiers must eat. The men who feed them will be there, too, on time if the shelling and the rain is not too bad, possibly a little late if the Germans spot those mules' ears. It is just another of those plodding service jobs, which no one thinks about—just another job that keeps an army moving.

Probably no one will give the mule trains any medals. "That's okay too." Lieutenant Costas agreed. "We'd rather hear 'Oh, boy' from the guys we feed, than get a pack saddle full of medals."

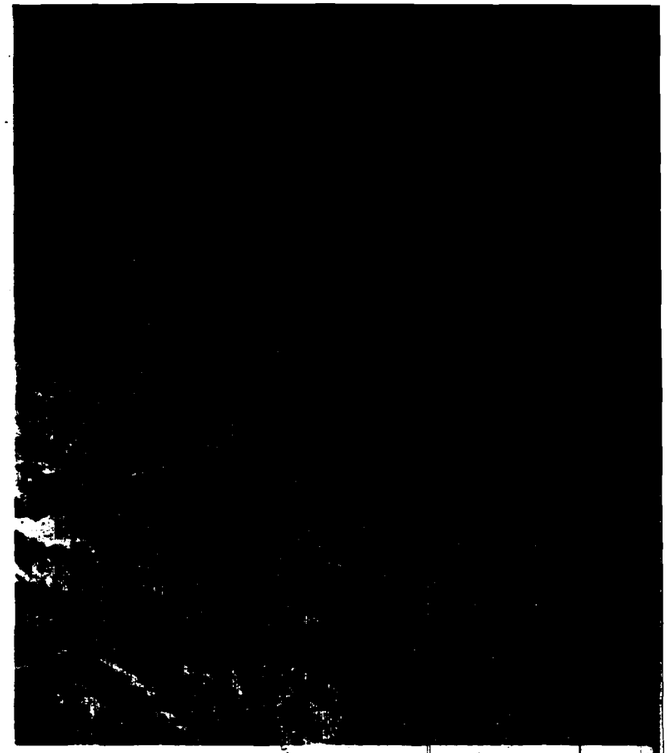
*Hq. Fifth Army.

Out where the war is being fought in primitive reality—up steep mountains, across swift streams, through mud and slush, on native trails remote from the pavements to which our gasoline minds have become accustomed—out where hard facts supplant armchair theory, the humble four-legged mule again comes to the aid of the army. On his back go the supplies of gasoline, food and ammunition that otherwise would have to be carried on the backs of soldiers—a vital rôle in an age of mechanized warfare.



Left: A mule pack train carrying rations for American soldiers picks its way across a rocky Italian slope. Supplies and ammunition must be hauled over this rugged terrain before they reach the Allied Fifth Army.

Mules plod through the snow with supplies for advanced British infantry somewhere on the Italian front.



Mule pack trains are meeting one of the most difficult problems of the army in Italy—keeping forward troops supplied with food, water and ammunition. Added to the natural difficulties of the mountains through which the Allied troops now are fighting, are the obstacles left by the retreating Germans. They blow up all bridges and culverts, tear up railroad tracks, fell trees, demolish houses in the mountain villages to block the roads, sow mines and booby traps. Mules can get through where wheeled vehicles would be stuck. Many infantry battalions now have their own "mule skinner" units. Photo shows one of the mule pack trains winding its way up a mountain trail.

"Know Your Enemy"

by Colonel George W. Pardy*

IN a recent attempt to impress a ten-year-old youngster with our knowledge, we glanced casually at a plane passing overhead and volunteered the information, "B-17, the Flying Fortress." Just as casually, he looked it over and in a very belligerent tone asked, "Oh yeah? An F or a G?"

This incident illustrates what can be accomplished when interest in a subject is active. Recognition of ships, planes and tanks is based on two things: repetition and interest. And the hardest of these to generate is interest. Too often the teaching of *recognition* has been allowed to fall into the same routine procedure day after day, with the result that tremendously expensive errors are constantly occurring where they are most costly—in the combat zone.

The close coöperation of air support activities with ground troops makes it necessary for the latter to be able to recognize aircraft at the earliest possible moment. And if the training of men in one branch of the service about equipment of another branch is not made interesting, it is a cinch that the men will not have the knowledge tucked away in that corner of the brain which motivates instinctive action.

Present recognition training programs attempt to incorporate all available training aids in an effort to offset boredom and monotony. The great variety of material available on this subject at the present time should make it easy for any instructor to conduct a recognition course that would force him to put the SRO (standing room only) sign outside his classroom constantly.

*Chief, AAF Training Aids Division.

Recognition of enemy craft—air, land or sea—is one of the numerous imperative subjects in which Air Force troops must be trained. All over the world the AAF is developing new teaching methods, inventing synthetic training and demonstration devices, finding recognition short cuts, discovering graphic treaching techniques, breaking new ground in visual education, and turning out more effective training publications.

As the recognition phase of AAF Training Aids activities is mutual to Air and Ground training, this article emphasizes that topic with only brief mention of the many other phases of Air Forces training.

Some Recognition Techniques and Devices

The flash-meter, consisting of a projector, shutter, screen and slides, heads the list of recognition training aids. Pictures are flashed on the screen at speeds from one second to 1/50 of a second to try to force recognition by total form. When presenting new planes or tanks, the flash-meter can also be used with the shutter open to show all the recognition features of the subject.

Supplementing the flash-meter is the shadowgraph, a device that permits motion to be imparted to models being studied. A white screen of some translucent material, a sheet or tracing cloth for example, stretched over a frame about four feet square, a light source behind the screen, a set of models and some wire rods with which to manipulate the models are needed for this device. The wire rods are inserted into the holes in the models which then can be maneuvered behind the screen so as to give realistic motion and countless views not covered by pictures or slides. Two models may be shown at the same time, in order to allow accurate comparisons to be made from all angles.

Another picture projection device is the baloptican. This is basically a box, a light, and a lens. The size of the unit depends on the lens available, since the focal length may vary considerably. The baloptican is for use with photographs or reproductions clipped from various printed sources without having to make special slides. With a homemade shutter on the baloptican, the instructor can approximate the flash-meter method in addition to having an unlimited set of slides.

All of these devices can be used alternatively for daily classroom work and for testing ability of the students, which must be observed carefully and stepped up as the course proceeds. During early periods of instruction, the instructor uses easy shots of planes; as the class progresses, he gradually works into the use of difficult angles and distant views. Tests, conducted on the same principle, grow consecutively harder as the proficiency rises.

The Shadowgraph is a device used to teach recognition of planes, ships and tanks. The instructor, holding a plastic model at the end of a wire, can vary the position at will. This gives the student an opportunity to study various silhouette aspects of the model. View behind screen.

Demonstration of the flash-meter and slide projection equipment used in recognition training. A camera shutter on the front of the projector allows "snap-shot" viewing.

Silhouettes are the basis of all recognition training. These are the three-view basic blueprints or engineering drawings of an airplane, adapted for recognition purposes and are available in poster form, in manuals, in slides and in the *Army-Navy Journal of Recognition*.*

Perspective silhouettes are called sillographs and are made from photos of planes taken from various angles as contrasted with the flattened-out standard silhouette. Sillographs are easily made by tracing the outline of a plane from a photograph and then blacking it in solid for visibility.

Photographs are used in training to integrate the three silhouettes and to make the students familiar with equipment from all angles. They are available in slide form, in manuals and in the *Army-Navy Journal of Recognition*.

Scale models are of great value because they show the relative size of different planes or tanks and allow the student to see any angle of a given unit without being limited by the small coverage generally available in photographs.

The introduction of motion and the greatest simulation of reality is accomplished by Training Films. Whereas many students cannot study actual planes or tanks in operation, the training film gives an accurate impression of how they will appear in the field. New films are being made with an eye to interest and value, especially in showing action views and distant or semi-visible sequences which approximate true field conditions.

Interest—A Vital Necessity

Coverage of the whole recognition training picture is presented in the *Army-Navy Journal of Recognition* which has been published monthly since September 1943. This Journal serves to keep the instructor abreast of the newest developments in Allied and Axis surface craft, armored vehicles and airplanes by making available information and pictures which would otherwise be hard to obtain. Articles on latest training methods and devices permit quicker distribution of ideas to the individual instructor.

*Restricted.

Interest, the key to the training program, should not be very hard to generate with such a lineup of equipment and information. Even with only a few of the above items present, an instructor could go through a 20-hour course without once being repetitious.

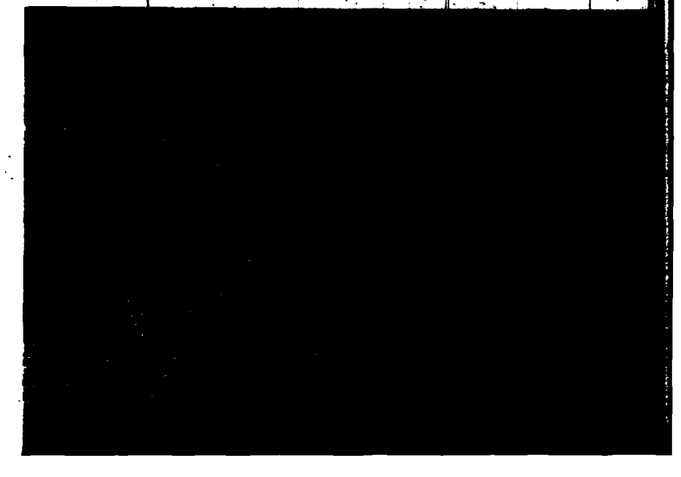
Operational news is presented along with the first view of the plane or tank and serves to make the students want to see it again. The first questions usually asked are, "How fast will it go?" and "How many guns does it carry?" By combining such information with stories of actual combat accomplishments, it is easy to hold the interest of students and pass on to them a proficiency that will save lives and equipment.

What about the instructor's interest? Is he going to become bored after two or three months of staging the same thing over and over again? *The Instructor's Guide for Recognition Training in the Army Air Forces*, prepared by AFTAD, in addition to showing how the material can be used, also supplies data for the construction of home-made devices, planning and operation of a recognition school, games to stimulate interest, and various ways of testing the student's progress.

Recognition Between Ground and Air Forces

For the cavalry, whether mounted on flesh or steel, high speed recognition seems more important every day. New tactics for low-flying planes, which bring the planes into closer contact with ground troops, results in more frequent opportunities for mistakes. Armored vehicles cover ground so rapidly that they often outdistance communication facilities, and small units operating on their own find it necessary to rely on recognition rather than official notification that certain planes will be overhead at a given time.

The Model Ship Recognition Display is used in recognition training. Here officers are shown receiving pointers on how to differentiate between naval vessels.



This same principle applies to Armored Vehicle Recognition Training. Fast vehicles, carrying longer range weapons than ever before, must be recognized from the air before a plane approaches near enough to receive a sitting duck shot—with the plane's crew still trying to count bogie wheels, turrets and guns.

While spending long hours training in tactics, operation, and maintenance, cavalry troops should, at the same time, allot a certain amount of time to the subject of recognition.

The only way to hold the attention of a man who has just finished an intricate problem dealing with his own equipment is to give him enough interest material to rouse him to new efforts. He must want to learn this new subject for his own protection and for his own advantage when on the offensive. A semi-darkened room is a wonderful place to doze—especially with the drone of an instructor's voice lulling one off to sleep.

This interest cannot be aroused by shouting nor by compulsion. There must be an incentive to make students sit up and take notice of the class work. Such an incentive is the "pay-off" in battle. The slogan "Know Your Enemy" has become of paramount importance in this war. Daily, in every theater of operation, men in the air and on the ground are finding that split-second recognition of friend and foe—in plane, ship or tank—is a fighting man's best insurance.

The Japanese Zero

PARTS of five Japanese Zeros, shot down in the battle for the Buna Airstrip, have been used by the Army Air Forces to reconstruct one of the planes.

This Zero, known as the "Hamp," is superior in many respects to its predecessor, the Zeke, and has already been the source of a quantity of information for the AAF.

Used widely in the Pacific theater, both as a land-based and carrier-based plane, the Hamp's structure is all metal. Compared with American planes it is light and fragile.

The metal skin covering is extremely thin, a factor which frightens most pilots when they fly the ship the first time. In flight, the wing surfacing wrinkles like tissue.

The plane has low wing loading, a factor which affords high maneuverability.

Brakes on the Hamp are ineffective. It has a hook for carrier operation, probably one of the reasons why the braking mechanism does not function too efficiently.

Not too much consideration is given to the pilot of the Zero in its construction. There are no warning lights in the cockpit to tell him when to switch over to auxiliary gasoline tanks. The pilot allows his main tanks to run dry then snaps on the auxiliaries. The ship carries four tanks—a belly tank, fuselage tank and two wing tanks. This gives it a good range.

The cockpit, which was built for small statured individuals, is small and uncomfortable. Everything is in easy reach. Its outstanding departure is of a structural nature. The cockpit is an integral part of the wing—the two being all one structure. The fuselage tail section and engine mounts join onto it.

The Hamp is powered with a Nakajimia Sakae radial, 14-cylinder engine. It appears to be a copy of the AAF's Pratt & Whitney engines.

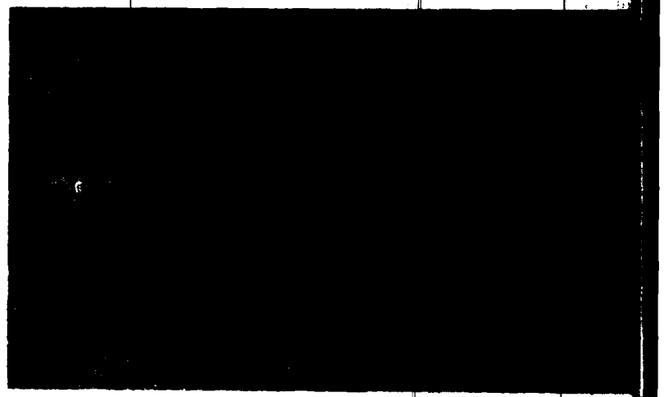
The plane packs lethal armament, but no armor to protect the pilot. The gasoline tanks are not leak proof. Two cannon are mounted in each wing and it has two 7.7 caliber guns firing through the propeller.

The Hamp is a killer, a dangerous adversary in aerial combat, and a weapon in which no pilot has yet been reported to have made use of a static line in the cockpit which can be used automatically to operate a parachute in bailouts. The static line is there, but the canopy cover of the cockpit has no emergency release and must be operated manually to permit egress by the pilot.

HAMP is Type O Mark 2 and, as can be seen from the crash photos, the air scoop is on top inside the cowling instead of below as in Zeke. The other noticeable variation is square wing tips.

U. S. Army Planes

THE following is currently releasable data on the bulk of the aircraft models now in use by the U. S. Army Air Forces. Descriptions are given as to dimensions, power plants, performance, bomb loads, armament and protection. No alphabetical suffixes of aircraft in a given series within a basic type are given. However, the information given pertains to the latest current model of each plane. Performance figures pertain to normal operations.



B-24 "Liberator"

B-17 "Flying Fortress"

Description: Four engine heavy bomber constructed as an all-metal, midwing monoplane with conventional retractable landing gear. Originally designed and built by Boeing Aircraft Corporation, but now also being produced by Douglas and Vega. Late models provided with external bomb racks and wing tip tanks. The crew varies from 9 to 11 men.

Dimensions: Span: 103 feet, ten inches. Length: 74 feet, 9 inches. Height: 19 feet, one inch. Tread width: 21 feet, 2 inches. Wing area: 1,420 square feet. Approximate maximum weight: 60,000 pounds.

B-17 "Flying Fortress"

Power Plant: Four Wright R-1820, 1,200 hp engines with turbo superchargers. Hamilton 3-bladed automatic control full-feathering type propellers.

Performance: Rated at a speed of about 300 mph. Approximate service ceiling over 30,000 feet. Tactical radius of action—700 miles.

Bomb Load: 6,000 pounds.

Armament: Latest model has 13 x .50 caliber guns as follows: 2 in Sperry mid-upper turret; 2 in Sperry ball-type lower turret; 2 in tail turret; 1 in radio compartment; 2 in nose; 2 in chin turret; 2—one each side—at waist position.

Protection: Armor for: Pilot, co-pilot, radio operator, top-ball, waist and tail gunner. Navigator and bombardier are partially protected. De-icer boots, wing and tail; anti-icing for propellers. Equipped for desert operation.

B-24 "Liberator"

Description: Four-engine heavy bomber constructed as an all-metal, high-wing monoplane with hydraulically operated tricycle landing gear and Fowler flaps. Deep-bellied fuselage, twin tail. The crew varies from 9 to 11 men.

Dimensions: Span: 110 feet. Length: 66 feet, four inches. Height: 17 feet, 11 inches. Tread width: 25 feet, 7½ inches. Wing area: 1,048 square feet. Approximate maximum weight: 60,000 pounds.

Power Plant: Four Pratt & Whitney R-1830, 14-cylinder 1,200 hp engines with turbo superchargers. Hamilton Standard 3-bladed automatic control full feathering propellers.

Performance: Rated in 300 mph class. Approximately service ceiling over 30,000 feet. Tactical radius of action up to 750 miles (normal mission). Has carried out many long range missions.

Bomb Load: 6,000 pounds.

Armament: Ten or more .50 caliber guns: 2 in nose turret; 2 upper turret; 2 lower turret; 2 waist guns; 2 tail turret.

Protection: Armor for all crew members in battle

stations from rear and partially from front. Leak-proof tanks and bullet-proof glass.

B-29 "SUPERFORTRESS"

Description: Four-engine very heavy bomber. Manufactured by Boeing and other major aircraft manufacturers.

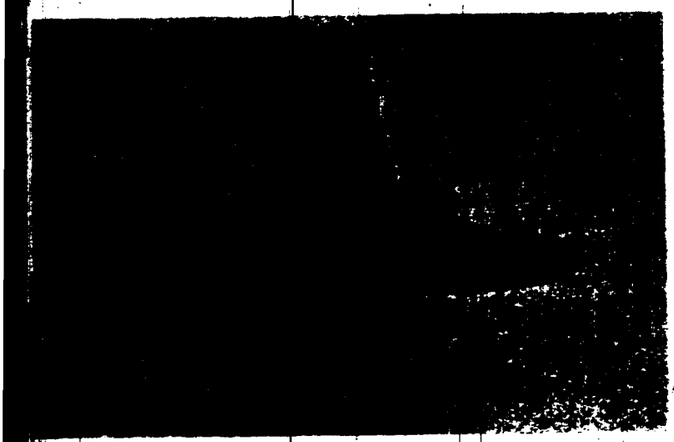
Power Plant: Four Wright Cyclone 18-cylinder radial air-cooled R-3350 engines 2,200 hp. Hamilton Standard 4-bladed propellers.

Performance: Long range, high altitude, heavy bomb loads.

Armament and Protection; Heavy armored and armed with multiple-gun and power-operated turrets.

B-25 "MITCHELL"

Description: Twin-engine medium bomber constructed as an all-metal, midwing, land monoplane. Twin tail, tricycle landing gear. Crew of 5 or 6. Manufactured by North American at Inglewood, California, and Kansas City, Missouri.



B-25 "Mitchell"

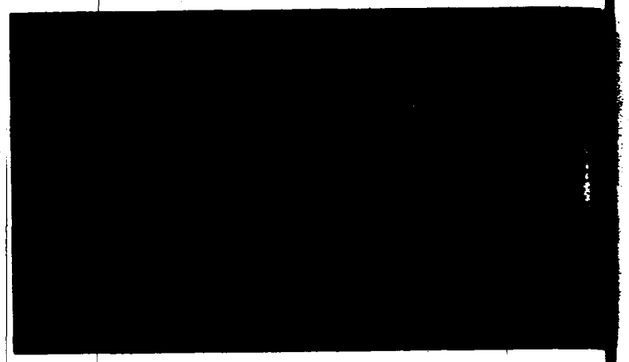
Dimensions: Span: 67 feet, 6 inches. Height: 15 feet, 9 inches. Tread width: 19 feet, 4 inches. Wing area: 610 square feet. Length: 51 feet, 11 inches. Approximate maximum weight: 35,000 pounds.

Power Plant: Two Wright R-2600 air-cooled radial 14-cylinder 1,700 hp engines, with 2-speed turbo superchargers. Hamilton Standard 3-bladed, hydromatic full-feathering propellers.

Performance: Rated in 300 miles per hour class. Approximate service ceiling 25,000 feet. Tactical radius of action—400 miles.

Bomb Load: 2,000 pounds.

Armament: Attack version: 1 x 75mm cannon. Fourteen x .50 caliber machine guns, including four in power turrets. Bomber version: Regular bombardier nose, no cannon. 12 guns.



B-26 "Marauder"

Protection: Armor for all crew members at battle stations. Leak-proof tanks.

B-26 "MARAUDER"

Description: Twin-engine medium bomber constructed as an all-metal, high-wing land monoplane with single tail. The crew is normally 6. Manufactured by Martin. Has tricycle landing gear.

Dimensions: Span: 71 feet. Length: 58 feet, 2 inches. Height: 21 feet, 6 inches. Wing area: 623.6 square feet. Tread width: 22 feet. Approximate maximum weight: 35,000 pounds.

Power Plant: Two Pratt-Whitney R-2800 air-cooled radial type, 18 cylinder engines developing 2,000 hp and equipped with a 2-speed engine driven supercharger. Four-bladed Curtiss constant speed full-feathering propeller.

Performance: Rated in 300 miles per hour class. Approximate service ceiling 20,000 feet. Tactical radius of action—350 miles.

Bomb Load: About 2,000 pounds.

Armament: 12 x .50 caliber guns, including 4 in power-turrets.

Protection: Armor for: pilot, co-pilot, nose gunner, tail gunner and radio operator. Leak-proof tanks.

B-34 "VENTURA"

Description: Twin-engine light bomber constructed as an all-metal, midwing monoplane with hydraulically operated landing-gear flaps, bomb doors and brakes. Twin tail. Crew of five: pilot, bombardier-navigator, turret gunner, radio operator, tunnel gunner. The B-34 is an enlarged version of Lockheed "Lodestar" commercial transport, originally built for the British by Vega Aircraft Corporation, a Navy version of the PV-1. The AAF acquired a number of B-34s for use as gunnery trainer, navigator trainer and glider tow planes. A number are now in combat action.

Dimensions: Span: 65 feet, 6 inches. Length: 51 feet, 5 inches. Height: 12 feet. Tread width: 15 feet. Wing area: 551 square feet. Approximate weight: 30,000 pounds.

Power Plant: Two Pratt & Whitney twin row R-2800 radial air-cooled 18-cylinder 2,000 hp engines, with 2-speed geared superchargers. Hamilton 3-bladed automatic control full-feathering propellers.

Performance: Rated in 300 miles per hour class. Approximate service ceiling 30,000 feet. Tactical radius of action—350 miles.

Bomb Load: 2,000 pounds.

Armament: AAF version: 2 x .50s and 2 x .30s in nose; 2 x .30s in sides; 2 x .50s in upper turret; 2 x .30s in lower rear tunnel.

Protection: Armor for all crew members.

A-20 "HAVOC"

Description: Twin-engine light bomber constructed as an all-metal, midwing monoplane, tricycle landing gear and single tail. Crew of three. The A-20 is a later version of the British DB-7 or "Boston." It is used for ground attack, skip-bombing, and also torpedo attack against naval units. Manufactured by Douglas.

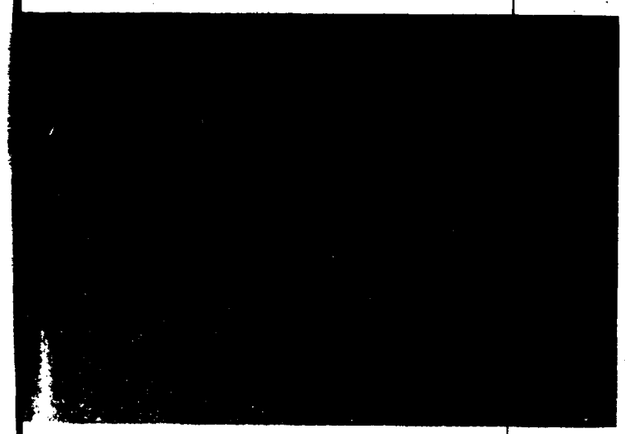
Dimensions: Span: 61 feet, 4 inches. Length: 48 feet. Height: 18 feet, 1 inch. Tread width: approximately 17 feet. Wing area: 465 square feet. Approximate maximum weight: 25,000 pounds.

Power Plant: Two Wright R-2600, 14-cylinder, 1,700 hp double radial air-cooled engines, with two-speed supercharger. Three-bladed Hamilton Standard hydromatic propellers.

Performance: Rated at a speed of over 320 miles per hour. Service ceiling over 20,000 feet. Tactical radius of action—300 miles.

Bomb Load: Approximately 2,000 pounds.

Armament: Bomber version: 5 x .50 caliber guns.

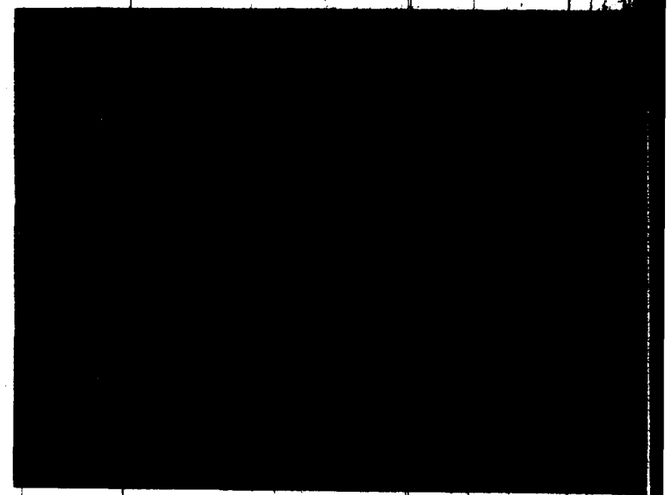


A-20 "Havoc"

Protection: Armor for pilot, upper and lower gunner. Leak-proof tanks and bullet-proof glass.

A-24 "DAUNTLESS"

Description: Single-engine light bomber constructed as an all-metal, low-wing land monoplane, with single tail and dive brakes. The crew consists of two—pilot and gunner. Manufactured by Douglas. Designed for dive bombing or scouting operations from either shore stations or aircraft carriers. Will take off on ground or carrier deck with or without aid of catapult, and will land on an ordinary landing field with or without landing flaps or on a carrier deck with arresting gear.



A-24 "Dauntless"

Dimensions: Span: 41 feet, 6 inches. Length: 33 feet. Height: 10 feet. Tread width: 10 feet. Wing area: 325 square feet. Approximate maximum weight: 9,000 pounds.

Power Plant: One Wright R-1820, 1,200 hp engine Hamilton 3-bladed constant-speed propeller. Two-speed supercharger.

Performance: Rated at a speed of over 230 miles per hour. Service ceiling over 20,000 feet. The tactical radius of action is more than 200 miles.

Armament: Two .30 caliber guns in rear cockpit. Two .50 caliber guns in nose.

Protection: Armor protection for pilot and gunner. Leak-proof tanks and bullet-proof glass.

A-36 "MUSTANG" FIGHTER-BOMBER

Description: Single-engine light bomber (attack) constructed as an all-metal, low-wing monoplane with single tail. Equipped with bomb racks and diving brakes. Crew consists of one—pilot. Manufactured by North American. Developed from the P-51. Similar in appearance to the ME-109E.

Dimensions: Span: 37 feet. Length: 32 feet, 3 inches. Height: 11 feet, 1 inch. Tread width: 11 feet, 10 inches. Wing area: 233 square feet. Approximate maximum weight: 10,000 pounds.

Power Plant: One Allison V-1710 engine. Curtiss electrically controlled constant-speed 3-bladed propeller.

Performance: Approximately 400 miles per hour.

P-38 "Lightning"

Service ceiling over 25,000 feet. The tactical radius of action is 200 miles.

Bomb Load: 1,000 pounds.

Armament: Six .50 caliber guns, two in nose and four in wings.

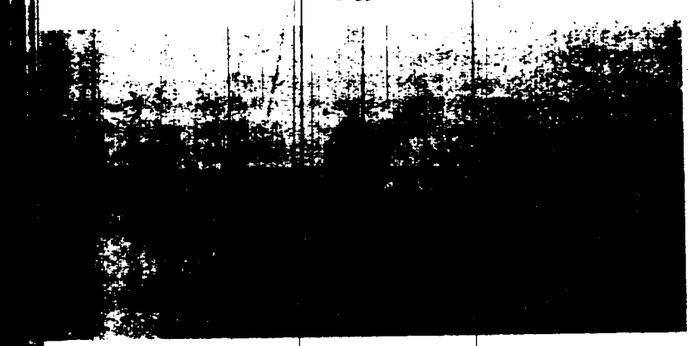
Protection: Armor, leak-proof tanks and bullet-proof glass.

P-38 "Lightning"

Description: Twin-engine fighter constructed as an all-metal, midwing monoplane with twin bombs supporting twin tails. Hydraulically operated flaps and nose wheel. Crew consists of one—pilot. Built by Lockheed. Component parts and finished airplanes will also be manufactured by Consolidated Vultee.

Dimensions: Span: 52 feet. Length: 37 feet, 10 inches. Height: 12 feet, 10 inches. Tread width: 16 feet, 6 inches. Wing area: 328 square feet. Approximate maximum weight: 18,000 pounds.

P-39 "Airacobra"



Power Plant: Two Allison V-1710 engines with turbo superchargers. Two Curtiss electric 3-bladed constant-speed, full-feathering propellers.

Performance: Approximate maximum speed is 400 miles per hour. Service ceiling over 40,000 feet. The tactical radius of action is over 400 miles.

Bomb Load: 2,000 pounds.

Armament: One 20mm cannon and four .50 caliber guns in nose.

Protection: Armor for pilot, front and rear. Leak-proof tanks and bullet-proof glass.

P-39 "Airacobra"

Description: Single-engine fighter constructed as an all-metal, low-wing, land monoplane with tricycle landing gear and single tail. Crew of one—pilot. Manufactured by Bell. Power plant located behind pilot and drives propeller by extension shaft.

Dimensions: Span: 34 feet. Length: 30 feet, two inches. Height: 11 feet, 10 inches. Tread width: 11 feet. Wing area: 213 square feet. Approximately maximum weight: 8,500 pounds.

Power Plant: One Allison V-1710 vertical "V" type engine of 1,325 hp, 3-bladed Aero Products hydraulic, selective, or automatic controllable pitch propeller.

Performance: Rated at an approximate speed of 375

P-40 "Warhawk"

miles per hour. Service ceiling over 35,000 feet. The tactical radius of action is 100 miles.

Bomb Load: 500 pounds.

Armament: Four .50 caliber guns. Two in nose and two in wings. One 37mm cannon in propeller hub.

Protection: Armor: front and rear armor protection for pilot. Other points of plane also have armor protection. Leak-proof tanks and bullet-proof glass.

P-40 "Warhawk"

Description: Single-engine fighter constructed as a single-seat, low-wing monoplane with conventional landing gear. Crew of one—pilot. Designed and built by Curtiss.

Dimensions: Span: 34 feet, 4 inches. Length: 33 feet, 4 inches. Height: 12 feet, 4 inches. Tread width: 8 feet, 2 inches. Wing area: 236 square feet.

Power Plant: One Allison liquid-cooled V-1710—

P-47 "Thunderbolt"

1,150 or 1,325 hp engine (P-40E and later models) or —one liquid-cooled "V-1650"—1,300 hp engine, Rolls Royce "Merlin" Packard-built. (P-40F and later models.) Curtiss 3-bladed, electrically controlled propeller.

Performance: Rated at speed of over 350 miles per hour. Service ceiling over 30,000 feet. The tactical radius of action is 150 miles.

Bomb Load: Has carried 1,000 pounds.

Armament: Six .50 caliber guns.

Protection: Armor plate, bullet-proof glass and leak-proof tanks.

P-47 "Thunderbolt"

Description: Single-engine fighter constructed as a low-wing, single-place, all-metal monoplane with single tail. Bulky oval shaped fuselage and elliptical wing are characteristic. The crew consists of one—pilot. Manufactured by Republic. Used as fighter protection for bombers, fighter sweeps at high and medium altitudes, and as a fighter-bomber.

Dimensions: Span: 40 feet, 8 inches. Length: 36 feet, 1 inch. Height: 14 feet, 2 inches. Tread width: 15 feet, 6 inches. Wing area: 300 square feet. Approximate maximum weight: Over 13,500 pounds.

Power Plant: One Pratt & Whitney R-2800 twin-row 18-cylinder 2,000 hp radial air-cooled engine. Both geared and turbine superchargers. Four-bladed Curtiss electrically controlled, constant-speed, multi-position propeller.

Performance: Rated at a speed of over 400 miles per hour. Service ceiling approximately 40,000 feet. The tactical radius of action is 350 miles as escort fighter.

Bomb Load: 500 pounds.

Armament: Eight .50 caliber guns in wings.

Protection: Front and rear armor protection for pilot. Leak-proof tanks, bullet-proof glass.

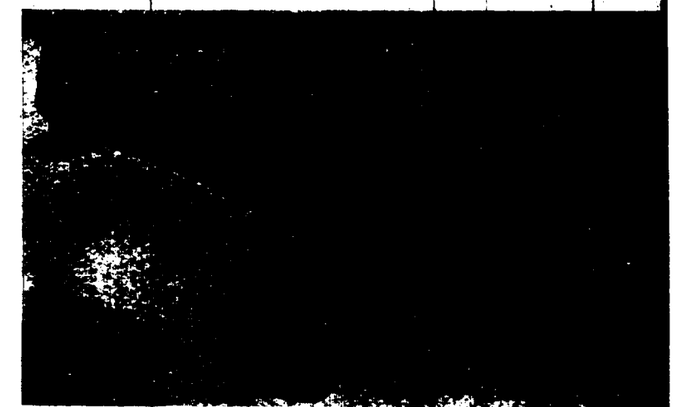
P-51 "Mustang"

Description: Single-engine fighter constructed as a low-wing monoplane with single tail. Crew of one—pilot. Manufactured by North American. Similar in appearance to ME-109E.

Dimensions: Span: 37 feet. Length: 32 feet, 3 inches. Height: 12 feet, 2 inches. Tread width: 11 feet, 10 inches. Wing area: 233 square feet. Approximate maximum weight: 9,500 pounds.

Power Plant: (1) *Allison-powered:* One Allison V-1710 liquid-cooled 1,200 hp 12-cylinder engine. One Curtiss electrically controlled constant-speed propeller.

Performance: Rated at an approximate speed of 400 miles per hour. Service ceiling approximately 30,000 feet. The tactical radius of action is 250 miles, as fighter-bomber—400 miles as fighter.



P-51 "Mustang"

Power Plant: (2) *Merlin-powered:* One Packard-built Rolls Royce "Merlin" V-1650 engine, 1,520 hp with 2-stage, 2-speed supercharger. Curtiss electrically controlled 4-bladed propeller.

Performance: Rated at a speed of over 400 miles per hour. Service ceiling over 40,000 feet. The tactical radius of action is over 500 miles as escort fighter.

Bomb Load: 1,000 pounds.

Armament: Four .50 caliber guns in wings.

Protection: Pilot protected front and read with armor plate. Plane equipped with leak-proof tanks and bullet-proof glass.

P-61 "Black Widow"

Description: Twin-engine night fighter, equipped with latest devices. Manufactured by Northrop.

Power Plant: Two Pratt & Whitney radial air-cooled engines.

Performance: Fairly long range; effective speed and climb characteristics.

Armament and Protection: Heavily armored and armed.

P-70 "Havoc"

Description: Twin-engine night fighter constructed as an all-metal, high-wing monoplane, single tail, tri-

[redacted]

C-46 "Commando"

cycle landing gear. Crew consists of pilot and radio operator. Manufactured by Douglas, the P-70 has been converted from the A-20. Forward compartment and bomb bays eliminated. Special interceptor equipment added.

Dimensions: Span: 61 feet, 4 inches. Length: 47 feet, 7 inches. Wing area: 465 square feet. Height: 17 feet, 7 inches. Approximate maximum weight: 19,000 pounds.

Power Plant: Two Wright R-2600 air-cooled radial 14-cylinder 1,600 hp engines. Three-bladed constant-speed, full-feathering propellers.

Performance: Rated at a speed of over 325 miles per hour. Service ceiling over 25,000 feet. The tactical radius of action is 400 miles.

Armament: Four 20mm cannon in belly.

Protection: Armor, leak-proof tanks, bullet-proof glass.

C-46 "Commando"

Description: Twin-engine transport constructed as

C-47 "Skytrain"

[redacted]

an all-metal, stress-skin, semi-wing land monoplane with single tail. Crew consists of three or four. Manufactured by Curtiss Airplane Division.

Dimensions: Span: 108 feet. Length: 76 feet, 4 inches. Height: 22 feet. Tread width: 26 feet. Wing area: 1,360 square feet. Approximate maximum weight: Over 50,000 pounds.

Power Plant: Two Pratt & Whitney R-2800, 2,000 hp engines. Hamilton four-bladed, full-feathering constant-speed propellers.

Performance: Rated at a speed of over 250 miles per hour. Service ceiling over 25,000 feet. Tactical radius of action 800 miles.

C-47 "Skytrain"

Description: Twin-engine transport constructed as an all-metal, low-wing, bi-motored monoplane. Hydraulically operated conventional landing gear and flaps. Crew of four: pilot, co-pilot, radio operator and aerial engineer. Built by Douglas. Military adaption of the

[redacted]

C-54 "Skymaster"

DC-3 airliner. C-53 is called "Skytrooper."

Dimensions: Span: 95 feet. Length: 64 feet, 6 inches. Height: 17 feet. Tread width: approximately 19 feet. Wing area: 987 square feet. Approximate maximum weight: over 29,000 pounds.

Power Plant: Two Pratt & Whitney R-1830 engines, 1,050 hp normal, 1,200 for take-off. Two Hamilton standard hydromatic quick-feathering type, 3-bladed propellers.

Performance: Rated at a speed of over 200 miles per hour. Service ceiling over 22,000 feet. Tactical radius of action 750 miles.

C-54 "Skymaster"

Description: Four-engine transport constructed as a large all-metal, low-wing monoplane with large single tail. Hydraulically operated flaps and nose wheel. Tricycle landing gear. Crew of six. Manufactured by

Douglas. Military adaption of the DC-4 commercial airliner.

Dimensions: Span: 117 feet, 6 inches. Length: 93 feet, 10 inches. Tread width: 25 feet. Wing area: 1,461 square feet. Approximate maximum weight: 60,000 pounds.

Power Plant: Four Pratt & Whitney twin-wasp R-2000 engines, 1,350 hp 14-cylinder air-cooled with two-speed supercharger. Hamilton Standard 3-bladed automatic full-feathering propellers.

Performance: Rated at a speed of over 275 miles per hour. Service ceiling over 20,000 feet. Tactical radius of action 1,000 miles.

C-69 "Constellation"

Dsecription: Four-engine transport, low-wing, tricycle gear, triple vertical tail, pressurized cabin. Crew of nine. Manufactured by Lockheed.

Power Plant: Four Wright R-3350 air-cooled radial type, 18-cylinder engines, developing 2,220 hp. Hamilton Standard 3-bladed propellers.

Performance: Cruising speed considerably faster than standard air cargo or airline planes. Service ceiling 20,000 to 35,000 feet. Will cross the continent in 10 hours, or fly to Honolulu in 12 hours.

C-87 "Liberator Express"

Description: Four-engine transport constructed as an all-metal, high-wing monoplane with hydraulically operated tricycle landing gear and Fowler flaps. Crew of five. The C-87 is a cargo-transport version of the B-24 bomber.

Dimensions: Span: 110 feet. Length: 66 feet, 4 inches. Height: 18 feet. Tread width: 26 feet. Approximate maximum weight: 50,000 pounds.

Power Plant: Four Pratt & Whitney R-1830, 1,200 hp engines with turbo superchargers. Hamilton Standard 3-bladed automatic control full-feathering type propellers.

Performance: Rated at a speed of over 275 miles per hour. Service ceiling over 30,000 feet.

CG-4 Glider

Description: Glider. Waco design. Built by several manufacturers. Crew consists of pilot and co-pilot.

Dimensions: Span: 83 feet, 8 inches. Chord: 10 feet, 6 inches. Wing area: 852 square feet. Weight (empty): Over 3,000 pounds. Design gross weight: Over 6,000 pounds.

Useful Load: Over 3,000 pounds. Carries 15 fully equipped men, or a jeep and six men.

Design Tow Speed: 150 miles per hour.

Construction: Fuselage—tubular steel, fabric covered. Wings—wood, plywood and fabric.

CG-13 Glider

Description: Waco design. Built by several manufacturers. Crew consists of pilot and co-pilot.

Dimensions: Span: 85 feet, 8 inches. Chord: 10 feet, 6 inches. Wing area: 872 square feet. Weight (empty): 7,500 pounds. Design gross weight: Over 17,000 pounds.

Useful Load: Over 9,000 pounds. Carries 30 fully equipped men.

Design Tow Speed: Over 150 miles per hour.

Construction: Fuselage—welded tube construction, fabric covered, wood floor. Wings—wood, plywood and fabric, externally braced.

R-4 Sikorsky Helicopter

Description: Helicopter constructed with main powered rotor with three 15-feet blades, each one foot wide, operating at approximately 280 rpm. Three-bladed variable pitch rear motor.

Dimensions: Height: 12 feet, 6 inches. Rotor diameter: 38 feet. Length: 48 feet. Approximate maximum weight: 2500 pounds.

Power Plant: Franklin 6-cylinder 100 hp air-cooled engine or Warner 165 hp engine.

Performance: Approximate maximum speed: 100 miles per hour.

Jet-Propelled Fighter

Description: Twin-engine jet-propulsion fighter. Manufactured by Bell.

Power Plant: Two General Electric jet-propulsion type engines. No propellers.

Performance: Secret. In general the aircraft has high speed and high ceiling.

Armament and Protection: Heavily armored and armed.

Reconnaissance (Photographic) Aircraft

F-5

Description: Same as the P-38 except for installation of aerial cameras and two droppable belly tanks in lieu of armament.

Liaison Aircraft (Grasshopper)

L-1

Description: Manufactured by Vultee (Stinson). Lycoming engine.

L-2

Description: Manufactured by Taylorcraft. Continental engine (L-2M).

L-3

Description: Manufactured by Aeronca. Continental engine.

L-4

Description: Manufactured by Piper. Continental engine.

L-5

Description: Manufactured by Vultee (Stinson). Lycoming engine.

Cavalry Leaves No Tracks

by

Lieutenant Colonel Ralph Perkins,
*Cavalry**

and

Lieutenant Newell D. Boyd,
*A.A.C.***

INVESTIGATIONS regarding concealment and camouflage of mounted troops were started at the Agricultural and Mechanical College of Texas because the cavalry instructors found, during tactical problems held in conjunction with the A. and M. Flying School, that there was an unaccountable discrepancy in the ability of various units to conceal themselves from aerial observation. Valuable assistance in these experiments were furnished by Mr. E. J. Urbanovsky, chief instructor of camouflage of the Landscape Art Department of the A. and M. College of Texas; the photographic section of Bryan Army Air Field; and the local C.A.P. unit.

The pictures were all made at College Station, Texas from slow, low flying planes on bright days in January when foliage offers a minimum of protection.

In the accompanying pictures, the officers were mounted on white horses as a help to the planes in locating the area to be photographed. No attempt was made to conceal them.

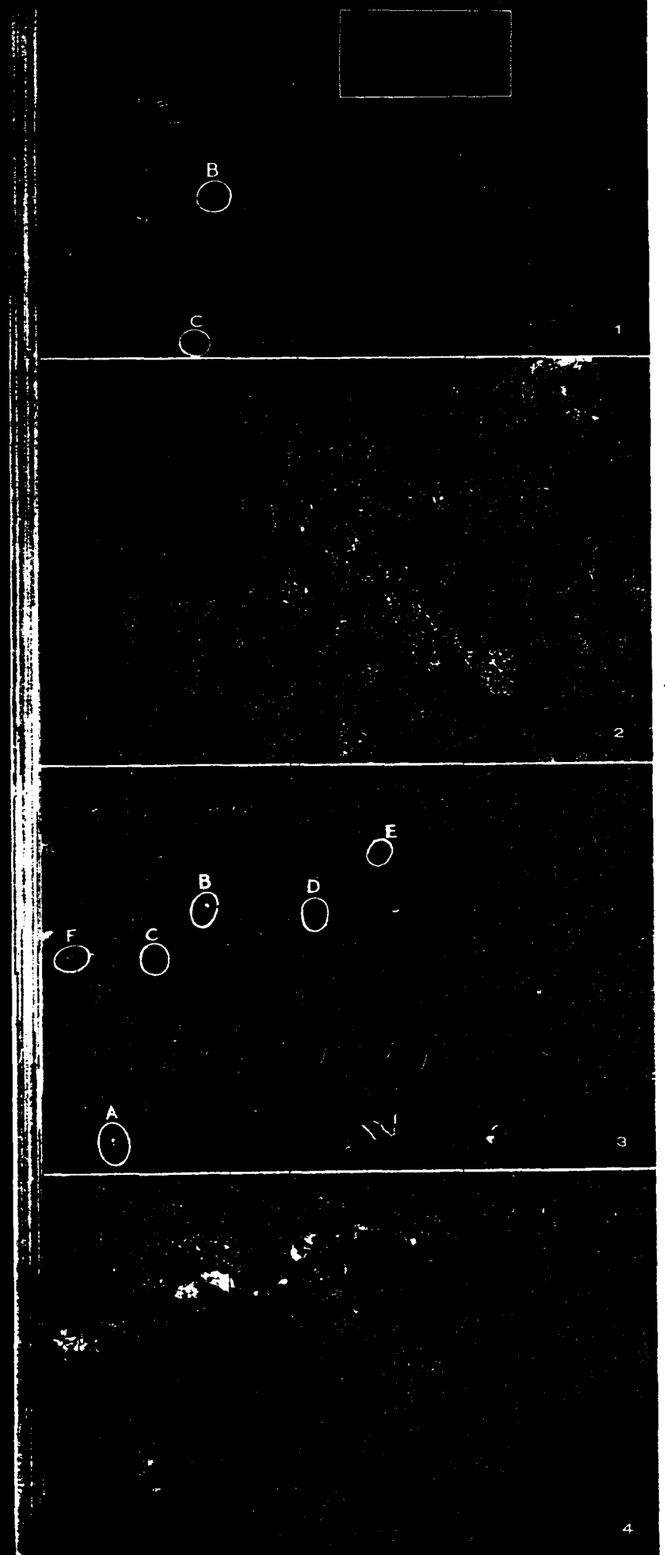
It is hard to conceive a situation when cavalry would have to protect itself from detection from detailed photographic study. The objective in these experiments was to find the best and quickest method of gaining concealment. This was done by one cavalry officer in a plane recording the number of mounts that he could detect in a prearranged locality. The photographs were made to record what was seen from the air and were then made into slides and shown to the enlisted personnel who participated. In this way mistakes were made apparent.

From the viewpoint of the cameraman, the following observations were made during the photographing of the attempted concealment of the Cavalry Unit at Texas A. and M. These observations are not to be considered as conclusive, as the study made has not been extensive.

Since the cavalry is a moving organization, extensive camouflage measures are neither practical nor necessary. Such a unit, however, is extremely vulnerable to strafing attacks from low flying aircraft, and it will be with this fact in mind that this article is written.

The first and most important idea to keep in mind is that during any strafing attack the unit should be well dispersed unless exceptionally good protective covering or concealment facilities are at hand. This fact is proven in photograph No. 1 where a platoon was caught on the move and is in a position where one plane could practically destroy the entire unit in a single attack by simply making a strafing run down the ravine.

*Senior Instructor, Cavalry, A. & M. College of Texas.
**Photographic Officer, Bryan Army Air Field.

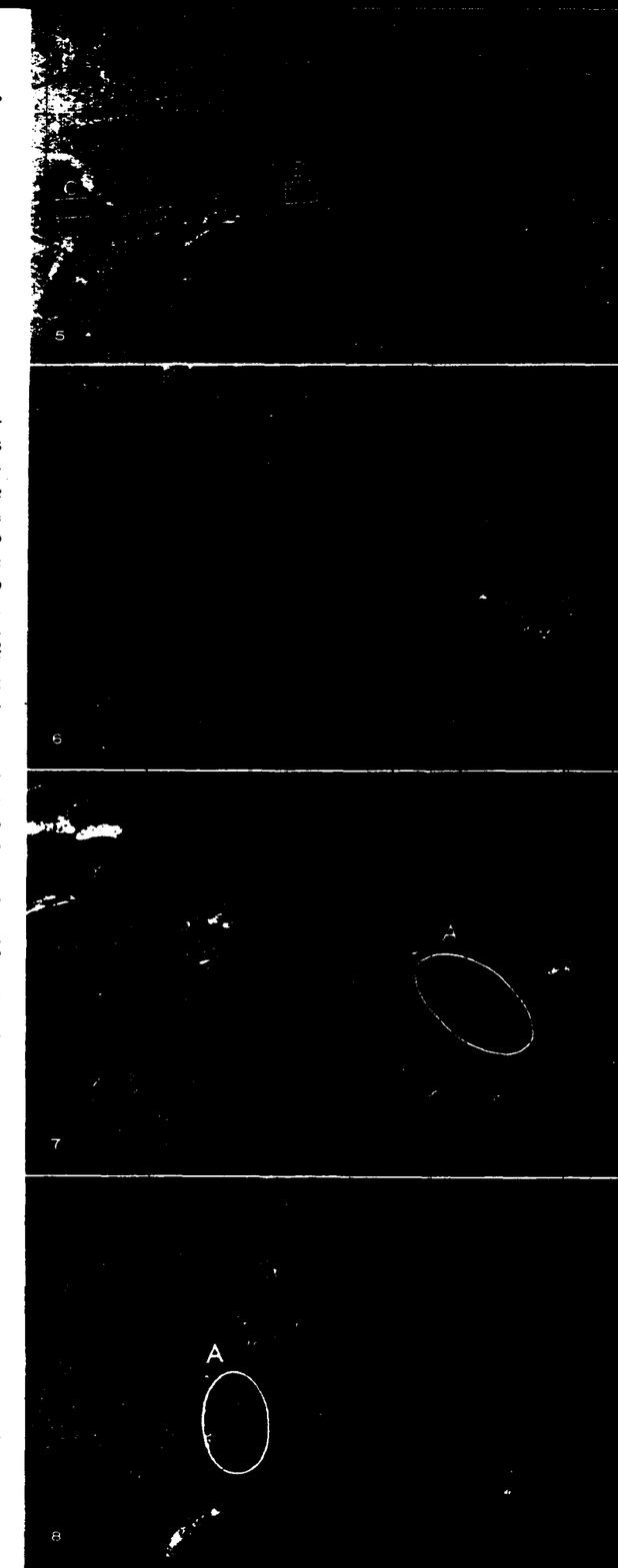


Picture 1 illustrates the value of taking advantage of shadows where complete concealment is not available. The group at A would have done better had they headed their horses toward the trees, in the trunk shadow and not perpendicular to it. The rider at B is perfect. Horse and rider at C are well concealed. See picture 3 for same horse and rider.

Picture 2 shows both good and poor use of protection. At normal altitude a reconnaissance plane would not be able to tell that there were 18 mounted men in this area.

Picture 3. Each horse in this picture is of different color and has dismounted rider at its side. The dun at A and buck-skin at B come nearer harmonizing with this East-Texas winter pasture than the bays, browns, and blacks. The gunny sack covering is of no use on horses in open but helps materially on horses partially concealed, as at C, D, and E. Horse and rider at F are the same as shown at C in picture 1 and in same location.

Picture 4 shows a platoon caught on the move with no attempt to conceal shadows. Gunny sacks are worthless when the shadow gives the complete picture. These gunny sacks had not been treated. Note the reflection.



Picture 5 shows that the troop of cavalry that constantly passed through this gate left no tracks while tracks of the automobile show the exact route traveled. The net at A, although well constructed for concealment of 8 horses is of too opaque material and therefore reflects, rather than absorbs light. The net at B was an attempt to reproduce the straw stack at C.

Picture 6 was taken of an area in which 28 inexperienced men were told to take individual cover.

Picture 7 illustrates the fact that both concealment and shadow must be considered to avoid aerial detection. Several of the 28 men in this area took advantage of the live oak at A.

Picture 8 shows the fallacy of neglecting shadows. Lead riders at A are well concealed had they not exposed their shadows.

If the strafing attack is a complete surprise and the time too short for dispersion, then the rider should dismount, assume a prone position, put the horse in a prone position with the sun directly in front of or directly to the rear of the horse. This last idea will hold true in either standing or prone position as the shadows are least recognizable with the sun directly in front of or behind the subject.

For concealment under trees, it is best to find a tree with the heaviest foliage, because it casts the darkest shadow. In any type of protective covering, if the rider and his mount can be covered completely by a dark shadow, the chances of discovery from the air are greatly lessened.

In the event the unit is caught in a position where there are no trees, a deep ravine or ditch may be used to advantage. In using a ravine for concealment the rider should stay as close to the side of the ravine as possible and always on the same side as the approaching plane.

Every cavalryman should receive individual instructions in concealment so that he will know how to take advantage of protective coloring, and other natural and man-made features of the terrain. He should not permit his horse or himself to cast a telltale shadow. He should be prepared to use gunny sack or netting to best advantage on prone or standing mount and should appreciate that movement is the greatest help to detection. He should know that the texture of gunny sacks reflects light so that they should be roughed up, dipped in mud, dabbed with neutral colored paints or rubbed with coffee grounds in order to get the best results.

Little need be said about tracks, as nothing seen or photographed from the air indicated that horses leave any tracks on this terrain. This situation probably would not exist in a climate where there is a heavy dew. It was also learned that the color of the horse made very little difference.

EDITOR'S NOTE: For a detailed study on the subject of Camouflage, reference is made to two previously published articles on this subject which have appeared in recent issues of The CAVALRY JOURNAL—"Camouflage for Armored Forces," by Lieutenant S. Daniel Cavallero, November-December, 1943; and "The Three C's—Cover, Concealment, Camouflage," by Captain George E. Price, January-February, 1944.

Picture 9 shows a troop caught on the road.

Picture 10 was taken one minute after 9 of same area. These men had had only three days training in concealment. The group at A are judges.

Picture 11. Good concealment of 18 men. Troopers at C used mud soaked gunny sacks.

Picture 12 shows an excellent use of net at A. There are 6 mounted men concealed under this net that fills the entire square.

The Reconnaissance Squadron (Light)

A Suggested T. O.—by Captain James P. Barry

THE Reconnaissance Squadron (Light) is conceived to furnish a more flexible unit than exists at present. In some ways it is similar to the reconnaissance battalion of a German infantry division.

Troop A of the proposed squadron is a mechanized reconnaissance troop of the familiar type, organized under the present tables of organization and equipment.

Troop B is a horse reconnaissance troop. Present tables for the reconnaissance troop would provide a unit fairly well equipped, though probably it would be wise to add a 60mm mortar to the weapons of each platoon to increase the fire power of the troop.

Troop C is the support troop of the squadron, and is subdivided into two elements: mechanized and horse. The primary weapons of the mechanized will be self-propelled 75mm howitzers of the sort used in the present assault gun troop. The animal platoon of the troop may have 75mm pack howitzers, or field howitzers. The choice would depend upon whether emphasis was to be placed on ability to penetrate very rough country or jungle, or on mobility and maneuverability. If a field howitzer were to be used, the 105mm might be worth considering. 105s would increase the fire power of the unit considerably, but might complicate ammunition supply.

Service and Headquarters Troops could be combined, but with the complicated supply and transportation problems of such a squadron it would probably be better to have them separate.

There need be nothing very startling about Headquarters Troop. With a few adjustments to meet the mixed character of the squadron, one of the present TOs, could be used.

In combat, the squadron could be split into three parts: mechanized, horse, and rear elements. The support troop would then be divided and one platoon attached to each reconnaissance troop. There would be two semi-independent reconnaissance commands, which would furnish the commander with a tool for any sort of terrain.

RECONNAISSANCE SQUADRON (LIGHT)
600 EM 32 O

Headquarters Troop
62 EM 12 O
3 armored utility cars
6 ¼-ton trucks
2 ¾-ton command cars
2 ¾-ton weapons carriers
1 2½-ton truck & kitchen gear
1 1-ton trailer
5 ¼-ton trailers
20 mounts
5 pack horses

Troop A
140 EM 5 O
12 light armored cars
4 half-track carriers
23 ¼-ton trucks
1 2½-ton truck & kitchen gear
5 1-ton trailers
9 60mm mortars

Troop B
157 EM 5 O
149 mounts
30 pack horses
3 60mm mortars

Troop C
122 EM 4 O
3 SP 75mm howitzers
3 75mm field howitzers
3 caissons
6 limbers
5 half-track carriers
1 tank recovery vehicle
1 2½-ton truck & kitchen gear
2 ¼-ton trucks
42 draft horses
40 riding horses
1 pack horse

Service Troop
119 EM 6 O
1 half-track carrier
1 wrecker truck
1 tank recovery vehicle
6 2½-ton trucks (1 with kitchen gear)
33 portee vehicles
9 ¼-ton trucks
6 1-ton trailers

SUPPORT TROOP (LT RCN SQ)
122 EM 4 O

Assault Gun Platoon
36 EM 1 O

3 GUN SECTIONS (each)
4 EM
1 SP 75mm howitzer

AMMUNITION SECTION
13 EM
3 half-track carriers
3 ammunition trailers

HEADQUARTERS
11 EM
1 half-track carrier

Horse Platoon
58 EM 1 O

3 GUN SECTIONS (each)
12 EM
1 75 field howitzer
1 limber
6 draft horses
7 riding horses

AMMUNITION SECTION
18 EM
3 caissons
3 limbers
18 draft horses
9 riding horses

HEADQUARTERS
4 EM
4 riding horses
1 pack horse

Troop Headquarters
28 EM 2 O

MAINTENANCE SECTION
10 EM
1 half-track carrier
1 tank recovery vehicle
1 ¼-ton truck
6 draft horses (spare team)
6 riding horses

ADMINISTRATIVE, MESS, SUPPLY SECTION
18 EM
1 2½-ton truck & mess gear
1 1-ton trailer
1 ¼-ton truck

A pack platoon would replace the horse platoon in units intended for operations in extremely rough country or in jungle.

Pack Platoon
52 EM 1 O

3 GUN SECTIONS (each)
19 EM
10 mules
1 75mm pack howitzer

AMMUNITION SECTION
19 EM
15 mules

HEADQUARTERS
14 EM
5 pack mules
3 riding mules

SERVICE TROOP (LT RCN SQ)
119 EM 6 O

MAINTENANCE PLATOON
29 EM
1 light armored car
1 half-track carrier
2 2½-ton trucks
1 wrecker truck
1 tank recovery vehicle
2 ¼-ton trucks
2 1-ton trailers

SUPPLY SECTION
7 EM
3 2½-ton trucks
3 1-ton trailers

3 PORTEE PLATOONS (each)
20 EM
11 portee vehicles
2 ¼-ton trucks

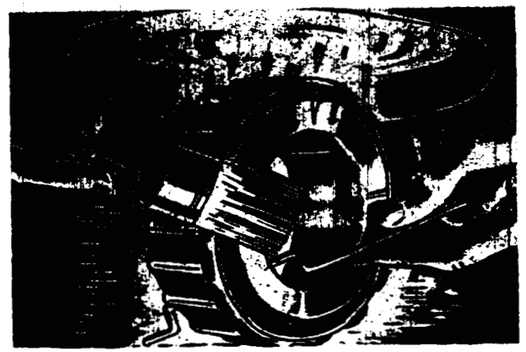
Troop Administrative, Mess, and Supply Section
23 EM
1 2½-ton truck & kitchen gear
1 ¼-ton truck
1 1-ton trailer

Two portee platoons to be attached to horse reconnaissance troop and one portee platoon to be attached to support troop when horse elements need motor transport.

Supply Section vehicles may be augmented by empty portee vehicles.

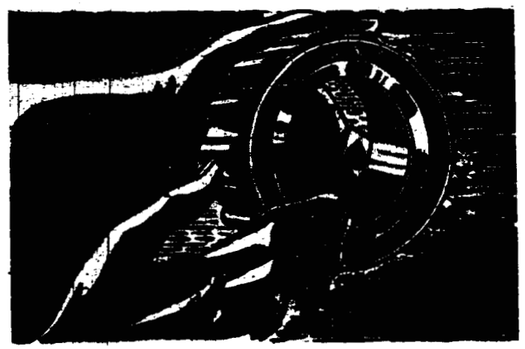
DO'S and DONT'S on *Care of Bearings*

With our Cavalry largely on wheels we ought to know as much about ball and roller bearings as Phil Sheridan knew about cartilage. Bearings, like tires, are acutely critical. You can help make bearings last. This page will show you how.



Clean Bearings Thoroughly—Always use a dry cleaning solvent that is itself *clean,* and a brush if necessary. Place the bearing on a clean piece of paper to dry. Remember, just one speck of sand or grit can ruin a bearing.

Inspect Bearings Carefully—Don't throw bearings away just because they are stained—possibly by chemicals in lubricants—and don't look like new. But inspect carefully for pits, flaws and extreme corrosion.



Lubricate Bearings Correctly—Bearings that are going to be grease-packed, like wheel bearings, must *not* be oiled before installation. Pre-lubricated bearings don't need to be touched. Consult your Lubrication Guide or Technical Manual.

Install Bearings Properly—Be sure the bearing itself is clean, and that all parts of its assembly—spindles, hubs and cups—are absolutely free from sand and grit. Install, adjust and lubricate only according to authorized instructions.

Use Your Lubrication Guide—Lack of lubrication, the wrong kind of lubricant, or too much lubricant will overheat and ruin a bearing. Maintain bearings with the care you would give jewels. Spread the word they are critical.

THE AXIS GRAND STRATEGY. Compiled and edited by Ladislas Farago. Military Service Publishing Co. $3.50.

Compiled from original material prepared by Staff Officers of the German Army, Navy and Air Force, this book offers an over-all picture of the German blueprints for total war.

Originally published in 1942, the book is considered of such tremendous value that it has been republished at this time.

The Axis Grand Strategy describes the plan for modern war from the political and psychological preparations to the ultimate campaign of military destruction. It does not limit itself to the purely military ends, but takes into consideration the utilization of political and economic weapons, fifth column penetration and geopolitical strategy. One writer, in discussing the Far Eastern strategy, actually predicts the attack on Pearl Harbor.

PIPELINE TO BATTLE. By Major Peter W. Rainier. Random House. $2.50.

The author of *Pipeline to Battle* is an extremely interesting South African who, after an adventurous career as a mining engineer, inveigled himself into the English army as a subaltern, age 47. Fortunately for the army, he had had experience laying pipelines, and soon became "the water Bloke," whose responsibility it was to see that the supply lines provided sufficient water to the mobile front across the North African desert.

Gifted with a grim, sardonic humor and a skilful ability to describe vividly the scenes he encountered, Major Rainier has written a graphic record of the African struggle that never wavers in its interest. His duties as Chief Water Supply Officer kept him constantly in the forefront of the battle, and enabled him to give a consecutive story of the war from the days of Wavell's Thirty Thousand to Montgomery's triumphal entry into Tunis.

Pipeline to Battle is a sincere and honest tribute, worthy of the men to whom it is dedicated—the men whose graves mark the route of the Eighth Army.

PHYSICS, Course I, *Mechanics*, two volumes, textbook and workbook, $1.50. Course II, *Heat, Light and Sound*, two volumes, textbook and workbook, $1.50. Course III, *Electricity*, two volumes, textbook and workbook, $1.50. Henry Holt & Co.

These three courses are identical with the United States Armed Forces Institute editions. They are planned for self-teaching, with mathematical pointers for those lacking a thorough knowledge of that subject. The material is so arranged as to eliminate the necessity for a laboratory, and to make the maximum use of objects and examples at hand to illustrate the problems involved. The necessary protractor is included in the course in mechanics.

THE ROAD TO TEHERAN. By Foster Rhea Dulles. Princeton Press. $2.50.

For those interested in a concise intelligent treatment of the Russo-American political relations from 1781 to 1941 this book offers the only complete coverage yet published.

Professor Dulles of Ohio State University has used all available material from our State Department and the Russians, as well as books and newspapers of the various periods. While he views events from the American aspect, he carefully avoids bias or ideological prepossessions and formulates almost no conclusions.

Common interests and minor differences flavor the entire history of the relations of these two powers from the time of John Quincy Adams' *Mission to Russia* to Joseph E. Davies' *Mission to Moscow*. *The Road to Teheran* is a fascinating as well as enlightening book, written with an undertone of wit that reminds the reader that the author is a former newspaperman turned historian.

INTERVENTION AT ARCHANGEL. By Leonid I. Strakhovsky. Princeton Press. $3.00.

Publication of this complete and documented account of Allied intervention and Russian counter revolution in 1918 is most timely. In the near future, problems of military government will be paramount in a number of countries and among a great variety of peoples.

The question of whether or not foreign intervention in Russian affairs was justified is not presented. Grave errors were made at Archangel in 1918-20 by the British, Americans and French. Mr. Strakhovsky appears to feel that many of these mistakes were due primarily to the failure of the interventionists to understand the nature and utilize the peculiarities of the people to the maximum advantage.

It is hoped that this very intelligent study will succeed in its purpose to assist students of military government to recognize the pitfalls to be avoided—some of which are even now becoming evident.

UNFINISHED BUSINESS. By Stephen Bonsal. Doubleday, Doran. $3.00.

This secret diary, kept at the request of President Wilson, and used by him to check his own memory of events, throws much interesting light on the problems and failures of the last peacemaking. It is not a rehash of already published documents, but a record of meetings and conversations of which no official records were kept.

Colonel Bonsal felt that the publication of these notes might inform, and thereby influence, people to avoid the obvious pitfalls of Versailles in which the present war was founded.

It is a significant book, the latest of a long line of significant books, hopefully presented to the public over a period of twenty-five years.

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GERMANY WILL TRY IT AGAIN. By Sigrid Schultz. Reynal & Hitchcock. $2.50.

WHAT TO DO WITH GERMANY. By Louis Nizer. Ziff-Davis. $2.50.

American-born Sigrid Schultz was taken to Germany by her Scandinavian parents just before the last war. Her father's position as a well known portrait painter undoubtedly placed her in a particularly advantageous position to study a certain strata of German society, an advantage she exploited intelligently and well.

After the Armistice Miss Schultz became a member, and later head, of the Berlin office of The Chicago *Tribune*, and broadcaster from Berlin over Mutual. Over a long period of time the author watched Germany gird for war while circumventing those treaties that she dared not violate openly. The course of German coördination of resources from 1918 to 1939 as presented in this book indicates that there is evidence of similar planning at the present time.

Louis Nizer in outlining the German character quotes from writers as far back as Caesar and Tacitus. He points out the fact that it has been the intellectual Germans—Wagner, Hegel, Treitschke, Nietzsche and de Gobineau—who have generated and fathered the attitude of superman, Aryan domination and German world conquest.

Mr. Nizer traces the history of German military behavior during and after the last war and concludes with suggestions as to methods of obliterating the Germanic spirit from which wars have eminated in Europe for so many hundreds of years.

The most striking aspect of these two books is the fact that while one is a recounting of personal experiences and observations, the other a series of logical deductions based on writings of and by the German people, they both arrive at the same conclusions and an identical appraisal of Germanic character.

HISTORICAL ATLAS OF THE UNITED STATES. By Clifford L. Lord and Elizabeth H. Lord. Henry Holt & Co. $3.00.

For breadth of concept and quick comprehension there is no handy atlas of American history that can compare with the book compiled by Clifford and Elizabeth Lord. It contains maps indicating the economic and political growth of the nation as well as the social progress that has been made through the years.

There are maps to illustrate colonial and state boundaries, military campaigns, explorations, national expansion and trade routes. Maps are used to show what areas were devoted to tobacco and rice in 1775, what states regulated the working day for women in 1850, the comparative day's travel in 1800, 1830, 1860, and so on. This method of reference is a great advancement over the process of reading long passages of semi-relevant material.

The only criticisms of this book are the occasional lack of sufficient variation in the shadings used, and the exceptionally small scale of the world maps. Both of these weaknesses can undoubtedly be corrected in future revisions, and would appear to be insignificant in comparison with the great value of the material and its method of presentation.

THE CURTAIN RISES. By Quentin Reynolds. Random House. $2.75.

One of Mr. Reynolds' outstanding attributes is his ability to make people like him, probably because he evinces his enjoyment of them. This is a direct contribution to his books in that he is welcomed into far more intimate knowledge of the people with whom he comes in contact than the average reporter is ever permitted.

His latest book, *The Curtain Rises*, embraces Moscow during the winter after Stalingrad, the Middle East after the armies had been rolled back from its borders, and Algeria in the midst of war. The climax is undoubtedly the recounting of the landing at Salerno—perhaps the best story of this incident yet published.

LAST FLIGHT FROM SINGAPORE. By Flight Lieutenant Arthur G. Donahue, D.F.C. Macmillan. $2.50.

Flight Lieutenant Donahue's first book *Tally-ho: Yankee in a Spitfire* went into its fifth printing shortly before he was reporting missing. In this first book he told of his experiences with a fighter squadron in England during the Battle of Britain. His stories of combat were varied with descriptions of the normal routine, which may consist of flying for days without an actual encounter with the enemy.

Last Flight From Singapore is what its name implies, an account of air combat prior to the last days of Singapore and during the fall of Palembang. The author's obvious sincerity, evidenced throughout the book, is climaxed by the inclusion of several personal letters to members of his family. The manuscript was found among his possessions when, after his return to England, he was listed as missing from a European patrol.

MY LIFE WITH THE ENEMY. By Phyllis Argall. Macmillan Company. $3.00.

In 1916, at the age of seven, Miss Argall went to Japan and, except for a few years during which she took her B.A. and M.A. at the University of Toronto, remained there until she returned to America on the *Gripsholm* in 1941. After getting her degree she taught first in Tamsui, Formosa, and then in Tokyo, where she started free-lance writing. In 1939 she joined the staff of *Japan Newsweek*.

Miss Argall has written an interesting and thoroughly convincing account of her experiences. Her analysis of the Japanese character is based on many years of dealing with the Japanese as students, as social acquaintances, business partners and rivals and finally as captors.

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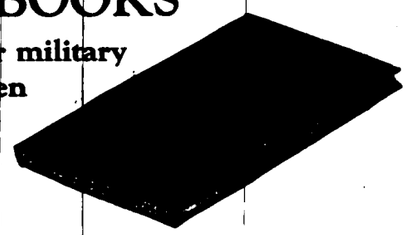

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CHINA HANDBOOK 1937-1943. Compiled by the Chinese Ministry of Information. Macmillan. $5.00.

WINNING THE PEACE IN THE PACIFIC. By S. R. Chow. Macmillan. $1.50.

These two books will be of interest to those readers who are interested in learning something more of our Pacific Ally at this time. *China Handbook* contains information on the area, population, topography, climate, history and religion of the country as well as education and economic conditions, foreign relations and permissable military information on campaigns and battles. A Chinese Government directory is included, and a "Who's Who" with biographical sketches of prominent men and women of the day.

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MILITARY DECORATIONS AND CAMPAIGN SERVICE BARS OF THE UNITED STATES. By Cromwell Gibbons. U. S. Insignia Co. $1.50.

Here is a complete informative pocket sized book giving over 75 photographic color reproductions of the authentic medals and bars of the Army, Navy, Marine Corps, Coast Guard, Treasury Department and the U. S. Merchant Marine, with a description of their history and usage. A handy guide for those requiring or desiring this information.

THE PRAIRIE LOGBOOKS. By Lieutenant J. Henry Carleton. Edited with an introduction by Louis Pelzer. The Caxton Club. $5.00.

Lieutenant Carleton (1814-1873) was an officer in the First Regiment of United States Dragoons from October 18, 1839 to March 17, 1845. His first Logbook, giving a description of the Dragoon Campaigns to the Pawnee Villages, 1844, was published anonymously and appeared first in *The Spirit of the Times*, New York, from November 9, 1844 to April 12, 1845. The Logbook describing the second expedition to the Rockies was first printed December 27, 1845 to May 30, 1846.

Mr. Pelzer has done an excellent piece of editing and his introduction gives much important data of interest to the reader.

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A member of the Provisional Reconnaissance Troop, 3d Infantry Division, Italy.

MAY-JUNE, 1944

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"Are Horses Essential in Modern War?"

*by Major P. D. Eldred**

THERE were plenty of "ducks" and trucks to move supplies across the Sicilian beaches and haul them up the highways. And when the armor landed, there was enough of that, too. But when the Seventh Army started fighting its way through Sicily's precipitous mountains, there were two things it did not have—pack transport and horse cavalry.

It was not long after the Americans hit the beaches before everybody, from the Commanding General down, realized that Sicily's tortuous terrain was a "natural" for pack trains and horse cavalry. Without them, supply was a back-breaking problem; reconnaissance was made difficult. Heavy weapons sometimes lagged behind the infantry, and pursuit of the retreating Germans was never quite fast enough to accomplish their destruction.

*Hq. Seventh Army.

Below: Mounted French Moroccan troops move to the front in Sicily. *Top insert:* Lieutenant General Omar S. Bradley. *Lower insert:* Lieutenant General George S. Patton with Brigadier General Hobart Gay in background.

As a result, some of the German forces eventually escaped across the Strait of Messina and lived to fight another day against Allied troops in Italy.

The invasion of Sicily on July 10 probably was as thoroughly planned an operation as American troops had ever undertaken. Every piece of motorized or mechanized equipment that conceivably could be used was provided. The speed with which the island was conquered (thirty-eight days) attested to the efficiency of operational planning.

Because pack transport and horse cavalry were not available, however, they were not included in this operational planning. One infantry division, anticipating supply problems, did bring 90 burros across from North Africa, but these light animals could not handle the job.

After the Sicilian operation was actually under way and fighting had progressed into rugged mountain terrain, with supply hampered by inadequate roads, blown bridges and mine fields, it was necessary hastily to improvise pack trains. A limited number of mules and horses were hurriedly rounded up, hauled to the front in trucks and, with inadequately trained personnel, put into service. Naturally, the result, while helpful, was far from satisfactory.

At the conclusion of the campaign, LIEUTENANT GENERAL GEORGE S. PATTON, Commanding the Seventh Army, and his corps and division commanders made some significant comments on the need for pack transport and horse cavalry in mountainous terrain.

GENERAL PATTON summed up his conclusions as follows:

"In countries such as Sicily, it is almost necessary to have pack animals.

"In almost any conceivable theater of operations, situations arise where the presence of horse cavalry, in a ratio of a division to an army, will be of vital moment.

"It is the considered opinion, not only of myself but of many other general officers who took their origin from the infantry and artillery, that had we possessed an American cavalry division with pack artillery in Tunisia and in Sicily, not a German would have escaped, because horse cavalry possesses the additional gear ratio which permits it to attain sufficient speed through mountainous country to get behind and hold the enemy until the more powerful infantry and tanks can come up and destroy him."

MAJOR GENERAL M. S. EDDY, commanding the 9th Infantry Division, went into more detail on the subject:

"Infantry can advance only so far without receiving its daily supplies of water, ammunition and food. In this (the Sicilian) campaign, even in the case of infantry advancing along a main road, the advance was temporarily held up, primarily because of the difficulties of supply.

"Because practically all bridges had been blown and the terrain was such that motor vehicles could not be used until engineers had constructed long and difficult by-passes, pack mules had to be employed.

Major General Lucien K. Truscott is shown in conference with General Bradley during operations in Sicily.

"A conglomeration of pack equipment was finally collected that was neither adequate nor efficient. Inexperienced packers did the best they could, and the drain on manpower to furnish packers and mule leaders was quite heavy. To obviate these difficulties in future operations, the following recommendations are made:

"1. Provide organized pack trains for any operation where mountainous terrain is to be encountered. These units could be in corps or army reserve, to be attached to divisions as needed.

"2. In case organized pack units are not available, provide a stock of American pack equipment, including special pack saddles for the six loads of the 75mm mountain howitzer and for the heavy weapons of the infantry. Again, the stock could be held in army dumps to be issued as needed.

"3. Provide units with pack equipment and mules on a loan basis during their training period before an

"YES," say the generals from the Sicilian Campaign

The Cry for Horses

★

Despite mechanization of modern weapons of war, the value of the horse on the field of battle has been dramatically rediscovered during the past winter and has been the difference between success and failure on the Russian front.

It is an old cavalry axiom that a horse can go wherever a man can travel, and this is still not true of the tank, truck—or even the faithful jeep. This winter on the Russian front, horses have packed men, munitions, supplies and weapons over impossible and practically impassable terrain. Pulling wagons, sleighs, caissons and guns, horses have kept pace with the Red Army.

In Italy the cry for horses, mules, and more horses became almost a howl during the past winter months as troops operating in treacherous mountain country faced the problem of packing in food, ammunition and other supplies and packing out wounded men. Once again the horse filled the vital need, and many an old cavalryman watching man's beast of burden pass a column of mud-embedded motor transport smiled a knowing smile and kept his peace.

The German army has used the horse to supplement its motor transport from the first day of war, and on the Eastern front has developed the use of animal-drawn vehicles to a scale almost equalling that of World War I. In China, both the Japanese and Chinese find the military value of the horse undiminished when used to support campaigns in mountainous terrain. And the god of war, still crazy over horses, has given many a recent victory to the army commander who has been able to assemble sufficient animals to meet the needs of the military situation—planes, trucks and tanks notwithstanding. — *Stars and Stripes*, 25 March 1944.

operation in order that instruction in packing may be given."

Major General L. K. Truscott, Jr., commanding the 3d Infantry Division, in discussing lessons learned by his division, said:

"The 3d Division landed at Licata with about 90 burros brought from Africa. The burros were gradually discarded and replaced by both mules and horses. At the end of the Palermo phase we had accumulated a number of horses and mules equipped with captured and improvised pack saddles. Losses and wastage among these pack animals were extremely high because of the crude improvisations and the lack of trained personnel in the division to handle them.

"During the final advance on Messina, it was necessary to increase greatly the number of pack animals. They were in constant use supplying elements engaged in flanking movements through the mountains."

At the end of the Sicilian Campaign on August 17, the 3d Division had on hand 301 pack mules, of which 48 were unserviceable. In all, the division used about 500 pack animals during the final phase of the campaign. The division also had 115 horses, of which 34 were unserviceable.

General Truscott added:

"The need for mounted reconnaissance and combat elements to work in close coöperation with the infantry in rough terrain was no less marked than the need for pack animals. The need for such elements . . . is obvious. However, such elements cannot be improvised in combat from untrained personnel, although we made strenuous efforts to do so. Considerable use was made of riding animals for command and communication purposes and, to a very limited extent, for scouting.

"I am firmly convinced that if one squadron of horse cavalry and one pack troop of 200 mules had been available to me at San Stefano on August 1, they would have enabled me to cut off and capture the entire German force opposing me along the north coast road, and would have permitted my entry into Messina at least 48 hours earlier."

During the campaign, General Truscott organized a provisional mounted troop and a provisional pack troop and began training personnel in animal management in order to provide more efficient and economical handling of animal transportation.

The provisional mounted troop consisted of troop headquarters and three reconnaissance platoons of three squads each. The provisional pack troop had about 250 serviceable pack mules. Both units were under a competent cavalry officer. Pack equipment included Phillips packs as well as captured equipment of the French Army type.

After the campaign, General Truscott recommended

that the division be authorized to organize a mounted troop and a pack troop on a provisional basis.

General Truscott concluded by making the following remark:

"I am firmly of the opinion that if future operations contemplate the employment of this division in terrain approaching that encountered in the Sicilian operation, that these organizations (pack, mounted reconnaissance and combat units) will be worth their weight in gold."

General Eddy stated:

"The heavy weapons company must be the base of advance of the entire infantry battalion; therefore, to facilitate the advance of the battalion, it must be driven home to those responsible for the organization and equipment of the infantry battalion that heavy weapons cannot be manhandled and still keep up with the advance of rifle companies. Weapons carriers can go only so far in mountainous terrain, and their use is limited. Their use is also limited by swamps and jungles in other types of terrain.

"In many instances in this campaign and in the Tunisian campaign, the weapons carrier drew hostile artillery fire and, from that point, the heavy weapons had to be carried by personnel unless pack mules were furnished.

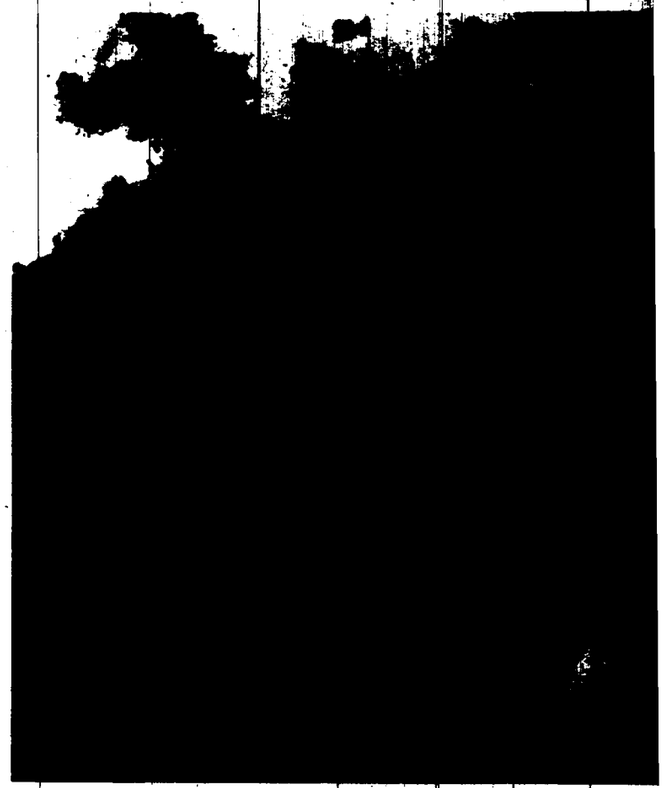
"Whenever pack mules could be secured or spared from supply functions they were furnished to heavy weapons companies, and in such instances, the heavy weapons companies had no trouble keeping up with the rifle companies. Whenever the heavy weapons had to be carried by hand, the heavy weapons company lagged behind."

Major General Eddy recommended that heavy weapons companies should have as part of their standard equipment the necessary pack equipment to be used when packing heavy weapons becomes necessary. "Mules," he said, "were always easily secured in North Africa and Sicily, and mules and horses will be available in Europe."

Lieutenant General O. N. Bradley, commanding the II Corps, also noted that infantry divisions had successfully employed pack mules. He concluded:

"In contemplated operations in mountainous terrain, plans should include facilities for supply by pack train."

That which has been said of Sicily was equally true in Tunisia and of the mountainous terrain of Italy and probably of the jungles and swamps of the Southwest Pacific. With the added difficulty of rainy seasons, there is no question but what serious terrain problems will present themselves in any theater of operations. Knowing this and bearing in mind "that you get on the roads to march and must get off the roads to fight," what is the answer to the question, "Is Pack Transport and Horse Cavalry Essential in Modern Warfare?"



Beyond the "jeep line" in Italy a mule pack train winds its way up the mountain side with supplies for troops. It will take about four hours to make the tedious five-mile trip.

Improvised Cavalry in Italy

"A certain ingenious general, an old cavalryman, now commanding infantry, has organized a battle-strength cavalry troop with commandeered horses and pack mules to smoke out the Germans in isolated areas. This general has had to turn infantrymen and artillerymen into cavalrymen to accomplish his purpose. While there are a few dead mules and horses lying about, this anonymous general (Editor: Major General Lucien Truscott, Commander 3d Infantry Division) has been very successful with his makeshift cavalry.

"It would seem obvious that, in regions where mechanized warfare breaks down because of lack of communications, horses and mules would speed up the task of harassing and defeating the enemy, but there is no sign that the masterminds of this war, who are determined that the war shall roll on wheels even when it can't, intend to use cavalry in any large way."—Frank Gervasi, Collier's, December 18, 1943.

TANKS IN SICILY

by Lieutenant Colonel W. B. Goddard*

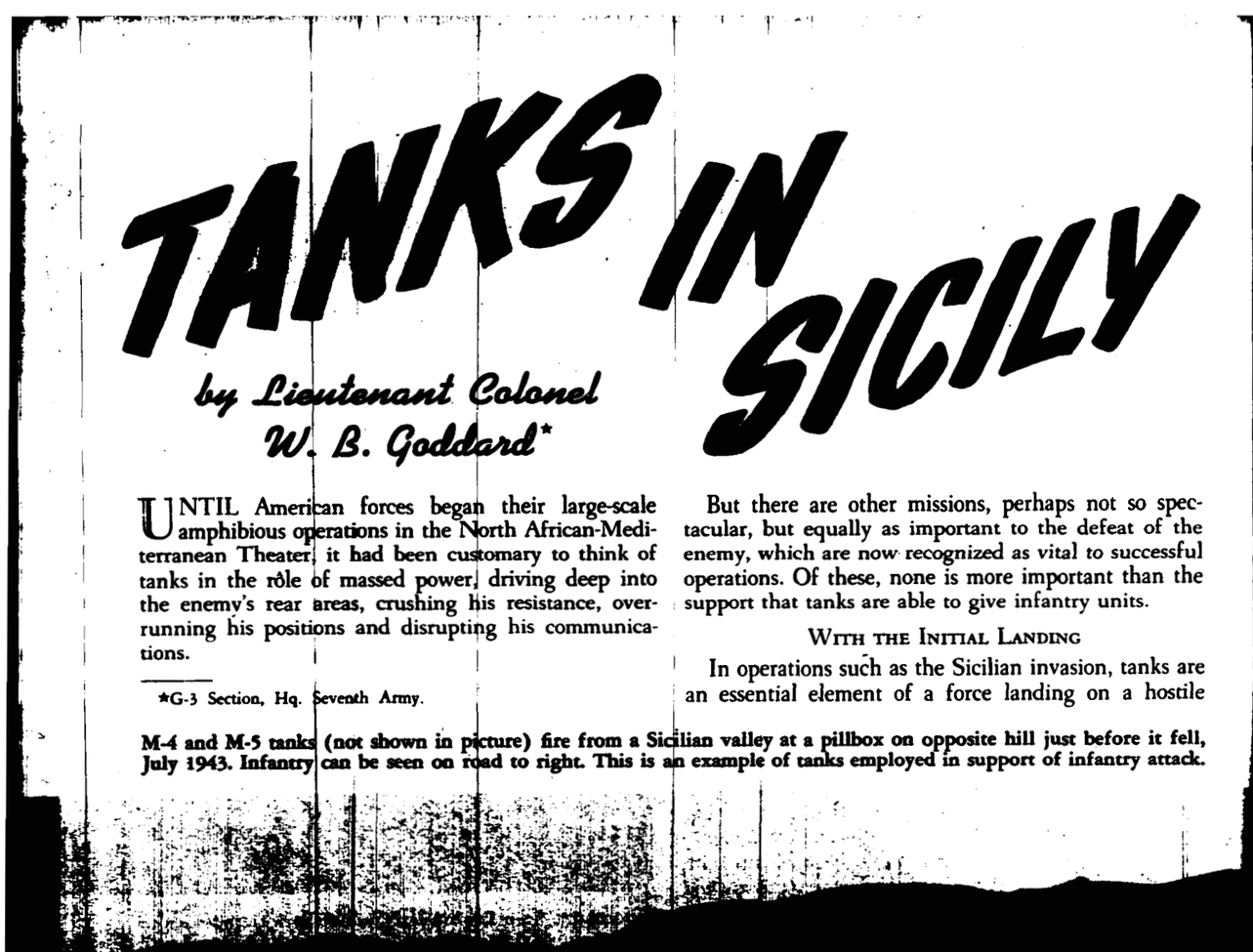
UNTIL American forces began their large-scale amphibious operations in the North African-Mediterranean Theater, it had been customary to think of tanks in the rôle of massed power, driving deep into the enemy's rear areas, crushing his resistance, overrunning his positions and disrupting his communications.

*G-3 Section, Hq. Seventh Army.

But there are other missions, perhaps not so spectacular, but equally as important to the defeat of the enemy, which are now recognized as vital to successful operations. Of these, none is more important than the support that tanks are able to give infantry units.

With the Initial Landing

In operations such as the Sicilian invasion, tanks are an essential element of a force landing on a hostile



M-4 and M-5 tanks (not shown in picture) fire from a Sicilian valley at a pillbox on opposite hill just before it fell, July 1943. Infantry can be seen on road to right. This is an example of tanks employed in support of infantry attack.

shore. Initially, the fire power of the medium tank provides the support necessary to the infantry until field artillery can be landed and moved into position.

It is obvious that a mobile force, with adequate fire power and capable of moving forward rapidly and aggressively, is of utmost importance in driving the enemy back for a sufficient distance from the beach to make possible the placing of field artillery in suitable positions. In the performance of this mission, tanks play a key part in successful landing operations.

It is needless to say that any kind of moral support for the infantry during this critical phase of combat is most welcome.

Against Enemy Counterattacks

After the initial landing has been made and the beachhead established, the landing force must be prepared to repulse enemy counterattacks. Here again, the tank takes a prominant rôle.

In the landing of the 1st Infantry Division at Gela, Sicily, American tanks played an important part. The terrain around Gela was not suited to mass attacks by

In the 38-day Sicilian campaign tanks of the 2d Armored Division performed many valuable missions other than the spectacular "blitz" from Agrigento to Palermo.

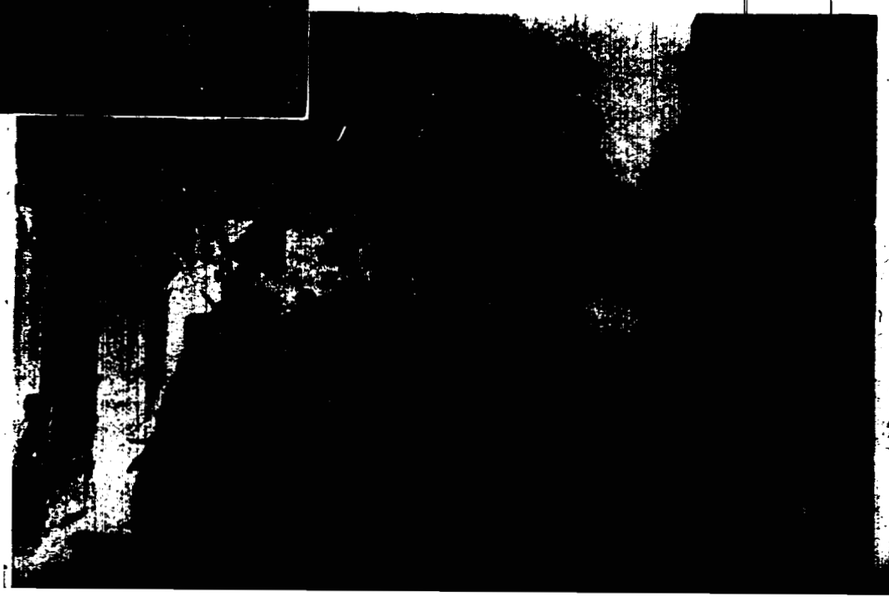
medium tanks, but the tanks initially landed were used very effectively to repel strong German counterattacks on the second day. These attacks were broken up only a short distance northeast of Gela.

With Amphibious "Loop" Landings

In addition to amphibious landings, such as the actual invasion of Sicily, there are special amphibious operations in which tanks may be employed in support of ground forces. On three different occasions, this type of special operation was used in the Sicilian Campaign along the north coast while the Seventh Army was advancing east toward Messina.

The axis of advance was the twisting coastal road, which closely follows the shoreline. Precipitous mountain ranges drop abruptly to the sea and, in places, the road actually is notched from the cliffside. The terrain is ideal for enemy delaying actions, successively defending well-chosen positions.

On each of the three occasions where special amphibious operations were used, the terrain encountered was such as to prevent successful execution of a frontal attack, or to envelop the enemy left (south) flank, without excessive cost. But, by amphibiously "looping" up the coast and landing task forces in the rear of German positions, it was possible to force enemy withdrawal and continue the advance of the main attacking force. Tanks included in these special task forces rendered fire support to the infantry and helped to repulse German counterattacks. They were credited with contributing largely to the success of the operations.



An M-4 tank of the 2d Armored Division advances into the town of Sceaco in western Sicily July 20.

An armored unit moves through Palma, Sicily July 11—the day after initial landings.

With Infantry Attack

The mountainous terrain of Sicily tended to canalize the movement of tanks in most areas. There were certain areas, however, where tanks could be used to advantage in assisting the infantry in gaining ground by making lightning thrusts, closely followed by the infantry assault. In such cases, and whenever such an attack was made, the objective was taken.

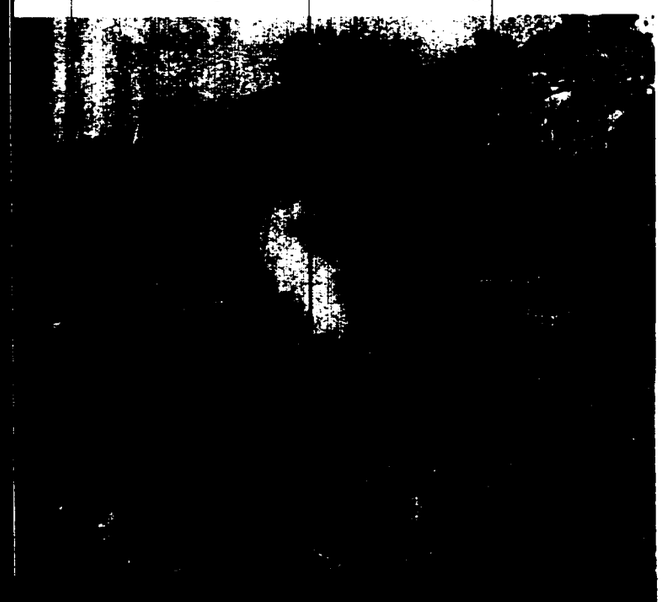
The conditions favoring attacks of this nature presented themselves so seldom that the enemy never knew when to expect a tank attack. As a result, at times when Allied tanks were not being used, many German antitank guns, set up well forward to destroy tanks, were overrun by the infantry. In the latter stages of the campaign, German losses of antitank guns were considerable. This might be described as an indirect means by which tanks aided in the defeat of the Germans.

At times during the Sicilian Campaign a light tank battalion and a company of medium tanks were attached to the 1st Infantry Division. In general, these tanks were very successful in clearing out enemy strongpoints, artillery, and even personnel. On many occasions, the 1st Infantry Division used this tank force advantageously.

Light Tanks in Support of Infantry

The light tanks of a reconnaissance squadron proved to be most essential to the squadron in accomplishing some of its assigned missions. Also, on several occasions, these tanks were of valuable assistance in expediting the advance of adjacent infantry units, by moving quickly around the flank and knocking out enemy machine gun positions that were cleverly located to delay the advance of our infantry.

This tank and crew was a part of the amphibious force landed behind German lines at Cape Orlando on the north coast road August 7. It is shown here plunging ahead to intercept German units retreating toward Messina.



Lieutenant General George S. Patton, Jr., commander of the Seventh Army during the Sicilian Campaign, tells of one notable instance in which light tanks, supporting infantry units, proved of utmost importance to the 1st Infantry Division:

"During the Sicilian Campaign a very interesting tank action took place between Butera and Mazzarino. Some 14 German Mark IV tanks attacked a regiment of the 1st Division while the regiment was deployed and in no position to repel the attack. These veteran soldiers, however, merely took cover and the tanks passed through them without doing any particular damage. These German tanks then turned to the north along the axis of retreat of the enemy. In so doing they came in contact with about 30 light tanks of one of our GHQ battalions. In the ensuing fight, at extremely short range, the 14 German tanks were destroyed. Our losses were three light tanks, none of which were damaged except in their running gear."

New Tank Tactics

This article has mentioned some of the various situations in which tanks are called on to assist the infantry. Authorities on tank operations, alert to evolutionary changes, believe that the pendulum has swung in the opposite direction and that now the infantry must assist the tanks to obtain the best results from this powerful weapon.

As an example of successful tank-infantry employment, General Patton cites the following example:

"The operation of the Provisional Corps in the taking of Palermo was a classic example of this method of using tanks. Initially, the tanks were held back so that the enemy was unable to determine in which direction the 2d Armored Division would operate. When the infantry of the 3d and 82d Divisions had secured an open flank, the 2d Armored Division moved rapidly around it, and during the day of July 22 advanced some 69 miles in about 12 hours. In the course of this move they had to overcome four distinct enemy positions."

In considering the employment of tanks, General Patton cautions:

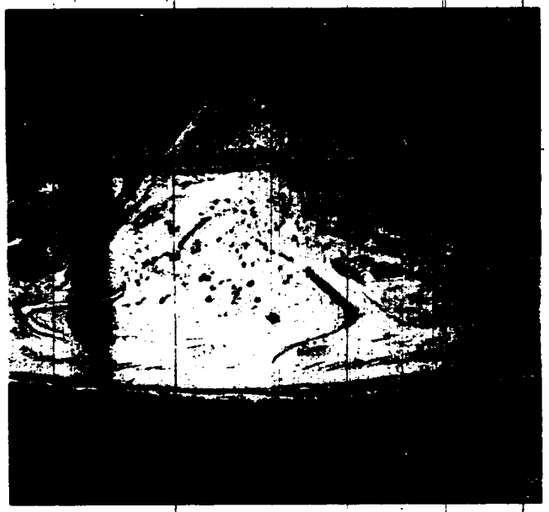
"There must be a careful differentiation between armored divisions and GHQ tank battalions; both are necessary. The GHQ tank battalions are used primarily for the purpose of supporting infantry, so that the integrity of the armored division is not destroyed. The present homogeneity of the battalions, however, makes it possible to add GHQ battalions to armored divisions when the circumstances demand additional armored force."

This discussion of the use of tanks in the Sicilian Campaign calls attention to some of the many ways in which tanks must be prepared to work with the infantry in defeating the enemy. All are based on the accurate employement of fire power and aggressive action to the highest degree.

Sicilian Terrain

When the Seventh Army was advancing east toward Messina, the main axis of advance was the twisting, coastal road which closely followed the shoreline. This picture, taken of an area 45 miles west of Messina, shows the typical terrain over which the advance was made. A railroad bridge and a highway bridge can be seen close to the water's edge.

In a great many places along the coastal highway, precipitous mountain ranges dropped abruptly to the sea, and often the road was actually notched from the cliffside.



The second amphibious landing in rear of a securely held German position was made on this beach. The landing referred to was probably that at Brola, August 11th.

Reconnaissance in Sicily

—Activities of a Reconnaissance Battalion from the Landings at Licata and Gela to the Entry into Palermo

Scene on Gela Beach on "D" day—10 July. Matériel was slow to arrive, and troops were unable to proceed immediately. A strong German counterattack delayed advance.

Troops landed at Licata Beach proceeded immediately through the town. Licata is pictured from elevation in the interior.

*by Colonel Paul A. Disney, Cavalry**

THE story of the action of this Reconnaissance Battalion is one of typical cavalry action albeit the mounting of the participants was on steeds of iron instead of flesh. It should be of particular interest, therefore, to all cavalrymen.

In a period of less than two weeks, the battalion operated on separate occasions as a reconnaissance battalion for its own armored division and for a provisional corps. During this period, frequently simultaneously with these operations, smaller elements operated as attachments to separate combat commands within the armored division, and companies operated in zones of advance of infantry divisions of the provisional corps—reporting directly to those divisions as well as to the Battalion.

It is believed that the command of a reconnaissance platoon gives a young officer an opportunity to display his ability in a manner afforded by no other command of comparable size. Of seven platoon leaders in the Battalion who have had the opportunity of displaying their wares in combat, one has been recommended for the Distinguished Service Cross, and four have received the Silver Star (one of them twice). The remaining two had hard luck and got the Purple Heart while leading their platoons. Two of these awards were made during landing operations in French Morocco in November 1942.

All of the platoons which were observed in action performed as though going through platoon combat exercises and tests, which have formed a part of the training in this Battalion for a considerable period of time. The principles laid down in the training manuals are sound. "The proof of the pudding is in the eating."

The period covered by this account starts with the departure of elements of the Battalion from Africa and ends on the day that they entered Palermo.

Most elements of this Battalion spent the period 1-5 July at an African Port of Embarkation loading vehicles and making preparations for an embarkation of personnel for amphibious operations. Headquarters Company and Company "A" were to remain in Africa. Company "B" had already departed for a staging area. Company "C" was attached to a Combat Command of the 2d Armored Division. Company "D" comprised a part of the reserve of the Task Force. Battalion Headquarters, consisting of the Battalion Commander, four staff officers, a medical officer and ten enlisted personnel. embarked with the understanding that elements of the Battalion would be assembled later for operations as a tactical unit.

Company "B"—Licata to Naro—10-11 July

The first element of the Battalion to reach Sicily was Company "B," which landed near Licata on 10 July between 2200 and 2300 and moved directly from the dock areas to a de-waterproofing area northwest of the town. Vehicles were de-waterproofed and tires inflated. Outpost was established and maintained by the 3d Platoon until 0400, 11 July.

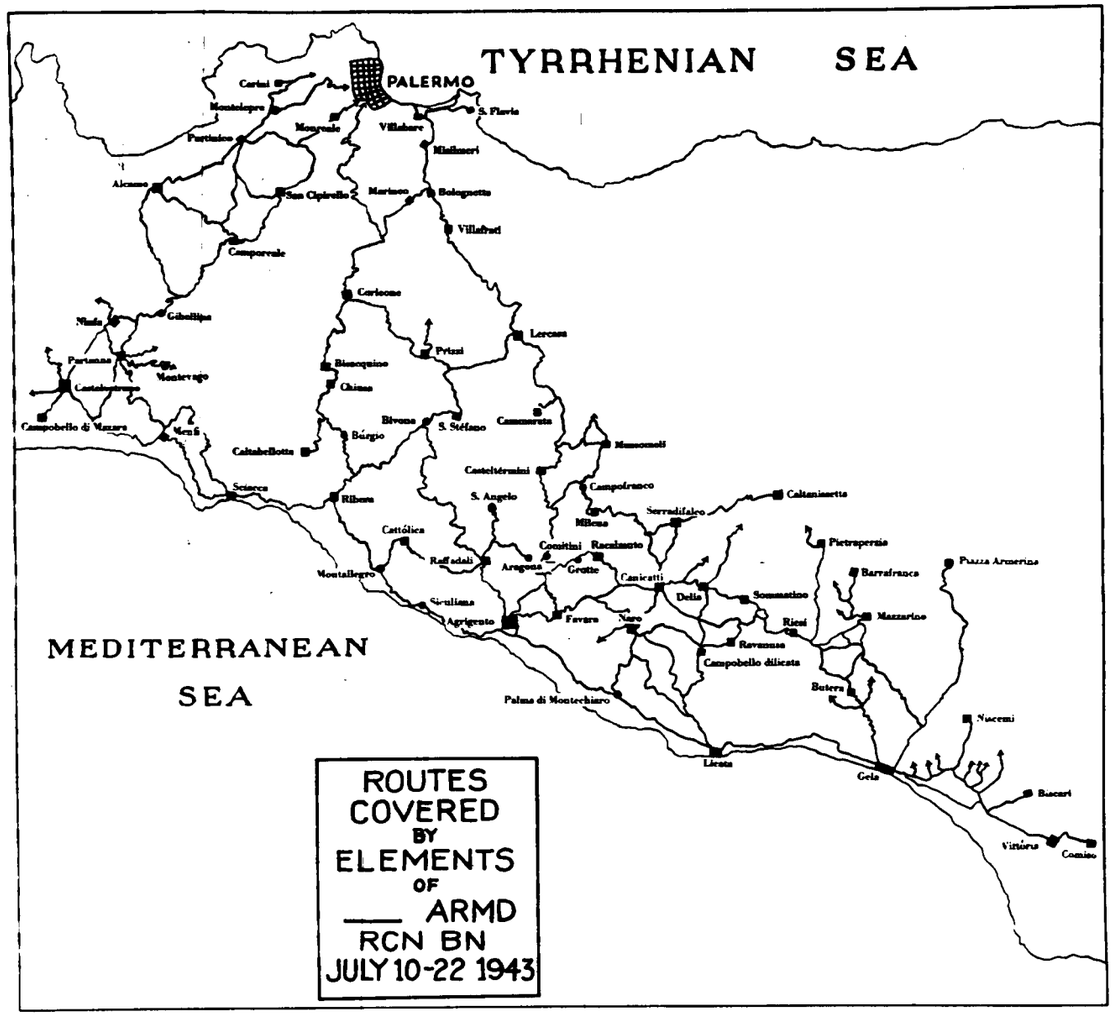
On the morning of 11 July Company "B" moved out in advance of a Combat Command in an attack on the town of Naro.

About one mile south of Naro the 2d Platoon, as the leading element of the company, observed an enemy tank moving east from the town. A patrol was sent after it, but it made a successful getaway. The 2d Platoon then entered Naro at 1100 without opposition. One Italian truck of ammunition was found abandoned and was turned over to Company Headquarters. Orders were received to outpost the town. On a ridge 5 miles north of Naro, enemy fire was encountered. Two Italian trucks coming from the north met with the leading ¼-ton truck of the patrol. Fire, promptly opened on the trucks, killed six of the enemy. Of the remaining, 3 Italian soldiers surrendered, and an estimated 30 or 40 more were killed or wounded. The Italians, evidently from other trucks, built up a strong firing line with machine guns and antitank guns. The 2d Platoon assault gun was brought forward and used with direct fire on the enemy positions. The enemy continued to reinforce its position from the north. After fighting for 2½ hours and being unable to get around either flank, the platoon set fire to the two Italian trucks and withdrew to a ridge just *north* of Naro, where it remained in observation of the enemy during the night and next day.

Meanwhile, the 1st Platoon, which left its position north of Licata at about 0315, proceeded north and

The city of Palermo, capital of Sicily, fell to the Americans on 23 July 1943. Elements of this Reconnaissance Battalion entered its outskirts on 22 July. The Provisional Corps covered distance from Agrigento in 72 hours' forced marching.

*Commander, Reconnaissance Battalion, Sicily.



northwest by road to a point about 7 miles north of Licata. It moved over this route at a fair rate of speed and arrived at Conostra at about 1000. The city was deserted of soldiers, and the platoon, proceeding immediately to Naro, arrived there shortly after the 2d Platoon had taken the town. The 1st Platoon was then sent to establish an OP *west* of Naro, which it maintained during the night and until 0300 on 12 July.

The 3d Platoon arrived at Naro and moved north on the main highway to Canicatti. At the highway and railroad junction, midway between Naro and Canicatti, it came under fire of enemy small arms, machine guns, and two artillery pieces. The platoon was trapped in a canyon but worked its way back by fighting a rear guard action. All except one enemy gun was destroyed, without any casualties or vehicular losses within the platoon. At about 1830 the platoon was bombed and strafed on the highway just north of Naro. One man was killed, three men injured, and two vehicles were lost. At 2100 it established an OP on a hill three miles *east* of Naro and maintained it for the remainder of day.

3d Platoon, Company "B"—Naro-Serradifalco—12-15 July

At dawn on 12 July, the 3d Platoon, which had established an OP east of Naro, was divided into two sections. One section remained at OP, and the other patrolled and reconnoitered the Naro-Palma Di Montechiaro road for an enemy armored division reported to be in that locality. No contact with the enemy was made, but hostile planes continued to bomb and strafe,

and the platoon leader and driver were wounded by fragments from German artillery shells.

The next day the 3d Platoon proceeded north of Naro to Canicatti, which had now fallen, and established an OP four miles in advance of the infantry front lines. A patrol moved toward Serradifalco, gained contact with the enemy and found a large oil dump on fire. Artillery was firing on the enemy south of Serradifalco. That evening the 3d Platoon withdrew to an OP one-quarter mile north of Canicatti, and a patrol moved three miles west of that town and established an OP on high ground. Two German prisoners were captured at this point.

At 0600 on 14 July, one section of the 3d Platoon moved three miles west of Castrofilippo, gained contact with the 2d Platoon, and then withdrew to the original OP because of friendly artillery barrage in that sector. A patrol was then sent southeast of Racalmuto on reconnaissance.

The second section of the 3d Platoon went north toward Serradifalco to the OP of the preceding day and again gained contact with the enemy. A patrol moved to the northwest and located an evacuated German bivouac area, which had apparently been a regimental headquarters and contained much German equipment. After finding and turning in many documents, the patrol set up an OP there for the rest of the day. Six Italian prisoners in civilian clothes were captured.

The next day, this same section went cross-country north to about three miles south of Serradifalco, where the patrol was fired on from the north by a German 170mm howitzer. It moved to take cover, but the artillery lifted and followed the patrol, so the section proceeded to the position of the day before. Fifteen minutes later, enemy artillery ranged in on the exact location that the section had evacuated. It then returned to a friendly artillery OP and pointed out the location of the enemy battery, which was soon silenced. About 2100 the 3d Platoon was relieved and withdrawn to Company CP about two miles north of Campobello.

2d Platoon, Company "B"—Naro-Favara—12-16 July

At about 2000 12 July, the 2d Platoon, which had remained in observation of the enemy north of Naro, sent a patrol north to determine the disposition of the enemy. The two trucks, burned the day before, had been moved so as to block the road. There was no enemy fire until the patrol reconnoitered by fire, at which time the enemy, from the same position as the previous day, returned the fire vigorously. The patrol then withdrew to the ridge just north of Naro, and remained in observation until early the next afternoon. When hostile artillery fire started falling near a bridge between the position of the platoon and Naro, the platoon was ordered to return to Company CP but later was ordered back to its original position, where it remained in observation.

In the afternoon of 14 July, elements of an armored infantry regiment were contacted in Naro and all information conveyed to them.

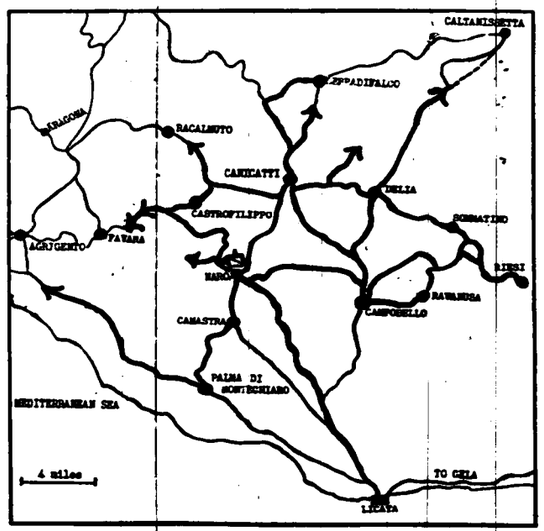
The next day a coördinated attack with the armored infantry revealed that the enemy position had been abandoned. Eight 47mm and four 20mm guns in good condition were found near Castrofilippo. The crews had evidently been destroyed by strafing.

A patrol was then sent to Favara. About one mile from Favara, two gun positions were observed and others heard. These guns opened fire on the patrol and upon a bridge 600 yards ahead on the road. The assault gun was brought forward and neutralized two of the gun positions. The remaining hostile guns were getting the range when the platoon was directed to withdraw to the original position north of Naro. Listening post and patrols were established for that night.

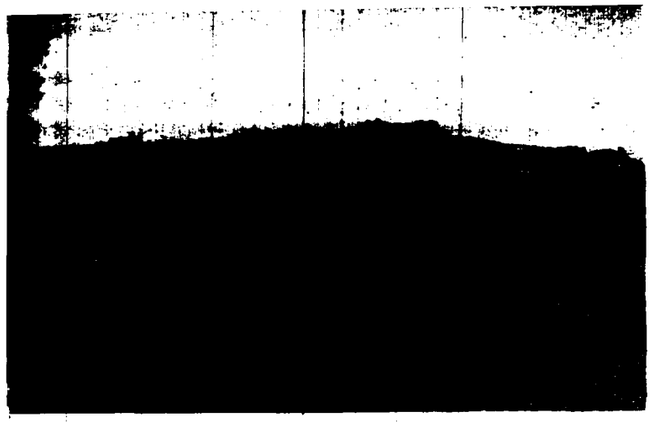
At about 1500 the next day, the 2d Platoon moved through Favara—the enemy having withdrawn from the town. That evening, it was relieved and returned to Campobello to join the Company Headquarters.

1st Platoon, Company "B"—Naro-Agrigento—12-14 July

On 12 July the 1st Platoon, Company "B," which had established an OP west of Naro, was ordered to contact the enemy north of Agrigento. The route of march was Camastra-Palma Di Montechiaro-Agrigento. The Platoon started on this mission at 0330. At 0600, the enemy was encountered about 3 miles southeast of Agrigento. The Scout Section came upon two bridges south of the town which were blown, and three enemy soldiers who were mining the banks of the



Route of Company "B" — July 10-16. Heavy lines indicate routes of reconnaissance of this unit for dates given.



View of Naro, Sicily, where as early as 11 July Company "B" established OP's to the north, east and west of town.

stream at the bridges. Fire was opened immediately. The three enemy were killed, and a truck loaded with mines standing in the road on the opposite side of the stream was destroyed. As fire was opened, the hostile artillery along the high ground beyond the creek, (about 1000 yards to the direct front), and 4 machine guns to the right front, opened fire. A vigorous fire fight ensued, during which the platoon was forced to withdraw.

Losses sustained were one officer and five enlisted men missing, one enlisted man killed and one assault gun destroyed. Enemy losses were three enlisted men killed, one truck and two machine guns destroyed and a pile of ammunition blown up. The platoon remained in observation of the enemy until the afternoon of the 14th, when it was ordered back to Naro.

1st Platoon, Company "B"—Naro-Delia-Caltanissetta—14-16 July

At about 1700 the 1st Platoon was given the mission of reconnoitering the road east from Naro to Ravanusa-Riesi-Sommatino-Delia, then north to contact the enemy in that sector. The platoon moved out about 1730 and patrolled the assigned route, but made no enemy contact that day. The night of 14-15 July an OP was set up on high ground about one mile northeast of Delia and patrols operated east to Sommatino-Riesi.

At about 0600 the 1st Platoon was reinforced by the Scout Car Section of the 2d Platoon, which was sent northeast with the mission of contacting the enemy south of Canicatti.

The 1st Platoon, moving northeast toward Caltanissetta, was shelled by artillery and forced to withdraw but continued to maintain contact. It next moved about 4 miles northeast and encountered an 88mm gun and two enemy tanks. One vehicle was destroyed and one man in the platoon wounded. The enemy tanks started an envelopment of the right flank of the platoon, which withdrew to the high ground occupied the previous night. The enemy tanks were kept in observation the rest of the 15th.

At about 0530 the next day the 1st Platoon again moved forward and occupied high ground on its axis. An Italian truck was destroyed about 2000 yards north of the position. That afternoon the platoon was joined by an I & R platoon of an armored infantry regiment and at about 1400 noted dismounted enemy moving south through a draw toward the positions held by the platoon. Remaining in observation until fired on by a machine gun, it then returned the fire, in conjunction with the armored infantry, inflicted several casualties, and caused the enemy to withdraw in disorder. That night the 1st Platoon was relieved and returned to bivouac north of Campobello.

Company "C"—Gela Beach—10-12 July

The majority of Company "C" landed at Gela late in the afternoon of 10 July and early morning of the 11th. The 1st and 2d Platoons plus Headquarters Company, were landed without sufficient vehicles to operate mounted.

Infantrymen of the 45th Division march through Caltanissetta, Sicily, 18 July. Reconnaissance elements attempting to enter the town earlier were stopped by heavy fire and established OP's three miles south of the town.

During the landing, the 3d Platoon, reinforced by other personnel of Company "C", was subjected to severe bombing, strafing and enemy artillery fire but succeeded in shooting down one low-flying plane. This platoon, which received its vehicles soon after landing, was immediately given reconnaissance missions of locating enemy vehicles reported in the vicinity of the Acate River to the south and east of Gela, and there made several enemy contacts. Enemy tanks were kept under observation to the north. The terrain was difficult and most of the reconnaissance along Highway 115 to the north had to be done dismounted.

The rest of Company "C" remained in assembly area near Gela beach awaiting the arrival of vehicles from ships.

Five German tanks were reported in the vicinity of Gela, and it became necessary for the 1st Platoon (less the Scout Section which had made contact with Combat Command about one mile north of the beach) to withdraw in face of tank action. The 1st Platoon took up a dismounted defensive position in a railroad cut about ¾ of a mile from the scene of action. There it was shelled by enemy artillery and dive bombed until forced to withdraw to the original assembly area.

The 2d Platoon, which had landed at 0530 on 11 July remained in the assembly area the rest of that day and all of the 12th waiting for vehicles to arrive. During this period, German tanks attacked from the hills, and the units underwent considerable strafing as well as tank and artillery fire.

On the afternoon of 12 July, Company "C" less the 3d Platoon, reverted to Battalion control and moved to assembly area about 4 miles northwest of Gela.

3d Platoon, Company "C"—Gela—12-17 July

On 13 July the 3d Platoon patrolled Highway 115 to Vittoria, and from Vittoria half-way to Comiso. The airport southwest of Comiso was being shelled by the enemy at that time.

During the night the platoon outposted the high ground north of Highway 115 to the Acate River. An overlay of certain trails to the north was given the platoon leader by the Combat Command and the seven points designated thereon were visited at least once every two hours. About 0100 the platoon leader took 12 men and with a small element of the infantry went up the mountain to the north to neutralize a gun position which they thought had been located. The gun was not found, and the patrol returned at dawn.

While continuing patrols the following day, the platoon captured one German prisoner and 6 Italian prisoners and on the 15th another Italian prisoner. Patrols and observation points remained approximately the same throughout this period.

Barrafranca was captured by an infantry regiment on the 16th, and the following day the 3d Platoon rejoined Company "C".

Company "C"—Riesi-Mazzarino Area—13-17 July

From the assembly area 4 miles north of Gela the 1st Platoon, Company "C" moved out toward Butera on 13 July with the mission of covering the flanks of a Ranger Battalion in its attack on enemy positions in that vicinity. The next day Company "C", less 3d Platoon, moved into assembly area about two miles south of Butera. The town of Mazzarino on the Ranger Battalion's right and Riesi on its left had already fallen. It was reported that enemy troops were between the two towns.

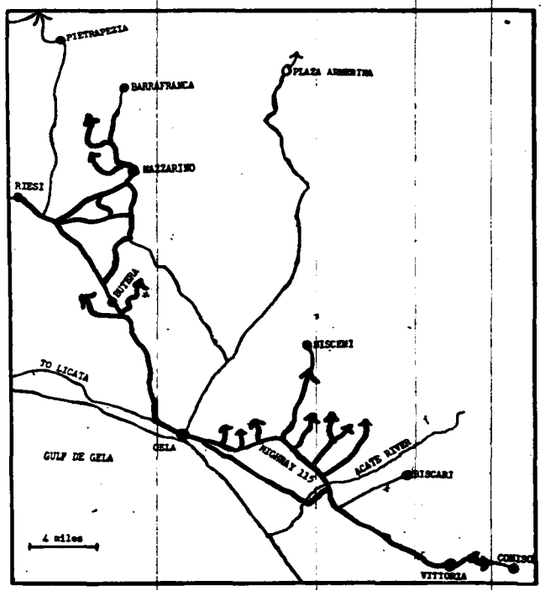
The Scout Car Section of the 1st Platoon moved out of advance position at dawn and by 1000 arrived on a high hill overlooking Butera. Its missions were to patrol the right flank of the Ranger Battalion to east and west phase line through Butera, and then to contact the Division east of Butera. By moving cross-country for about three miles the Scout cars reached an infantry outpost 6 miles east of Butera and left an OP to investigate the hills to the north of Butera. After finding a deserted Italian garrison filled with ammunition and grenades, the 1st Platoon was ordered back to CP. Later, while patrolling in the Riesi-Mazzarino area, it contacted an Infantry Division CP in Riesi at 2000, and maintaining contact with the Division, patrolled to Mazzarino. The patrol then returned to bivouac area after midnight and patrolled the Mazzarino-Riesi road between two Divisions CP's for the remainder of night.

The next day, the 1st Platoon was ordered to contact an infantry regiment at Mazzarino and patrol with scout section as far as Barrafranca. As the platoon arrived, a tank battle was in progress in the valley just north of Mazzarino, and the commanding officer of the infantry regiment said that it was impossible to make a daylight patrol and requested the scout section to make a dismounted night patrol of the road to Barrafranca. The scout section leader with eight men performed this mission. The patrol was recalled at 2100.

On the 16th the 1st Platoon returned to Mazzarino and was assigned the mission of reconnoitering the road to Barrafranca in an effort to locate an alternate route for supplies moving north to an infantry regiment in the hills.

The Scout Car Section moved out on its new mission at 1200 and by 2100 had located a cross-country route to the area northwest of Barrafranca.

Early the next morning the 1st Platoon moved out



Route of Company "C"—July 10-17.

to make contact with the enemy north of Barrafranca. Before contact was made, however, it was ordered to rejoin Company "C" south of Butera.

By the 17th, all platoons had rejoined the Company, which in turn reverted to Battalion control and moved to the new assembly area near Campobello.

Company "D"—Gela-Agrigento—11-18 July

Company "D" landed from lighters at Gela beginning at 0500 on 11 July, and assembled behind the sand dunes just off the beach. Dismounted elements of the company which landed earlier from the transport were on the beach for a full night and a day before vehicles were received. During this time they were subjected to constant bombardment and aerial attack, and a German tank attack.

The tanks of Company "D", and personnel vehicles of Battalion Headquarters were brought ashore on 11 July, and the Battalion (less detachments) assembled in the vicinity of Division Headquarters.

On 12 July, Company "D" (light tanks) moved approximately 6 miles north of Gela on the Butera Highway, and spent the 13th and 14th as a reserve in close support of the Ranger Battalion and its attack on Butera.

One tank platoon was made available to the 2d Armored Division Commander and remained at Division Headquarters.

Again on 16 July Company "D", still in reserve, went to the assistance of an infantry division sustaining a German tank attack. The company moved in 5 minutes, but upon arrival found that the attack had been beaten off.

On the 17th the Company rejoined the Battalion at Campobello, and the following day moved out under Battalion control to an assembly area west of Agrigento. It remained in reserve throughout this period, and none of its elements were committed.

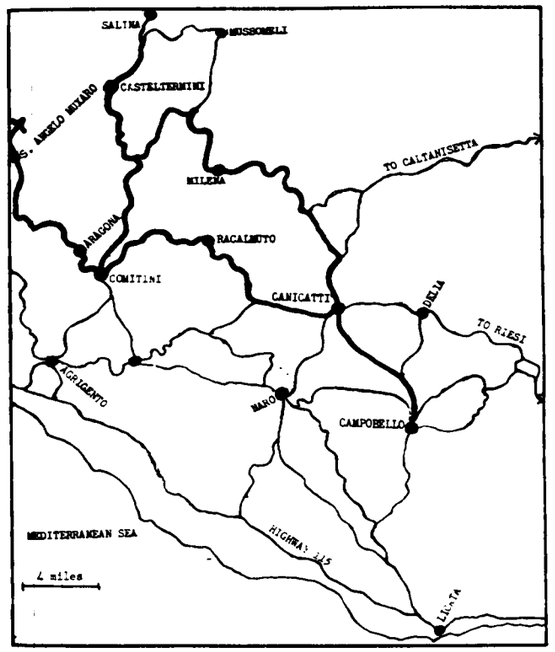
Company "B"—Campobello-Comitini—15-18 July

On the 17th, the 3d Platoon, Company "B", which had rejoined the company at Campobello on the 15th, proceeded north to Canicatti and pushed reconnaissance two miles northwest of Milena. Contact was gained with enemy artillery there and an OP and listening post established for the night. Enemy infantry and artillery were located two miles west of this position.

At dawn the next morning a dismounted patrol was sent to reconnoiter a large sulphur mine and railhead on Salina Road, 6 miles north of Casteltermini. The enemy was seen withdrawing to the north at 1000.

The Platoon was called back to the Company CP at noon to revert to Battalion control. The Platoon joined Battalion west of Agrigento at 2300.

On the 17th the 1st Platoon, Company "B", attached to a battalion of an armored regiment, was assigned the mission of reconnoitering routes to Racalmuto and Comitini and of contacting an enemy column reported



Route of Company "B"—July 15-18.

moving south from Casteltermini. The armored regiment was later recalled and the 1st and 2d Platoons then proceeded on missions of contacting the enemy north of Comitini.

At about midnight, Comitini was found to be clear. Five miles north of Comitini the 2d Platoon was fired upon by riflemen who ran off when fire was returned. At about 1500, the 1st Platoon made contact with an enemy artillery position. Three artillery pieces, one 20mm AA gun, one 47mm gun and two machine guns were definitely located. The two platoons shelled this position and at about 2000 started an attack which resulted in the destruction of these weapons and the capturing of 10 prisoners.

As the platoons returned from this sortie, another artillery piece and two machine guns opened fire, but their exact location could not be determined. Neither platoon suffered any casualties. It was determined earlier by the 2d Platoon that the bridges across the river were blown, but the railroad bridge was still intact. The night of 17 July, listening posts were established.

Observation of enemy gun positions was maintained throughout the next day, and the remaining piece located. Meanwhile, the two platoons proceeded to Aragona without resistance, and patrols reconnoitered northwest to S. Angelo Muxaro and north for about three miles. During the night several prisoners walking from Agrigento were captured.

A patrol during the afternoon went 10 miles north

of Comitini where heavy artillery fire was encountered, causing the patrol to withdraw and set up an OP. In the early evening a dismounted raid was made on the enemy position with the Scout Section of the 1st Platoon. Nine prisoners were taken. The Platoon then returned to the Company CP at Campobello and moved with the Battalion to Agrigento.

Campobello—Agrigento—17-18 July

During the period 10-17 July Company "B" had operated under Combat Command. On 18 July the Battalion was detached from the 2d Armored Division to act as a Reconnaissance Battalion for a Provisional Corps comprised of the 3d Infantry Division, 82d Airborne Division and the 2d Armored Division. For the first time Company "B" reverted to Battalion control for this operation. In accordance with these plans, the Battalion moved to assembly area west of Agrigento during the night of 18 July.

Company "C"—Agrigento-Ribera—19-20 July

All platoons of Company "C" moved out of Agrigento at 0200 on the morning of the 19th. The 3d Platoon, performing reconnaissance for the 82d Airborne Division, moved west on Highway 118, on the axis of advance Raffadali-Cattolica-Montallegro. The first enemy encountered was at the Magazzolo River and after some firing, 55 prisoners were taken.

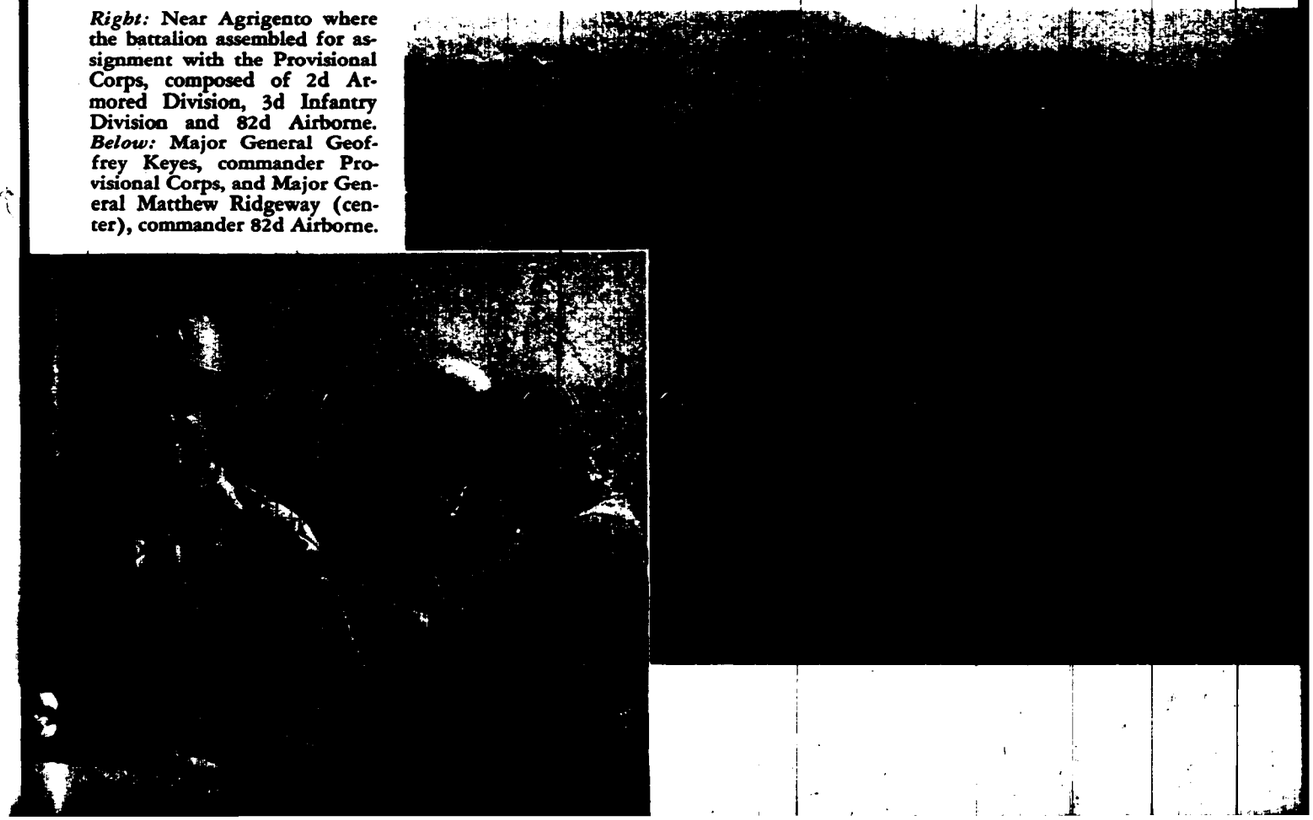
At Ribera, after a mine field had been removed and the town placed under fire, the city surrendered and some 70 prisoners were taken.

At the Verdura River, two miles west of Ribera, the 3d Platoon encountered small arms fire and artillery. The position was reduced by fire and dismounted action, and 85 prisoners were taken.

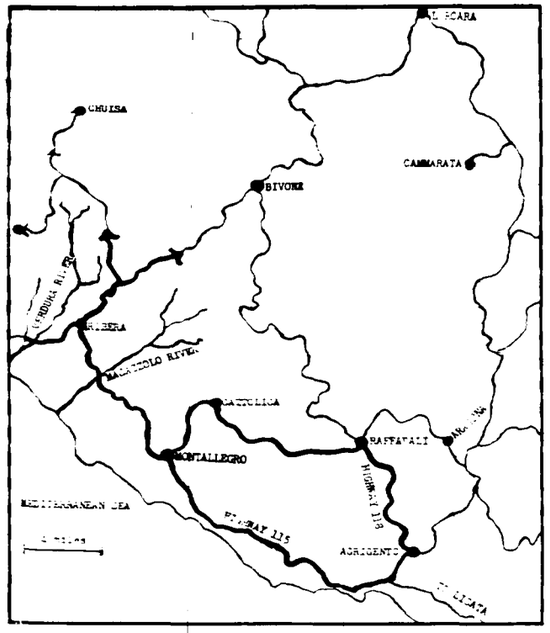
At a second river crossing west of Ribera, stiff resistance was met in the form of small arms fire, antitank guns and artillery. Both ends of the bridge were hit by antitank fire when a scout car attempted to cross. Ninety prisoners were taken. One man was wounded by strafing of enemy planes.

Meanwhile, the 1st Platoon, which had also moved out of Agrigento in advance of the 82d Airborne Division, made contact with Battalion of Rangers at 0430 three miles east of Raffadali. Following the 3d Platoon, the 1st Platoon then moved rapidly to Cattolica where it received a hearty welcome from the population. It then continued its advance toward Ribera. At the approaches to the town, hostile small-arms fire was encountered, but was quickly overcome by the vigorous return fire of the platoon. Patrols, after passing through a mine field, entered Ribera at about 1200. The local garrison of approximately 75 men surrendered to the platoon leader. Shortly thereafter infantry entered Ribera, and the platoon assembled and went to assembly area north of the town. The Scout Section patrolled roads to the north but encountered no enemy resistance.

The 2d Platoon moved northeast of Ribera to an in-



Right: **Near Agrigento where the battalion assembled for assignment with the Provisional Corps, composed of 2d Armored Division, 3d Infantry Division and 82d Airborne.** ***Below:*** **Major General Geoffrey Keyes, commander Provisional Corps, and Major General Matthew Ridgeway (center), commander 82d Airborne.**



Route of Company "C"—July 19-20.

fantry outpost line. The Company CP moved to Ribera and joined the CP of the 82d Airborne Division.

The following day the 3d Platoon continued reconnaissance in advance of the Airborne Division moving west on Highway 115; the 2d Platoon moved north of Highway 115; while the 1st Platoon remained in company reserve.

1st Platoon, Company "C"—Ribera-Caltabellotta-S. Ninfa—20-21 July

The 1st Platoon, proceeding slowly because of the presence of mines, moved from Ribera to Villafranca at 0500 on the 20th. Just south of Villafranca, the platoon was directed to patrol a side road to the mountain town of Lucca, which capitulated without resistance at 0800.

The platoon then pushed on to Villafranca. An enemy armored car was sighted on a hill near the town. Fire was opened with a 37mm gun, but it was found that the range was too great. After passing Burgio, reconnaissance was made toward Caltabellotta. An Italian machine gun just over the crest of a hill near Caltabellotta was next discovered. Mortar fire from the platoon silenced these guns. A white flag was shown and the Scout Section went forward to take the position. Eight AA machine guns and several prisoners were captured. The platoon then proceeded on its mission to Caltabellotta.

The Platoon entered the town at 1800 after a white flag had been raised and the garrison of 25 men was taken prisoner. Prisoners, reporting the road west of the town as mined, were marched out to clear the mine field. Mines were found to be TNT placed under the road and in deep pits sufficient to cause complete destruction of the road. Italians very reluctantly cleared the tunnel under the road, but they claimed they could not clear pits without pulleys.

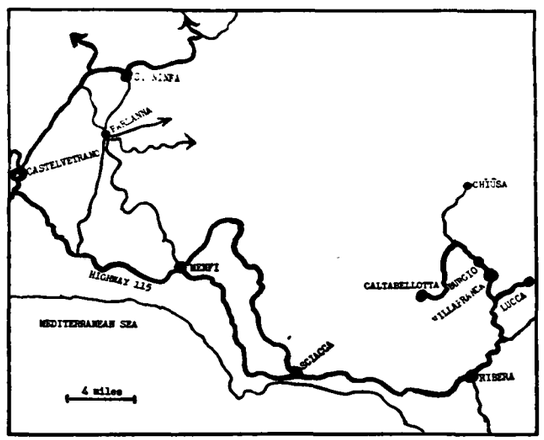
Naval gunfire was observed in the zone of advance, and a smoke flare was sent up. Orders were then received to remain in position. The platoon was approached by the Mayor and Chief of Police of Caltabellotta who stated that rioting threatened the town as the civilians were attempting to storm the local monastery to get clothing and equipment known to be stored there. Order was restored, and the local police force rearmed to maintain order.

The next day the 1st Platoon rejoined Company "C" at Menfi and was held in reserve as the company pushed on through Castelvetrano to S. Ninfa, which was reached at 1800. The Scout Section reconnoitered the high ground north of the town without locating any enemy forces. Outposts were then established for the night.

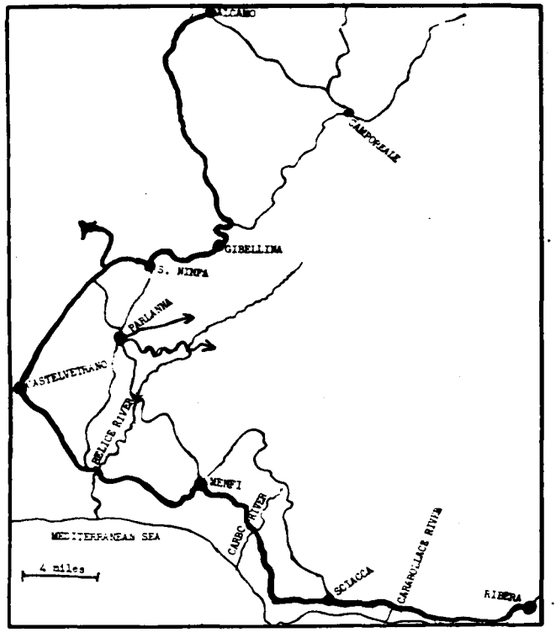
3d Platoon, Company "C"—Ribera-Menfi-Alcamo—20-21 July

At 0530 on the 20th, the 3d Platoon moved out of Ribera toward the west. Artillery fire was met about 5 miles from Sciacca. Dismounted, the platoon took the gun position and 80 prisoners. About three miles farther west, it was fired on again by artillery but pushed on after returning fire with an assault gun.

After some delay because of a blown bridge and the necessity of stopping for ammunition and gasoline, the platoon entered Sciacca, then proceeded toward Menfi. The head of the column drew very heavy small-arms fire at close range from the flanks and rear. No casualties were suffered because of the prompt delivery of supporting fire by the remainder of the platoon. Casualties were inflicted on the enemy by all weapons including hand grenades.



Route of 1st Platoon, Company "C"—July 20-21.



Route of 3d Platoon, Company "C"—July 20-21.

Four miles east of Menfi the river bridge was mined and defended. The position was reduced by the fire of all weapons and dismounted action. Several casualties were inflicted and 110 prisoners taken. Two prisoners were killed in the mine field which was booby-trapped.

Another mine field was located one mile east of Menfi, and while it was being removed, a small dismounted patrol entered Menfi without resistance. At least 500 prisoners were rounded up in the city square.

At a small river two miles west of Menfi a large mine field was encountered. The Engineer squad which was sent up to remove the mines hit a booby-trap which killed two men including an officer, and wounded 9 others.

One platoon of Company "D" joined the 3d Platoon just prior its entry into Menfi.

The 3d Platoon bivouacked at Menfi for the night and, moving out early the next morning, reached the Belice River at 0555. The bridge was blown, and the enemy infantry closed on the platoon before it could be by-passed. Hostile artillery fire went on intermittently for two hours but was ineffective.

The Scout Section and Tank Platoon were able to cross after considerable delay. A mine field was removed on the way to Castelvetrano, which was entered without a fight. Approximately 500 prisoners were rounded up and sent to the rear. The remainder of the day's advance was through to S. Ninfa, Gibellina, and Alcamo. No resistance was encountered. Eight 75mm and three 100mm guns were destroyed by the enemy as the 3d Platoon entered Alcamo. Approximately 800 prisoners were taken in these three cities. Actually, this was a small percentage of the enemy troops present; the remainder were taken over by succeeding elements.

The 3d Platoon halted for gas at Alcamo and was ordered to return to Company CP at S. Ninfa. Inadvertently, it had crossed the "bomb line."

Company "B"—Agrigento-Palermo—19-22 July

Early on the morning of 19 July, Company "B" moved out of Agrigento in advance of the 3d Infantry Division on Palermo.

At 0300 the 1st Platoon moved back to a position north of Comitini, where, at about 1000 an armored infantry regiment attacked the enemy, and the platoon immediately forded the river and proceeded to Casteltermini. As the Platoon left the town it destroyed an Italian truck, killed one enemy soldier and wounded another. The 1st Platoon remained in the vicinity until ordered to return to company CP at Aragona where it arrived at about 2400.

The 2d Platoon as sent north to the Platani River, where its advance was held up until midnight because of a blown road.

The 3d Platoon, moving out at 0830 as advance guard for Battalion, passed the infantry front lines, joined French-Arabian Forces at Mussomeli, and set up an OP and listening post one mile west of the town. The next day, it proceeded west toward Casteltermini, then north toward Lercara—both infantry objectives. The platoon was divided into two sections—one going toward Lercara, and the other west toward Cammarata. The latter section captured 208 Italian prisoners in barracks and destroyed their arms. These men were members of a motorized cavalry unit. The other section was first to arrive in Lercara. Friendly artillery continued fire on a point one mile south of the town, but civilians cheered and greeted the patrol as it entered.

Elements of the reconnaissance battalion move through the town of Ribera, 20 July. Building at left is town jail.

Route of Company "B"—July 19-22.

The 3d Platoon was reassembled at 1800 and proceeded to S. Stefano to join the 2d Platoon, which had moved there through Bivona. The 2d Platoon had encountered no resistance until two miles from S. Stefano where the enemy was found camouflaging a position around the railroad station. In coördination with a Reconnaissance Troop it took the position and captured 30 prisoners in addition to about 30 more dead or wounded. About 200 more prisoners were taken by the infantry.

A long column of vehicles, including some tanks, was seen moving north out of S. Stefano. This column halted and personnel dispersed when brought under 37mm fire from the scout cars. The vehicles and personnel captured in this action included about 500 prisoners, 7 light tanks, 25 trucks, 5 command cars, six 75mm guns, 1 tractor and 2 motorcycles. The 3d Platoon left S. Stefano at 2000 for the Company CP at Comotini, while the 2d Platoon set up a CP and remained there for the night.

The next morning a patrol moving 6 miles north of S. Stefano discovered four 88mm and four 75mm guns. The 2d Platoon then moved into Prizzi without further resistance, thence to Corleone where 300 prisoners were taken, and remained there patrolling roads and outposting the town through the night of the 21st, and until the Company CP was moved there on the 22d.

On the 20th, the 1st Platoon relieved the 3d Platoon and proceeded to Lercara, where contact was made with the enemy on high ground to the north at 1700. After shelling, then attacking, the platoon took the position and captured one artillery piece, three 20mm guns, one machine gun and 200 prisoners. At 2045 the enemy drove the platoon out with shell fire but failed to occupy the position and the platoon moved in again at about 2200. An armored infantry moved through the position that night and bivouacked about 2 miles from Lercara, and the 1st Platoon established a listening post in advance of the infantry until morning, when it moved on Lercara, seized the town at 0630 and rounded up 600 prisoners. The 1st Platoon, after being relieved by the infantry that entered the town at 0900, proceeded north to where a mine field and a large gas dump were discovered. Twelve prisoners were captured and one soldier killed. After moving to Prizzi and Corleone, it proceeded north and captured 14 Germans and 6 Italians. Friendly infantry moved through the position during the night, and the next morning the 1st Platoon moved out through the infantry and occupied the town of Marineo at 0800. Continuing on to Bolognetta, it captured a railroad train and 30 prisoners. Again it proceeded and captured 5 more prisoners and 3 trucks, then pushed on into Misilmeri at about 1130.

Meanwhile, the 3d Platoon proceeded toward Corleone to join the 1st Platoon in the drive north to Palermo. At a rail head midway between Corleone and Marineo 50 Italian prisoners were taken from box cars. The 3d Platoon proceeded north to Marineo, and found that the enemy was fleeing to north. A dismounted patrol was sent to a bridge on the main highway which had been prepared for demolition. Five hundred yards north of the bridge a large booby-trapped ammunition dump was found. After marking this, the Platoon proceeded into Marineo, where it received a warm reception from civilians.

The 1st and 3d Platoons, proceeding north from Misilmevi, encountered an enemy artillery position consisting of an 88mm and one 75mm gun in position. About 1200 a friendly artillery battery came up and shelled the position, after which the 1st and 3d Platoons advanced, took the gun positions and pushed on to Villabate, where about 1200 enemy troops (Italians and Germans) surrendered. A guard was placed on the prisoners, and the 1st Platoon outposted the town until relieved by infantry. A patrol was then sent east to S. Flavia. En route, about one regiment was captured, marched to Villabate, and later taken to Ficarazzi. The 1st Platoon bivouacked at S. Flavia that night with no further contact.

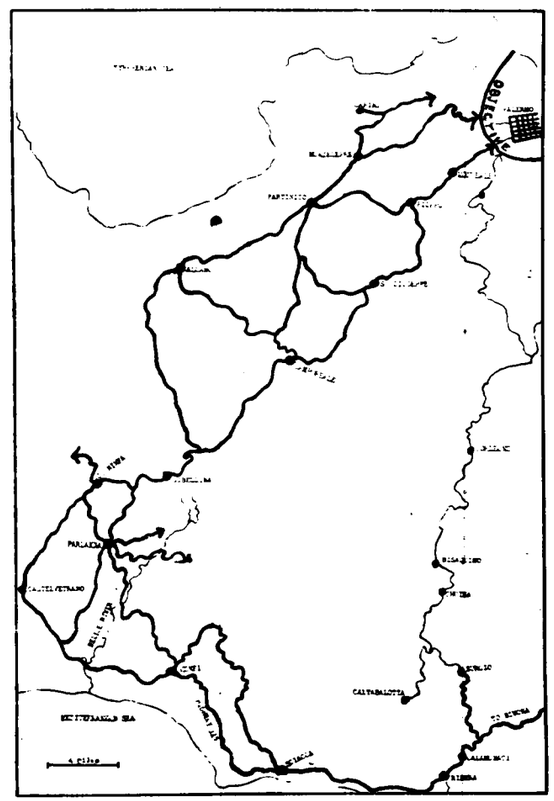
The 3d Platoon proceeded into the outskirts of Palermo, seized and destroyed an arsenal there, and took about 600 more prisoners, who were taken to the prisoner of war area at Villabate. The Platoon withdrew from Palermo when Allied naval guns shelled the city.

Company "C"—S. Ninfa-Palermo—21-22 July

On the 21st, Company "C" was released from operating with the 82d Airborne Division and moved out on Highway 115 through Sciacca and Menfi.

The 2d Platoon, which had moved on Bivona, then back to a road junction northeast of Calamonaci and thence to Burgio, had returned to Company CP at 1900 on the evening of the 20th.

It now received orders to proceed at 0330 to the restraining line on Fiume Belice southeast of Castelvetrano; to reach and cross this line at 0430. A bridge over Fiume Belice was found to be destroyed. The attached squad of armored engineers and the 2d and 3d Platoons constructed a tank crossing and, with one tank, pulled three ¼-ton trucks across the river. Vehicles of both platoons were forced to wait for gas trucks. Four tanks of the attached tank platoon of Company "D", two ¼-ton trucks of the 3d Platoon, one ¼-ton truck of the 2d Platoon, and the vehicles of the 1st Platoon moved into Castelvetrano.



Route of Company "C"—July 21-22.

The 2d Platoon ¼-ton truck returned to the bridgehead—leading a convoy of two captured colonels and 8 other officers, plus 27 enlisted men (Italians). The prisoners were turned over to Company Headquarters. The 2d Platoon then established an OP one mile south of Parlanna and sent out patrols at about 1530. The Tank Platoon (attached to the 2d Platoon) moved to a point just north of Parlanna, where it captured one major general, one lieutenant colonel, one major, four captains, four 1st lieutenants, two second lieutenants and 20 other officers (rank not known) and 60 enlisted men (all Italians).

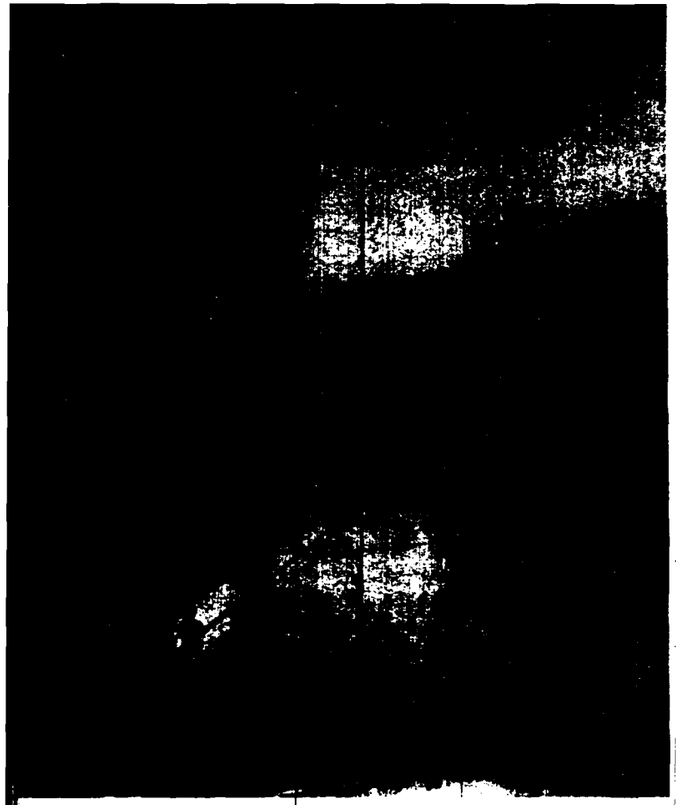
On 22 July the 3d Platoon was dispatched from Company CP to a point one mile east of Alcamo to commence reconnaissance at 0530. It captured one German officer and 8 enlisted men in Alcamo and was forced to shoot one of the Germans when he attempted to escape.

Two large bridges had been blown between Alcamo and Partinico. These were by-passed with the aid of demolitions and the tank platoon. A guard was placed on a large gasoline dump between the two cities. About 20 prisoners were taken at the second bridge, and at least 500 prisoners were assembled at Partinico.

About three miles east of Montelepre, the mountain was blown down over the road, which made it necessary to cross the mountain into Carini and continue up the coastal road. After taking about 600 prisoners in Carini, it was a squad detached to maintain law and order and prevent the destruction of property. The 3d Platoon halted for the night three miles east of Carini in compliance with orders not to enter the city of Palermo until directed.

Meanwhile, Company "C" (less 3d Platoon) moved out of S. Ninfa as the leading element of the Battalion, in the advance on Palermo. With the 1st Platoon in the lead, it followed the route Gibellina-Camporeale, and arrived at S. Giuseppe at approximately 1000 without encountering enemy resistance. At S. Giuseppe several Italian soldiers surrendered and volunteered information that the road north of the town was mined and defended by artillery and machine guns.

In the narrow pass approximately 3 miles north of S. Giuseppe the Scout Section surprised a group of Italian soldiers laying mines in the road. Following machine-gun fire from the Scout Section the Italians surrendered. Before the prisoners could be taken a 75mm



A forward reconnaissance unit of the Provisional Corps is greeted by civilians in a village on the outskirts of Palermo.

gun from a well camouflaged position in the pass fired upon the leading scout car which was hit and destroyed on the second shot. The Scout Section left vehicles under cover and moved forward dismounted, while the platoon leader moved to high ground on the right of the road in an attempt to spot the hostile gun position. The Scout Section brought retreating Italian soldiers under small-arms fire. The hostile 75mm gun continued to fire on elements of the 1st Platoon until its gun crew was killed by fire from the assault gun of the 2d Platoon. This gun had been moved into position several hundred yards to the south.

As soon as the hostile artillery piece had been destroyed, the company executive officer, the platoon leader of the 2d Platoon, and the scout section leader of the 1st Platoon moved forward with dismounted scouts for a distance of one-half mile up the pass where they were warned by prisoners of the presence of an 88mm gun. The scout section leader climbed to an observation point on the high ground by the road but was unable to locate the gun position.

A radio operator of the 1st Platoon pushed forward in an attempt to point out the gun position to members of a mortar crew that had come up, but as he pointed out the gun, it turned its fire on him, and the second shot made a direct hit and killed him instantly.

The 2d Platoon, in conjunction with elements of the Reconnaissance Company of an armored regiment immediately returned fire, and two separate enemy gun positions were neutralized in this vicinity by the assault guns.

The 2d Platoon then replaced the 1st Platoon as advance guard, and Company "C" resumed its advance on Palermo. After an advance of approximately two miles the company again encountered heavy antitank fire, which was overcome by the quick action of the company executive officer who organized an assault gun crew and placed fire on the gun positions.

Two assault guns of Company "C" were grouped with three guns of the Reconnaissance Company of the armored regiment to cover the advance of the column on Monreale.

While these assault guns were being organized to cover the movement of the attached light tank platoon, a medium tank platoon of the armored regiment passed through the position and was followed into Monreale, in the outskirts of Palermo. The objective was reached about 1900.

A German 1st lieutenant (acting as forward observer for the 100mm howitzers on the high ground north of Pioppo) was captured near the gun position. Some enemy infantry were encountered when the advance was resumed but were quickly overcome when tanks of Company "D" were placed in front of the advance guard. Company "C", the leading element of the Reconnaissance Battalion, moved into Monreale, its objective, and bivouacked for the night.

Conclusions

Experience of this Reconnaissance Battalion in Sicily demonstrated the specific need of attention to the following training:

a. Study the training manuals and lessons learned in theaters of actual combat.

b. Sand-table and practice on the ground the following exercises until the platoon is as well drilled in them as a top-notch football team is drilled in its plays.

(1) Reduction of defended road blocks.
(2) Meeting engagement with hostile tanks and armored vehicles.
(3) Meeting engagement with hostile infantry in position.
(4) Passage of defiles (all types).
(5) Crossing open terrain.
(6) Delaying action.
(7) Defense of a position.
(8) Establishing observation posts.
(9) Dismounted night reconnaissance by small "teams."
(10) Removal of mines, and gapping and marking mine fields.

Thorough knowledge of, and training in the above exercises, will enable the reconnaissance platoon to perform most of the multitude of missions that may be assigned to it. The need for excellence in marksmanship with all weapons, communications training, and all phases of scouting and patrolling is obvious.

German Antipersonnel Weapons

Press Association

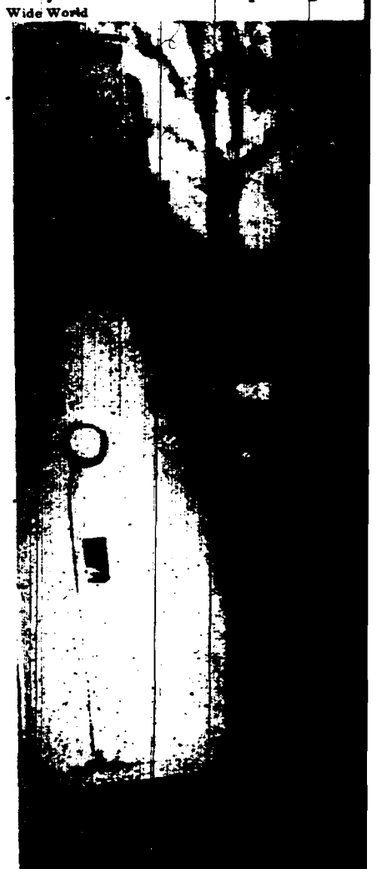
This wooden box mine, which has recently appeared on the Italian front, defies detection devices. When the twig, used to hold the lid open, is broken by pressure the lid snaps shut, setting off a spring that operates the detonator and explodes the dynamite.

Signal Corps Photo

This pressure type German S. mine is familiarly known to American soldiers as the "Bouncing Betty" because of its ability to "jump" some distance above its emplacement before exploding. Note three-pronged detonator, also knife.

On the Anzio beachhead, a British soldier examines the interior of a German "butterfly" bomb case. After falling a predetermined distance the case is shot open, and a number of small, delayed-action bombs fall among personnel in bivouac areas. These smaller bombs often lie a day or more before exploding.

Wide World



German caption accompanying this photo, received from a neutral source, says that it shows German troops carrying wooden boxed land mines to the Anzio beachhead sector. Detonator is set off by pressure from above, in some cases not until the ground has been traversed for days and has become well packed.

Press Association

Mechanics of Battlefield Reconnaissance

by Lieutenant Colonel Charles J. Hoy*

AN analysis of how a reconnaissance unit functions in battle must cover the phases of reconnaissance from the approach march, to initial contact, to pursuit.

Unfortunately, the uninitiated are quite often prone to picture the meeting engagement as one where two armies are poised opposite each other waiting for the go signal to race for the Kansas-Oklahoma border. This type of action is most unusual and rarely seen on the battlefield.

The normal situations for the meeting engagement are: first, where the enemy has managed to withdraw to a new defensive line so that contact must be regained; or second, where additional troops, arrived in the combat zone, must be moved into the line to reinforce the troops already in contact. This latter situation will generally call for a relocation of all troops in the particular area.

As the meeting engagement in which contact must be gained also covers the situation of relocating troops, a discussion of the former will suffice to illustrate the mechanics involved in either.

Prior to Combat

When the reconnaissance unit moves toward the enemy to gain contact, it should know in general where to expect this contact. Unless the unit knows this, the reconnaissance is liable to move too slowly over the entire route. In this stage, time is all-important. Knowledge of anticipated enemy contact can be gained from several sources. The main and most reliable source will be the G-2. A thorough map study of terrain is essential. The enemy will withdraw to a position that is easy to defend and hard to attack.

Enemy mine fields, enemy air attacks, and enemy long range artillery fire, in that order, are the three big concerns of the reconnaissance unit as it closes with the enemy.

Mines

Mines are laid primarily to cause delay, and the mine fields become denser the closer the enemy position. Reconnaissance units must not creep along behind a mine detector in this phase, for if they do, they are permitting the enemy to accomplish his mission of delay. Reconnaissance units must take chances. The enemy can not lay the mines everywhere, so he lays them in bottlenecks. True he will scatter a few promiscuously to try to cause over-apprehension, but the reconnaissance soldier must realize that the time lost by slow reconnaissance is well spent by the enemy in preparing his defenses—and that means more mine fields.

After many weeks of working through Rommel's mine fields after Kasserine, some of the men and officers of the 81st Reconnaissance Battalion developed an almost psychic power in divining the location of mines. Of course, some would miss in their guesses and discover the mine field by the explosion, but the scout car with sand bags protected the crew somewhat. The 81st had many scout cars to hit mines, and sometimes the crews were severely injured, but none fatally. The bantams were not so fortunate, however. Lt. Granger, of C Company, named his third scout car replacement "Mine Detector No. 3."

Assuming that the advance of the reconnaissance unit is stopped by a mine field, then regardless of whether the mine field was discovered by sound, observation, or by a hunch, the following procedure is suggested: Try to find a path around it, but do not waste too much time doing this.

When the 81st pursued the enemy east from Kariouan to Sousse, in April 1943, the main highway, an excellent paved road, was found cratered at a point where the road crossed a swamp. Turning south in search of virgin ground, the unit moved parallel to the edge of the swamp, continued on for about 400 yards along a poppy field, and came to a portion that appeared untouched for some time by men or vehicles. Cutting east again, then north back to the road, it by-passed that large mine field in less than fifteen minutes.

Sometimes reconnaissance units were not that lucky. When no by-pass was possible, it was necessary to dismount, use the mine detector or bayonets, clear and mark the by-pass, and then continue on. This had to be done quickly, and reconnaissance soldiers must be trained to do it automatically.

The mine fields discussed here were those laid along the route of advance to cause delay. Before the enemy withdrew, his troops and supply installations were using that same terrain. His greatest obstacle in laying those mines, before he withdrew to his new position, was time. Many of the mines had to be laid after he had moved the bulk of his forces to the rear. It is obvious, therefore, how important it is for the reconnaissance unit to move boldly and not permit the

*Instructor, The Cavalry School. Formerly Commander, 81st Reconnaissance Battalion, Tunisia.

enemy the advantage of that time. All soldiers in a reconnaissance unit must be past-masters at mine removal.

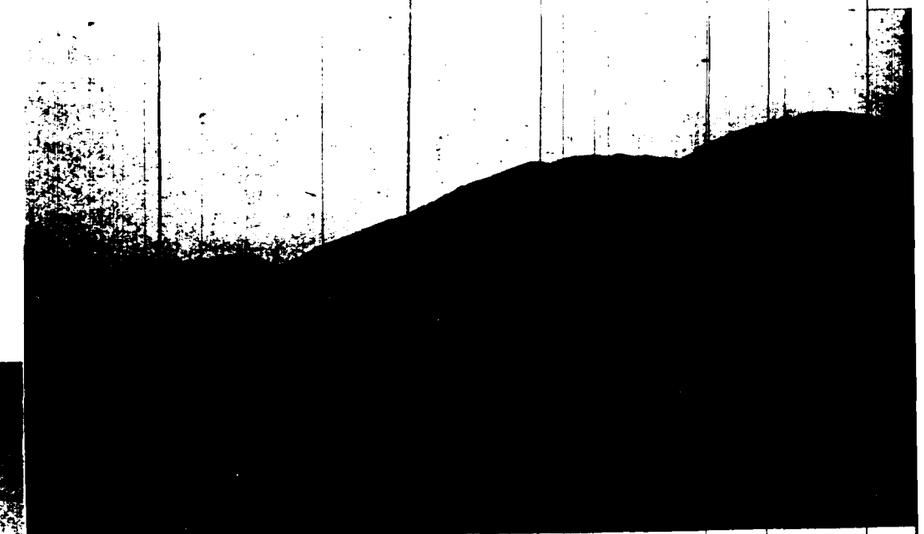
Air Attacks

Although not as effective as the mine field, enemy air attacks present additional problems for the reconnaissance unit. Concealment, dispersion, antiaircraft fire, and slit trenches are necessary defenses against enemy air. It would seem that reconnaissance units would make poor targets for enemy air, but because of the reconnaissance units' proximity to enemy positions, enemy aircraft frequently attack these units in order to stop forward movement of advanced elements.

In the valley at Sened, in February 1943, when the enemy had air supremacy in that area, C and A Companies were dispersed along the slopes of the bare rocky hills to the north and south of Station de Sened. Although ten or more Stukas and Messerschmitts attacked several times a day for three days, casualties were very few. Each of the scout cars with the 81st had a .50 caliber machine gun mounted on it. Leaving this gun manned, the rest of the crew usually took cover at a distance from the car and prepared to fire their individual weapons. Men were instructed to hold their fire until the planes came within effective range. It is a waste of ammunition to fire every time a plane is seen unless damage can be inflicted on it. On the other hand, whenever a plane comes within range, it should really be given the medicine.

By the same token, men should not be allowed to get "slit trenchitis"; that is, they should not be permitted to run for a slit trench every time a plane's motor is heard. If permitted to remain in slit trenches, men get morbid, and it is demoralizing to see men who are not in danger run for cover. They should take cover only when necessary. Officers and NCO's should be the last in, and certainly the first out of slit trenches in the event of an air attack.

It is better to have only the gunner remain in the scout car, because the plane (especially if it is a bomber) usually goes for the vehicle; and if the crew is still in a car that gets hit, the loss is great. No difficulty should be experienced in getting a gunner to man the gun: in fact, it was just the opposite in Tunisia. It was



Right: Infantrymen in Tunisia follow a reconnaissance unit which has preceded them through the mine fields in hot pursuit of the retreating enemy.

Signal Corps Photo

Left: Between Gafsa and Maknassy a company of the 1st Armored Division forms for an offensive action against the enemy, *after* thorough reconnaissance has furnished desired information.

Signal Corps Photo

found that with well trained troops, men would much rather fire the .50 caliber machine gun at the enemy plane than do anything else during an air attack.

Long Range Artillery Fire

The enemy will try to delay the advance of the reconnaissance elements by long range fire. This fire is not always accurate, and reconnaissance elements must move in under it and continue forward. The men must learn to use their ears and know the characteristics of the enemy weapons. The sound of the shell as it describes its trajectory is very important. Also the degree of loudness, or absence, of the muzzle blast gives information. By using their ears and eyes, troops can determine whether it is long or mid-range artillery, mortars, or antitank fire, that is landing.

At Sened, in February, it was necessary for A Company to withdraw in the face of mid-range artillery and mortar fire. Because of terrain difficulties, the company had to infiltrate through interdictory fire on some of the bottlenecks of our line of retreat. This was done without casualties because the officer or NCO infiltrated his vehicle through the shelled area by listening for the muzzle blast and by knowing from this how many seconds it would be before the shell landed. The Germans did the same thing to us once at Sheitla when they had to cross through our artillery fire. The success of such tactics is dependent, of course, upon the intensity of the fire.

Reconnaissance units must not consider that they have gained contact with the enemy when they receive artillery fire, and they must not be stopped by it unless it is intense. If it is intense, then they have to find a way around it.

Contact

After passing through the artillery fire, contact with the enemy can be expected shortly. The chances are that the reconnaissance unit can continue mounted through the artillery fire, but movement soon becomes more restricted. The nearer the enemy, the more numerous the mine fields.

Contact is finally gained when the reconnaissance unit has received accurate antitank fire, small arms fire, or has seen the enemy. In any event, when contact is made, the dismounted phase begins. Assuming that this reconnaissance unit which has made contact is a platoon with an attached assault gun, and that the leading vehicle received fire, normally the action should be like this:

The lead vehicle goes for cover, and generally this cover is nearby. The crew should not whirl the vehicle around and go dashing back with the report that they were fired upon. There is no need for pseudo Paul Reveres in reconnaissance; that is, anyone who goes excitedly back yelling "Jerry's coming" or "tanks are coming." This type of soldier can do more damage than the enemy. Usually, the number of enemy tanks this type of soldier saw is increased by the product of the speed of his vehicle, and the distance in yards that he has returned from his initial contact. No excited man should be allowed to pass back to the rear. Properly, the lead car should go quickly to the nearest cover, and a little anticipatory planning helps.

The second vehicle, if possible, returns the fire at the same time that the first vehicle takes cover.

The assault gun, back at the tail of the platoon, should open fire as soon as possible. With the assault gun and the weapon on the second vehicle firing, the crew of the first vehicle is given a break.

A dismounted reconnaissance should be made immediately to determine what opposition the vehicle may have met. In the meantime, the other two teams should have started immediately to by-pass the opposition, or else move so that they can establish observation posts on one flank, or both flanks. This movement should be part of a battle drill, so that it will be done without command, or at most after the briefest order or signal from the commander. Each team knows that it must gain dominant observation and reconnoiter for a by-pass around the enemy. In this, anticipatory planning will pay big dividends. Previous map study should have fixed firmly the key terrain features in the reconnaissance man's mind.

Establishing the OP

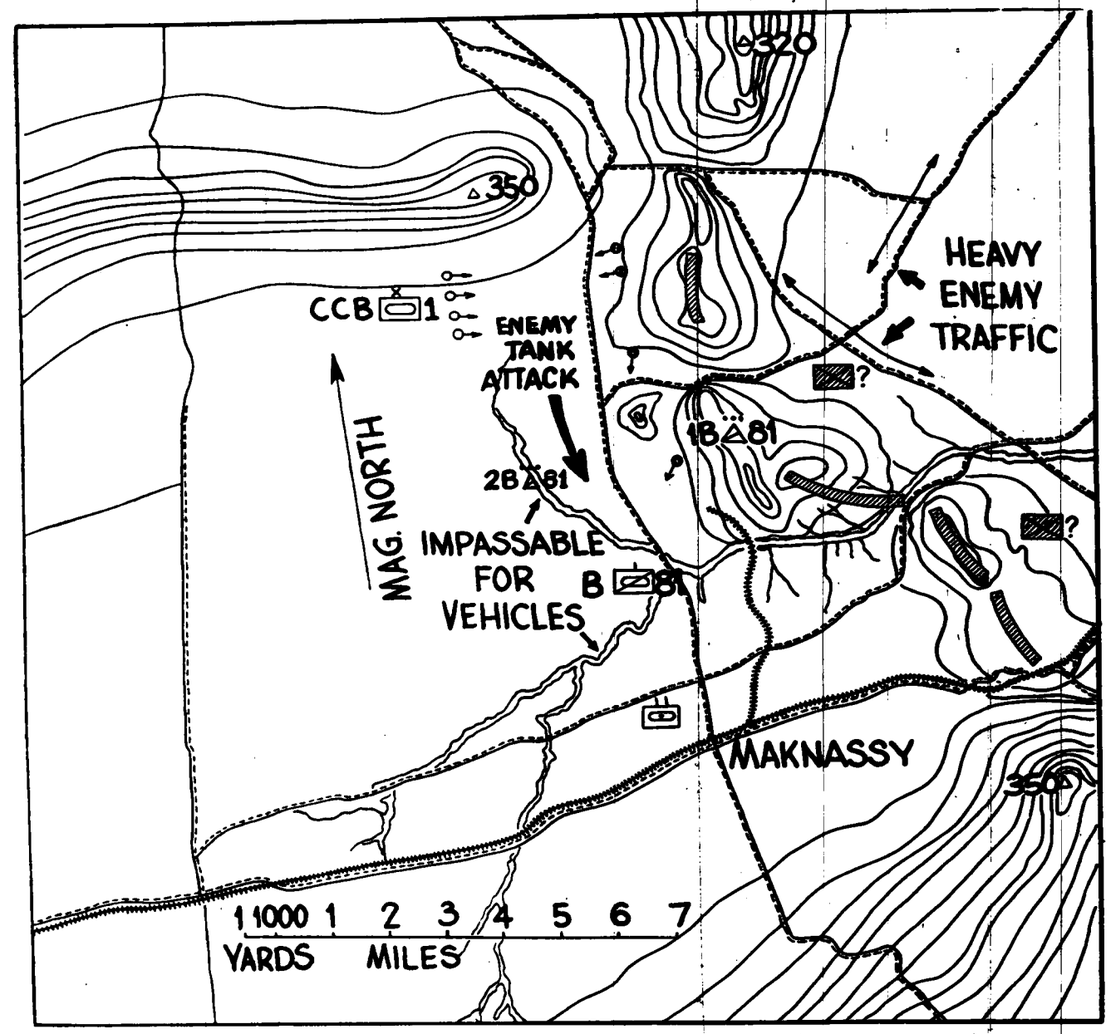
The initial establishment of the observation post will probably be done under enemy observation; therefore, it should be a well protected one.

For the purpose of coherence, let it be assumed that in the example just given, no immediate by-pass is found, but that a dismounted observation post is established on one of the flanks by the second team. Leaving his vehicles at the rear, the leader takes his SCR 510 and machine gun from one bantam, one man from the armored car, and two men from each of the mortar and machine gun bantams—a total of six men—and proceeds forward dismounted.

After his arrival at the OP, the leader immediately pin-points his location accurately, notes his range of vision in all directions on his map, and reports that as soon as possible. The radio is set up, the machine gun is put in position, and the other two men help protect the OP. The longer this OP is maintained, the more work is done on it. The reconnaissance leader, however, should never be satisfied with his OP. He should always want to advance it.

The next movement of this OP, or the establishment of an OP by one of the other teams, will probably be by stealth. If one of the other teams is to establish this second OP, its leader most likely will come up to the first OP, study the terrain, and pick his location and route thereto. It may be necessary to take a circuitous route to the new OP, or even wait until darkness.

At Maknassy, in March, the advance of the 81st had been stopped. The enemy held the Leben Wadi, and the route to the hills northeast of the railroad bridge

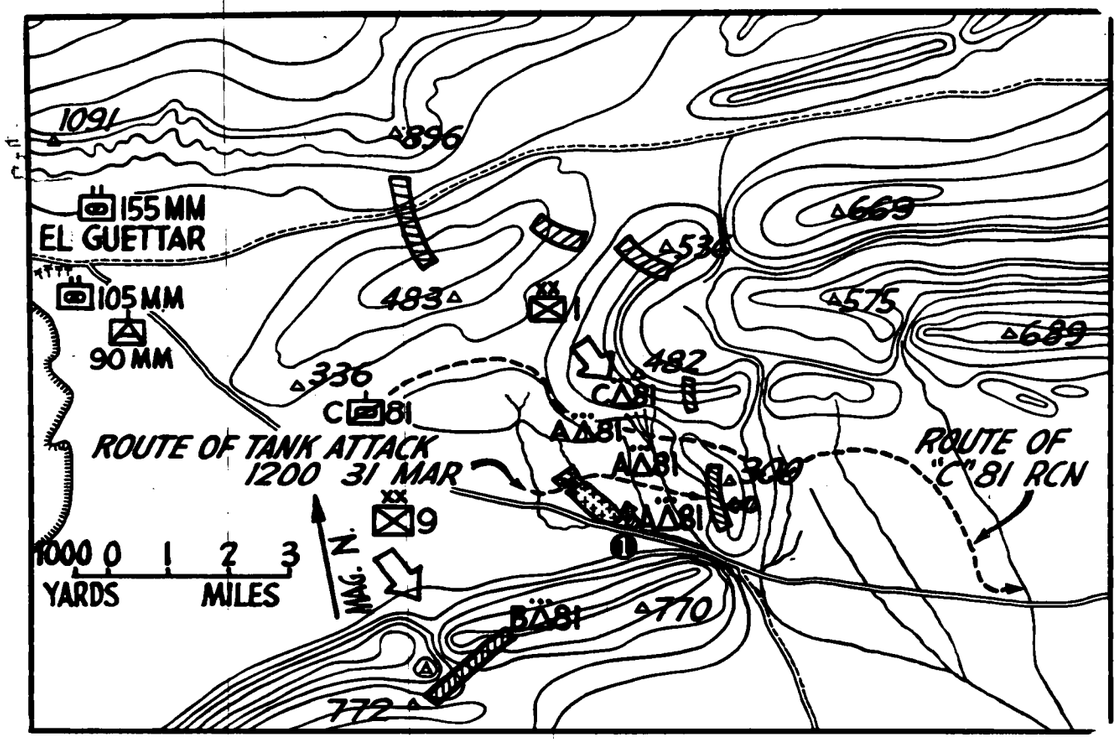


Sketch No. 1.

appeared to be devoid of cover. A patrol, under Lt. Rossman, from B Company moved out that night to establish a dismounted OP on the hills as shown on sketch No. 1. This patrol worked its way through the enemy positions and established the OP. For the next two days this OP was maintained, and it reported much valuable information. The lieutenant adjusted artillery fire on the targets in rear of the line of hills. An enemy tank attack moved south towards the bridges over the wadi on the second day, but it was still possible to maintain the OP. Finally, on the third night this patrol was told to return, as it was out of water and food.

Another patrol under Lt. Lytle went out that night to the same ridge and established another OP. Just as it started to get light, this patrol discovered that just a few yards away was an enemy observation post. The B Company patrol shot first, killed a German artillery officer and NCO and wounded a private. They searched the bodies and took all papers and the German radio over to their side of the hill. Shortly thereafter, the enemy apparently realized that there was something wrong up above and sent a strong infantry detachment to check their silent F.A. observation post. Lt. Lytle had reported the situation, and B Company's three assault guns in the wadi near the bridge opened fire instantly.

Lt. Lytle was ordered back to the troop when the enemy started to close in on him. His patrol carried their captured radio, maps, and papers, and sauntered



Sketch No. 2.

back under the protection of the assault gunfire. They found that the ground was cut by many little wadis that afforded good cover and concealment. This was not evident from a map study, nor from a view of the ground from the OP's in the vicinity of the railroad bridge—which is quite often the case! For example, a patrol will move out dismounted, when there is no apparent covered route for vehicles, but by actually moving dismounted over the ground, a vehicular route will be found and this is one way that vehicles can be brought up later.

Intensified Reconnaissance

In the original situation stated earlier, after the first team had come under fire, the second team established an OP under enemy observation, and the third team established one by stealth deeper in the enemy's position.

After that, the platoon begins the intensified reconnaissance phase, marked by bold aggressive action. The situation must be developed further and the initiative taken away from the enemy. The remainder of the platoon must be so disposed as to protect and maintain the second team's OP. The enemy will not let a reconnaissance unit sit complacently on an OP and keep it. The more timid the reconnaissance becomes, the more brazen the enemy becomes, so he must be shown very definitely that the reconnaissance intends to keep that OP.

In the Mouse Trap area south of Mateur, one of C Company's platoons had an OP within 400 yards of an enemy position on Dj Badgar. The enemy knew that the OP was there, and finally sent a platoon out to get it. The C Company lieutenant on the OP saw the platoon coming and alerted his two attached tanks, which were in a covered position about 200 yards in his rear. The tanks came out, guided by radio, swung around the little knoll where the OP was and opened fire with canister. The tanks killed or wounded all but seven men, who were marched back to Allied lines in front of the buttoned up tanks. All this was done in plain view of the enemy on Dj Badgar. It apparently was most impressive, as the enemy did not bother that OP any more.

The 81st continued to outpatrol the enemy in that area day and night, and soon became the more brazen of the two.

The troop and squadron commanders are better suited to order and coördinate night patrols than the platoon leader. Night patrols must be planned thoroughly, and a single definite mission must be given in an ice clear order. (Reconnaissance units in Italy

have been reported to have sent several patrols five to seven miles behind the enemy lines and stayed back there around three days.)

The enemy will try to drive the OP off by harassing artillery and mortar fire. Quite frequently he may only suspect that an OP is there, but it is well to remember that he must maintain a continuous fire before he can prevent the OP from being manned.

Maintaining Contact

If the reconnaissance platoon reaches the enemy's main defensive line, the situation becomes more developed and even tends to become stalemated. Quite frequently, some of the artillery forward observers join the reconnaissance platoons on the latter's OP's, or they may have accompanied the reconnaissance platoon. Friendly infantry moves up into the vicinity, and the battle is begun in reality.

The big job that the reconnaissance elements then have is to maintain contact. Continued manning of OP's, day and night patrols and listening posts at key points are necessary for two reasons—to give timely warning in the event of a counterattack, but mainly, to prevent the enemy from secretly withdrawing. It must be realized that the enemy will try to withdraw at night, and it is a hard job to maintain contact during this period. The enemy will probably leave a shell of his forces and increase his activity on the front by patrols, raids, and artillery fire. Meanwhile, he may be withdrawing the bulk of his forces back to their new position. Reconnaissance elements must assist in discovering this operation in time to permit friendly forces to interfere with it.

If the enemy fails to make a night withdrawal, and the stage is set for the big drive to crack his position, reconnaissance units in contact with the enemy normally will be informed in ample time to get ready for the break-through. Every single man in the affected reconnaissance unit should know what is scheduled and when. By that is meant that he should know, for instance, that the artillery is going to lay down a terrific concentration at 0700 tomorrow for one hour, and then the infantry is to jump off, and the armor is poised back behind ready to go through.

The reconnaissance mission for the big drive will be to locate enemy resistance and any available by-passes and find routes for the exploiting force. The reconnaissance platoons waiting for the artillery to open up should be straining at their leashes. As soon as the artillery opens, or shortly thereafter, they should start probing. The break-through does not happen until after the infantry wipes out all enemy defenses, but it should be initiated sometime during this phase, not after. It will be too late then. Six platoons may probe during this time, and if two make it, then two routes through the enemy position will have been made for the exploitation force. A few days before, these same two platoons might have been stopped by antitank positions, but on the morning of the break-through, because of artillery fire, the enemy cannot man his weapons effectively, and these two platoons get through.

At El Guettar in April the 81st Reconnaissance Battalion was disposed as shown on sketch No. 2. After several days of battle, the enemy's resistance started to crumble. At dawn on 8 April, Lt. John Souther's C Company platoon started probing on the north flank. Inching its way forward, it slipped north of the enemy position, and behind it, then cut to the main road, and raced east towards Gabes. At that time, about 0730, there was still considerable enemy action back behind the platoon. The men felt confident, however, that the American mobile force was going to follow right behind.

The entire reconnaissance battalion poured through Souther's gap and was followed by tanks, tank destroyers, armored infantry and armored artillery. Contact with an enemy tank column was gained about 25 miles east, and about the same time the leading elements of the British Eighth Army were met. The battalion helped rescue some British lancers who had been captured, and took over 700 prisoners that day. Night fell with the battalion in contact with an enemy tank force, and a fire fight continued throughout the night

Conclusion

No matter how bold or aggressive the action becomes, the reconnaissance soldier must never forget that he is out there mainly to get back accurate, complete and timely information.

Modern Reconnaissance

The most serious lack in the military literature of this war has been an adequate book on reconnaissance. The insistent demands by men in training and on the battlefront for a single volume which would comprise the important information thus far secured on the subject has given birth to the new and comprehensive book,* Modern Reconnaissance, *to be published by The Cavalry Journal June 1st.

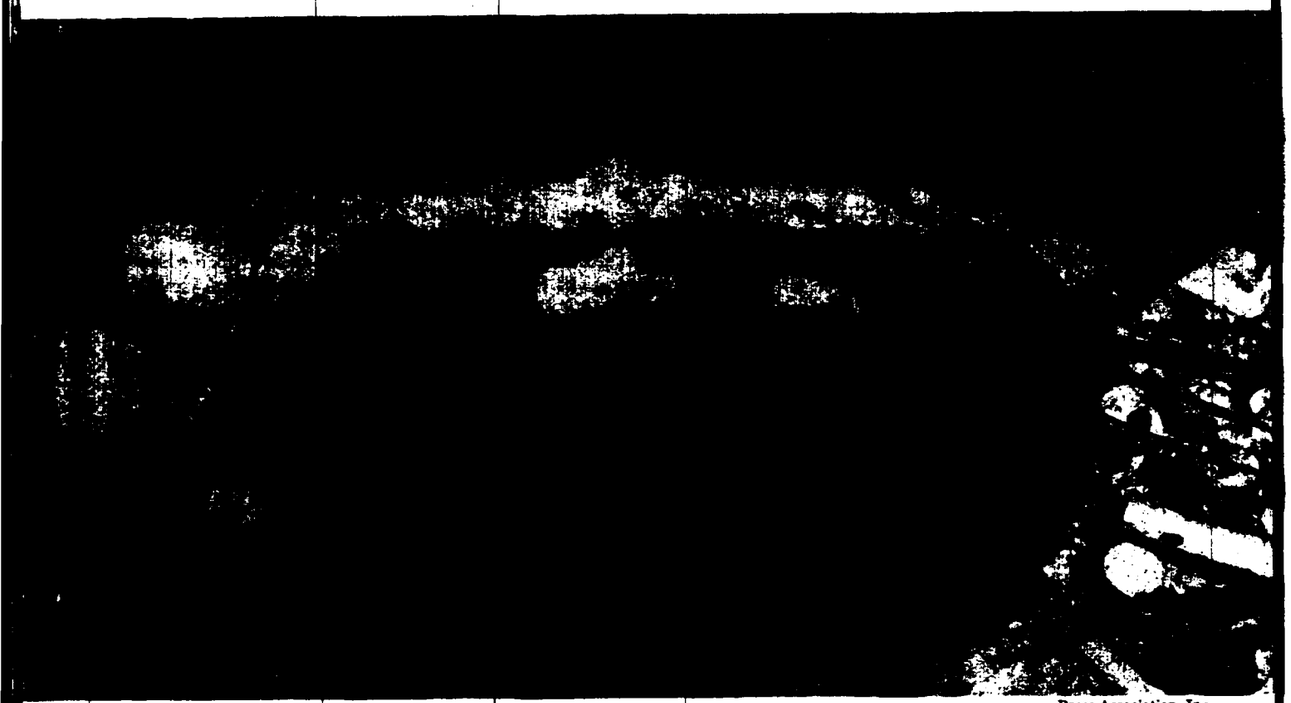
The Table of Contents of this book includes articles on training for reconnaissance units, information on the problems met in various war theaters, and stories of the practical value of reconnaissance in actual warfare by men who participated in the action described.

The format has been planned with an eye to the needs of men "travelling light." Excellent maps for study in connection with the articles are included as well as an abundance of illustrations, yet the book has been kept to a convenient size to pack easily, or fit into a uniform pocket.

(See inside front cover for Table of Contents.)

British Official Photo

This German "secret weapon" was captured on the Anzio Beachhead, Italy. Known as the "Doodlebug," it is cable-controlled. Approximate length, including bumper bar, 69 inches; length excluding bumper bar, 51 inches; height, 25 inches. Explosive chamber holds 250 rounds and construction appears to be spot-welded throughout. The side plates over the battery and electric motor are slightly under one-tenth of an inch thick, while an extra plate one-quarter of an inch thick has been added to increase protection to the front. Photo at left above shows side view. The rear compartment holds the storage battery, while the electric motor with direct drive to the driving sprocket is in the forward compartment. The arrangement is duplicated on the opposite side. Photo at right above shows drum holding the control wire. U. S. Ordnance discarded idea in 1935. Its use by Germans has not been successful.



Press Association, Inc.

A Fifth Army soldier inspects machine-gun mount in a German portable pillbox in the Cassino area. Rumored to have been brought down from the Mannerheim Line, this pillbox controlled the plain leading up to Vallerotonda and St. Elia in background. U. S. soldiers now use flame throwers against such fortified emplacements in Italy.

"And It Came to Pass"

In the January-February (1942) issue, THE CAVALRY JOURNAL carried an article containing the speech made December 3, 1941, by Major General J. K. Herr (then Chief of Cavalry) at the annual meeting of the Horse and Mule Association of America.

In the past two years the JOURNAL has published a number of articles dealing with the brilliant successes of the Soviet army. Some of the articles have been written by well known and authoritative military officers; others by war correspondents in the Soviet army. Many of these articles deal with the combined use of cavalry, tanks, motorized infantry, and air forces. Especially is the cavalry-tank team emphasized as a big contributing factor in the exploitation of the Red Army's successes and break-throughs. This complete utilization of all the horse and motor resources of a nation has been coördinated by a common purpose—the destruction of the Nazi armies.

The conclusion of General Herr's address of December 3, 1941, is reprinted here because it seems amazingly prophetic of the Russian war machine of 1943-44.

From the standpoint of military efficiency and a balanced use of our horse and motor resources, it is believed we should use animal instead of motor transport in a proportion of our marching divisions.

We should add to the Armored Force and Motorized Infantry Ground Exploitation Team, divisions and corps of cavalry to produce the greatest exploitation force yet devised.

The most effective reconnaissance is accomplished by motor plus horse. We should have horse reconnaissance groups with all infantry echelons from regiment to corps.

The strategic mobility of cavalry divisions should be amplified by the use of motor transport, consisting of truck-tractors with semi-trailers to transport cavalry divisions on long road marches.

The power of armored forces will be diminished because of the threat of antitank and air power.

The relative power of cavalry will increase because of its power to evade destruction from the air by cross-country mobility and dispersion. Cavalry will be able to disperse, evade, continue on its mission, and fight.

—Major General John K. Herr, Retired,
The Cavalry Journal, January-February, 1942.

See article "Are Horses Essential in Modern War," Page 2.

National Horse Roster

The first number of Don Henderson's *National Horse Roster* reached this office a few days ago. It is an excellent little bi-monthly pamphlet listing horses of all types for sale and giving items of interest to horse owners. If you are a horseman or are interested in keeping abreast of horse news, get in touch with Don Henderson, Box 186, Berryville, Va. and get a copy of this "newsy" National Horse Roster. You will find it enjoyable reading.

Preventive Maintenance

Preventing damage helps maintain the fighting efficiency needed to win the war.

* * *

Take a load off your mind. Use *Preventive* Maintenance instead of *heavy* maintenance.

* * *

The value of Preventive Maintenance cannot be estimated in terms of dollars and cents. It should rather be counted in terms of the battles it can win and the lives it can save.

* * *

A stitch in time saves nine and is not nearly so embarrassing. Sometime when you forget to take a few stitches of Preventive Maintenance you might be embarrassed to death.

* * *

The Preventive Maintenance services you perform do double duty. First, and most important, they protect your life and the lives of those around you by keeping your fighting weapons in fighting condition. Second, they save your equipment from needless wear and tear, and the resulting waste of time and money required to replace or recondition it.

* * *

Maintenance is a war job—*your* war job. So make it easier for yourself. Remember that *Preventive* Maintenance is the *easiest* maintenance.

* * *

"It's not the cost, it's the upkeep" is an old phrase, but it has a new meaning when applied to Army equipment. For truly, it is not the cost that matters now, but the *upkeep*. And that upkeep depends on *you* and the Preventive Maintenance services you perform.

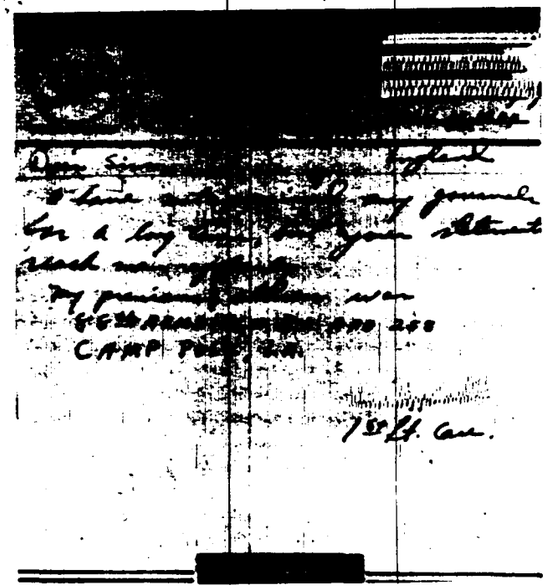
* * *

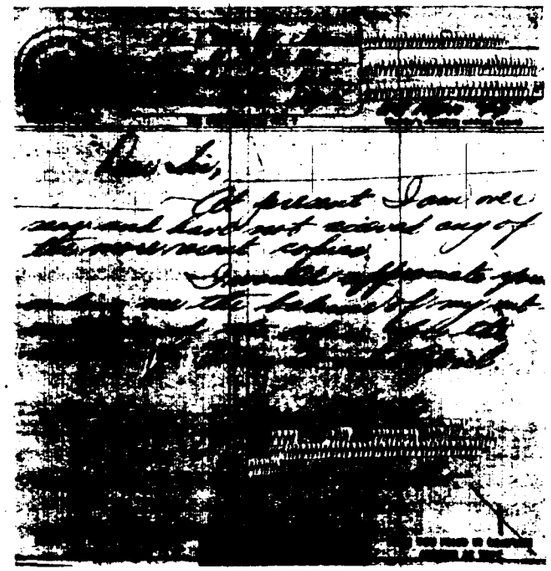
Preventive Maintenance is *not* a military secret. So talk about it to everyone, and perform it on everything.

Your January-February, 1944, Issue

This issue is now out of print and unavailable. If you have finished reading your copy *please* send it back to The Cavalry Journal office.

Are You Getting Your Cavalry Journal?

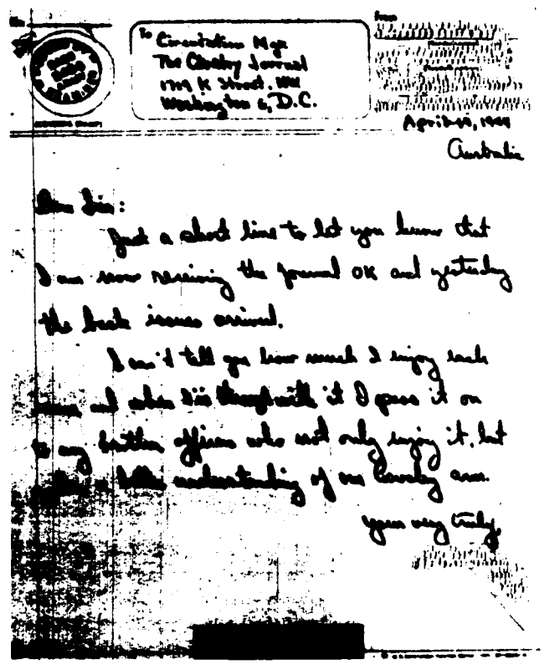




The two letters shown above are samples of many received from officers who have gone overseas, but who have neglected to send us their new address. As a consequence, they have not received their copies of THE CAVALRY JOURNAL. Although all mail is supposed to be forwarded to men in the service, it does not always work out that way. THE CAVALRY JOURNAL is fourth class mail, and as such does not receive the same prompt handling as does first class matter. Sometimes these magazines are returned to us; sometimes they are forwarded; but often they are "lost." In the first letter compare the "present address" with the "previous address," to which we had been sending THE CAVALRY JOURNAL. Is there any wonder that delivery was not made?

When complaints such as these are received, every effort is made to replace all missing copies of THE CAVALRY JOURNAL—*as long as extra copies are available.*

Shown below is a letter from an officer for whom such a replacement has been made. When handled in this manner, however, one copy of THE CAVALRY JOURNAL is wasted for each duplicate mailed, and the Post Office must handle two pieces of mail in order to deliver one. This places an additional and unnecessary load on a postal and transportation system which is already overburdened—"unnecessary" because a postal card giving the new address, would have solved the problem.



It is not always the matter of a transfer overseas that causes a subscriber to lose his CAVALRY JOURNAL. Letters similar to these are also received from officers still in the United States. If you were formerly stationed at "A," and are now stationed at "Z," it is probable that your CAVALRY JOURNAL is still being mailed to "A" unless you have sent in your new address. Perhaps it will be forwarded from "A"; perhaps not. It would be much simpler, however, if you will arrange to let us send your mail direct to you.

Action of a Patrol When Fired Upon

SOME general remarks about reconnaissance and patrols were included in my Notes published in the September-October, 1943, number of THE CAVALRY JOURNAL.

It is assumed that the difference between various types of patrols is understood, and that the value of cavalry for reconnaissance is also understood. This may be a rash assumption in view of the suppression of horse cavalry in the American and British armies. The value of the tank-cavalry team has been demonstrated thoroughly in the Russian army, both for reconnaissance and for battle. The value of horsemen for patrolling has been demonstrated in Italy. These Notes, when discussing reconnaissance or some of the details of patrolling, refer to cavalry reconnaissance or the tank-cavalry team in the performance of that duty. This particular Note offers some suggestions as to one very common situation that so often arises in the performance of patrolling.

Almost all young officers find themselves wondering about *what to do* if, while leading a patrol or point of an advance guard, they suddenly come into contact with an enemy of undetermined strength who fires upon the patrol from a concealed position.

The enemy may be a small patrol or large force. The column behind the point must not be delayed unnecessarily. But the point or patrol cannot risk advancing to attack until its leader knows something of the strength of the enemy. And part of the mission of the point (or even a reconnaissance patrol under the same circumstances) is to ascertain the strength of the enemy.

The following brief formula has been found useful for the *procedure of a patrol acting as point of an advance guard or acting alone, which comes under light fire from an enemy of undetermined strength:*

First: *Take cover*—to right, left, forward or rear, and keep scattered.

Second: *Take a look!* The patrol leader rushes to a point from which he can see, and searches with field glasses the place from which the fire came. Usually, not over two minutes should be taken for this.

Third: *Act!* If the patrol is the *point of an advance guard* or *a patrol of a covering force,* and the leader is unable to determine by observation the size and nature of the enemy, he immediately forms his patrol as mounted skirmishes with about ten yard intervals and moves rapidly *by the route giving the best cover* to reconnoiter the enemy position. If the patrol is the *point* of an advance guard, this must be done promptly within a zone not over 300 yards on either side of the axis of march.

If the patrol is acting alone as a *reconnaissance patrol,* it is of course not confined to any zone of action, and the leader decides to reconnoiter the enemy if his mission requires a report on any sign of the enemy—or, he may decide to avoid that element of the enemy and go around it and proceed toward certain areas which his mission requires him to explore.

If the patrol is a *combat patrol,* it must remain under cover and in readiness to resist the enemy advance so as to protect that flank from surprise attack until the column from which it was sent out has passed that point. In the meantime the leader of the combat patrol sends in reports to keep his commander informed.

If the patrol is a *connecting patrol* sometimes called *liaison patrol,* it avoids combat if possible and attempts to keep its relative position between the forces that it must keep connected. The presence of the enemy, of course, is reported.

It is obvious, therefore, that after his first two actions, taking cover and taking a look, the leader must determine his third action in accordance with his mission and special instructions.

In certain country a patrol is liable to find itself at times *without any cover* near it when it is fired upon, and no cover between it and the place from which the enemy fire apparently comes. In such a case, the action depends upon the mission.

If the patrol is a point or a covering detachment, it must determine the position and strength of the enemy, and the only solution is to deploy at once as foragers (mounted skirmishers) at about ten-yard intervals. Then the patrol separates into two groups with a 100-200 yard interval between groups. Each group gallops at speed toward the enemy to draw his fire or drive him out if he is only a small patrol. If this procedure draws heavy fire or discovers the enemy to be in force, the patrol will have accomplished that part of its mission, and the two groups should retreat at full speed in divergent directions. The supporting forces then take over the action.

If the patrol is a reconnaissance patrol, it may be required to move widely around the enemy in order to reconnoiter the area or areas as required by its mission.

Armored car patrols can carry out these same principles, with some modifications; but infantry patrols cannot act so boldly and when there is no cover, must merely deploy and remain in observation while reporting to the next higher commander. When there is cover for an infantry or dismounted patrol to use in advancing to reconnoiter the enemy more closely or to explore areas as required in its mission, it uses such cover by the same principles as those controlling mounted patrols except that they cannot go as far or act as boldly.

With the 26th Cavalry (P.S.) IN THE PHILIPPINES

December 7-22, 1941

by Major Arthur K. Whitehead, Cavalry

Jap Attack

ON Sunday, December 7th, 1941, the day before the Asiatic War broke, the 26th Cavalry Regiment (P.S.), less one troop, was at Fort Stotsenburg, Pampanga. Troop "F," detached, was stationed near Nichols Field, Manila. The regiment was composed of three squadrons—two rifle squadrons and headquarters squadron. The rifle squadrons consisted of three rifle troops each—"A," "B," and "C" in the first squadron; "E," "F," and "G" in the second. The rifle troop was composed of two rifle platoons and one light machine gun platoon, plus troop headquarters. The rifle platoons had from two to three squads each; the light machine gun platoon always had two complete squads, which had a total of four guns. Troop headquarters consisted of mess, supply, administration and stables. There were about 90 enlisted men in each rifle troop, and men were drawn from the troops for both squadron and regimental headquarters.

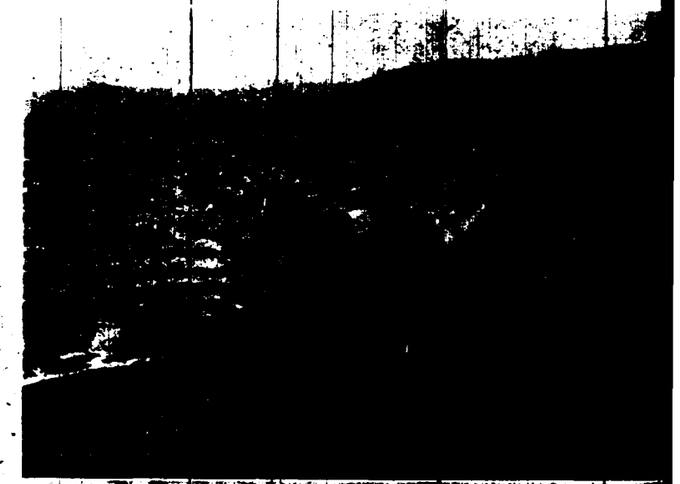
Headquarters Squadron consisted of Headquarters and Service Troop and Machine Gun Troop. Headquarters Troop consisted of a communications platoon, a scout car platoon, and a transportation platoon plus troop headquarters. Machine Gun Troop, as I remember, had one platoon of .50 calibers—two guns, and two platoons of .30 calibers—water-cooled machine guns; total, 8 guns. Officers were American—a total of about 36.

For several months preceding the Japanese attack, the regiment had been training with the idea in mind that it was actually at war. Troops never moved out of stables without full pack and ammunition; night problems and marching were stiff and exacting. All different phases of tactics were first studied in the classroom, then executed by platoons on a competitive basis. Critiques afterward spared no one including the regimental commander. Blank ammunition was used in revolvers on mounted problems to accustom men and horses to the firing.

Special attention was given to conditioning the horses and keeping them in good shape. In the Philippines, it seemed that more horses were on sick report than was usual in the States, and most of their trouble appeared to be due to bad feet or bad backs caused by the heat and excess moisture in the air and ground. Horseshoers, who previously had not seen a book for ten years, began to use manuals on horse-shoeing and care of the feet as their bible. Burlap sacks were placed underneath the horse blanket but without successful results. A particular effort was made to keep the men sitting forward and in the middle of their saddles. After a long march, horses were led with the cinch tight. Back in stables, the cinch was loosened while the saddle was left on. Then the saddle was removed, the blanket turned, and the back rubbed. Every platoon leader stood stables every day with a rod in his hand. This brought remarkable results. Horses and pack mules with full pack were made to jump a two-foot barrier every day before entering stables.

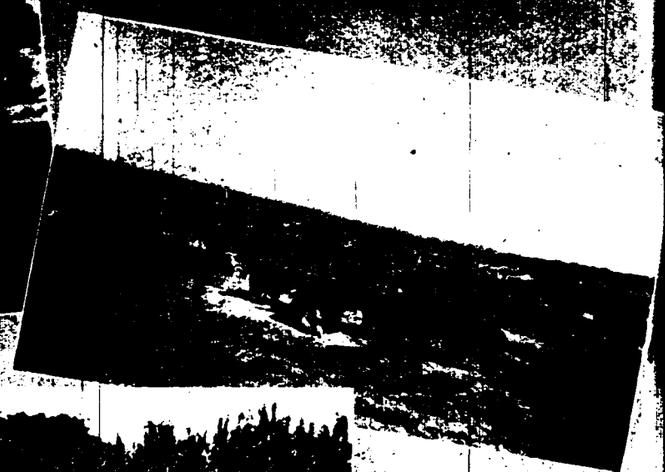
Every horse in the regiment was taught to load on and off a transport truck. Much patience was required, but a perfect system was finally evolved. One man was stationed on each side of the truck with the sole duty of tieing the horse down after he was in position. One man stood on each side of the ramp near the truck to steady the horse on the ramp. Another man stood on each side at the base of the ramp with a rope which, if the horse hesitated, was passed between the two men, placed just above the horse's hocks; and, with a little forward force on the part of the men, the horse rode up the ramp.

For a month and a half prior to the war, a platoon with a squad of light machine guns attached stood parachute watch every day from a half hour before dawn to one hour afterward.



Major Whitehead (center), [illegible] of the 26th Cavalry at Dingalan Bay on the east coast of Luzon, July, 1941.

As a lieutenant with Troop "A," 26th Cavalry (P.S.), Major Whitehead witnessed the Jap attack on the Philippines, saw Stotsenburg bombed, marched north with the regiment and fought the Japs at Lingayen Gulf. His story is the first eye-witness account to have been brought home by a cavalryman.



A herd of carabao driven along a Philippine road. A barbed-wire fence surrounds the sugar-cane field in background.

Troop "E" stables, Fort Stotsenburg.

Ferrying horses during training in August, 1941.

At 0100, 8 December 1941, Troop "A," to which I was assigned, left the stables for a night march to an area between Capas and Camp O'Donnel, Tarlac. The troop arrived about 0700 and went into bivouac. After grooming the horses, the men had breakfast and lay down to rest.

At 0800 an officer-courier arrived with news of the Pearl Harbor attack, and delivered instructions for the troop to join the regiment in the Bamban River Valley after dark. The rest of the 26th had left Fort Stotsenburg at dawn for this valley.

I believe that it was on this first day of the attack that Troop "G," with scout cars attached, was sent by truck with animals to the Baler Bay and Dingalen Bay areas on the east coast. (Lt. Ramsey, sent with this troop, was later mentioned in Captain Wheeler's report of the Moron fighting (March-April, 1943 CAVALRY JOURNAL) so the troop must have been pulled out before the Japs reached Cabanatuan, Neuva Ecija, as that would have been its only outlet.)

Guns were loaded, helmets covered with mud, and air scouts posted. The kitchen truck was camouflaged, and the horses checked for overhead cover.

At the time, the troop was bivouacked in a rolling, foothill country. Rice paddies filled the depressions, while innumerable bamboo clumps bordered the streams, and cogan grass covered the surrounding hills.

There was not much danger from enemy ground action that first day. The most important precaution was to have fair warning of air attack—and since the higher the OP, the better the observation, a light machine gun and rifleman were sent about 500 yards west to the highest hill in the vicinity. The rifleman was to relay signals to the troop. The most serious danger was from the west. There the Zambales Mountains rose three or four miles away, and from that direction fast, low-flying planes could get in quickly. Another observation post with the same set-up was established about 100 yards to the east. Machine guns were to fire only if the troop was attacked, for it was definitely to the troop's advantage to keep its position secret.

At about 1230, the post to the west signalled "airplanes." From the north came the barely audible drone of heavy motored planes. Soon they could be seen flying in perfect formation at an altitude of 15,000 to 20,000 feet—their silver bodies glittering in the sun.

At first we hoped that the planes were ours, but as they passed overhead there was no mistaking the dark blotches on the underside of the wings. They were the first Jap planes that we had seen. There were 54 of them—twin-engined, medium bombers, flying in two formations of 27 each and heading south toward Fort Stotsenburg and Clark Field. We watched them disappear in the mist, and soon heard the heavy *umph* of bombs landing, mixed with an occasional faint rattling of machine gun fire.

A few minutes after the planes had passed over on their way to the south, they returned—all 54 of them—in their same perfect formation. By this time, we could see dog fights in the air over Clark Field. One worked up close to us. Two planes were after a single plane. We hoped the two planes were ours, but soon the lone plane trailed smoked and glided off into the Zambales Mountains, and it was easy to see that it was one of our P-40's. Clouds of smoke were rising from the vicinity of Clark Field and Stotsenburg.

At 1500, Troop "A" started for the Bamban Valley. Although groups of two or three Jap fighter planes had been in sight most of the afternoon, because of the limited time allotted for the march it was necessary to follow the highway, which had barbed wire stretched along each side for most of the way. Between our bivouac and the Bamban Valley the country was largely rolling, broken here and there by bamboo thickets.

The troop marched on each side of the road in columns of twos in staggered formation with about 5 yards distance between horses. Platoons had about 25 yards distance. In case of air attack, where the barbed wire made it impossible to go to right or left, the only thing to do was to increase distances—using either the 2d or 3d squad as the base, depending on the cover available—then dismount and try to find a depression to lie in. When and how to increase distances and find cover were matters left to the initiative of the squad leader and his second in command. Four men of each squad were on opposite sides of the road. When it

Troop "E" picket line in a forest west of Fort Stotsenburg. Picture was made a short time before war broke.

was possible to get off the road, the platoon broke up into groups of fours when disperse order was given. On that first day, however, the troop was not bothered, and went into bivouac with the regiment about 2200. The kitchen truck waited until dark to come in.

The Bamban River Valley north of Fort Stotsenburg is a broad deep gulch possibly three miles wide with banks in places 75 to 100 feet high. The bottom is covered largely with a thick low brush, tall enough to

give good cover to horses. Through this brush runs a broad river.

The 26th Cavalry was dispersed up and down the river over an area a mile or a mile and a half in length. Troops were given different times to water the horses, and a troop never watered more than a platoon at a time. This precaution was necessary, as most of the troops had to go into the open to water and even by the second day of war enemy fighters were over us occasionally. Being in a valley made it easy for the Jap planes to surprise us. When they were over us the main thing was not to move. The kitchen trucks were hidden right with the troops. Squads at a time filled their mess kits, then went to their area to eat.

A great deal was left to the squad leaders and the second in command of squads. Dependence on them became greater each day that the war progressed. In the middle of the night and sometimes during the day it was impossible for a platoon leader to get around to check everything. The second in command of a squad had to have his men with him, ready all the time, and also had to be in contact with his squad leader. The squad leader had to have his squad under his thumb and at the same time be always in contact with the pla toon sergeant.

IN AND NEAR FORT STOTSENBURG

On the morning of the 9th, some of us from the troop went into the Post to get out the war gas masks and find a few odds and ends of equipment that we thought we might need. Fort Stotsenburg had been bombed and strafed, but the damage done was nothing comparable with that described at Clark Field. It was reported that two hundred men had been killed on Clark Field the previous day, besides the runway, shops, and hangars made almost useless. A good number of the planes around the field had been destroyed, yet it was reported that not a dummy plane had been attacked. Our planes had been in the air most of the morning of the 8th, and it was said that they drove off one attack on Clark Field, which forced the Japs to unload their bombs on Baguio on their way back.

By the morning of the 10th, Air Force personnel from Clark Field were coming to our mess to eat. Many had not eaten since noon of the 8th. They had no idea where their units were or where they should be.

On the afternoon of the 10th, the 26th was ordered into a position in the hills northeast of Clark Field in readiness to nip an expected paratroop landing on the field. The regiment was dispersed along the edge of the field under cover. Its mission was to ride out as the enemy was landing and break up the Jap troops before they could become organized. The operation would be supported by our machine guns already in good positions.

At this time we got a look at Clark Field. Shot and burned up planes were strewn around in many places. The runway was full of craters. Several of the buildings were burned, and enemy strafing had been so intense that those still standing looked like sieves. The Japs had done a thorough job.

Just before dark, the 2d Squadron marched east into an area where paratroops had been reported to have landed. The 1st Squadron combed the immediate vicinity east of Fort Stotsenburg and Clark Field, and took up an outpost position for the night on a north-south line about five miles east of Stotsenburg. It was found that the parachutists had been our own pilots jumping from crippled planes.

The morning of the 11th, we were awakened by antiaircraft fire. In the dim light Jap bombers were passing overhead about 10,000 to 15,000 feet up, but our AA fire did not bother them. From this day on we saw very few of our planes in the air; the Japs took up most of the space. From time to time during that morning, more Jap bombers passed overhead within range of our antiaircraft, but the fire of these guns was not effective. We went over to kid the gunners and asked them when they were going to learn to shoot. They told us that most of their gunners had gone home on the order releasing men over 28 years of age, and that recruits were doing the shooting.

That afternoon the 26th Cavalry assembled and bivouacked in a wood near Taconda hill, a mile and a half south of Stotsenburg. Just before dark three Jap fighters located the position and (after appearing to take pictures) strafed the area. Troop "A" area was well sprayed but received no casualties. As soon as it had bivouacked, the men had dug slit-trenches. Clark Field had already proved these had to be L shaped and deep enough for a man to get his head a foot under ground. Some of the Scouts had built the sides of their trenches up with the trunks of the banana trees; the pithiness of the banana tree had an amazing ability to slow up a bullet. At the time of the attack the light machine guns were in position, and at one time it was noticed that the tracers bounded off the armor of the Jap fighters.

To put out air scouts in the day time had become as standard as digging slit trenches the minute that the troop went into bivouac. I do not remember that the troop was ever surprised by planes. Besides picking good positions for air warning observation and having a good system of transmitting signals, every man in the troop was alert at all times for the sound of planes. Talking was subdued. Men even walked quietly. When walking along, they shifted their eye from one foxhole to the next or from one depression to the next. For a bomb to get a man lying in a depression it had to land nearly on him. The only protection from intense strafing lay in being dug deep in the ground. For the horses, it was found that their best protection was in having them tied in a river bed or some other depression, well covered from above and with as much dispersion as the area allotted to the troop allowed.

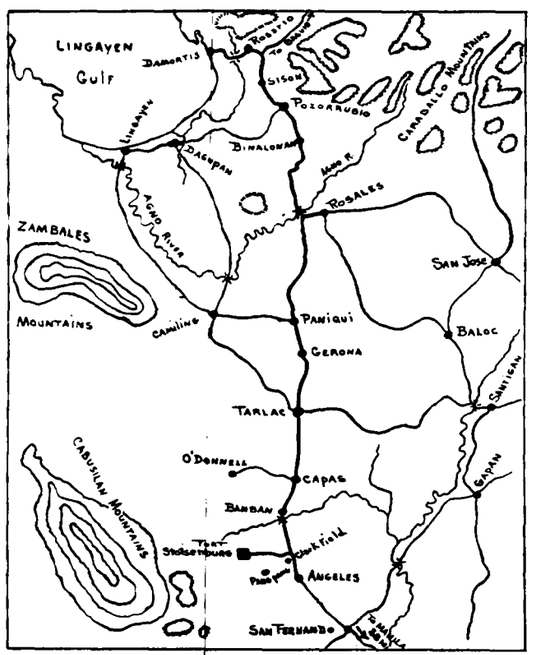
It was not necessary to prohibit smoking after dark,

as the men realized the danger of detection involved, and of their own volition stopped smoking at night. The white G.I. mosquito bars were dipped in coffee to keep them from looking like rocks of phosphorus when spread out.

It was the beginning of the dry season, so troops could sleep on the ground.

The morning of the 12th the 1st Squadron held officers call at the regimental headquarters building at Fort Stotsenburg. The appearance of the Post had changed considerably. Foxholes had been dug everywhere. Machine guns, with Scouts lolling beside them, were in position for antiaircraft fire. The parade ground and polo field were broken here and there with sets of trenches. At the west end of the parade ground near Post Headquarters a battery of 2.95's was in position as defense against a possible Jap paratroop landing. Hong Kong Street and the Post Exchange were both crowded with men getting little last necessities, sending radiograms, and having a last drink. Our own quarters were just as we had left them. We went up to the club to have our last beer there and felt fairly certain that it would be on the house.

Two Jap prisoners who had been shot down looked very tough with their brisk black mustaches and close cropped hair. It was rumored that a German pilot had been shot down on the 8th. There was also a story of the Negritos, the black pigmies of the Zambales Mountains, who were said to have brought in on their spear-



March of the 26th, Stotsenburg to Lingayan; the regiment fought a desperate rearguard action back to Bataan.

heads the heads of two Jap pilots shot down and had said, "Send us more."

At 1030 officers of the 1st Squadron assembled on the porch of headquarters building of the 26th. The clouds were thick that morning and not over 3000 feet high. Now and then it drizzled a little. The meeting had barely started when from the direction of Clark Field to the east there came the faint *umph* of bombs exploding. As the seconds passed, the sound of the bombs became nearer, and soon the planes themselves could be heard. Everyone got into trenches and holes in front of headquarters and watched them come from Clark Field, out of the mist and over Stotsenburg—releasing their bombs as they moved forward. They came over, then still dropping bombs, circled to the south. It was possible to look up and see the bombs in the racks, and everyone felt that each bomb was coming right into the hole where he sat. The machine guns did a lot of firing but no planes fell.

Clark Field had had another good working over. One bomb landed on an antiaircraft gun and blew the gun and crew into a thousand pieces. A bomb in back of regimental headquarters had hit a jeep squarely. The driver was about ten feet away in a hole and unhurt. The Jap planes wrecked two of the barracks, two of the stables, and the motor pool in the area of the 26th. The sick horses were grouped together in stalls in Machine Gun Stables, and one bomb got 12 of them. Word arrived that the regimental bivouac area had been bombed, so the officers hurried back.

In troop "A" two horses, badly wounded from the shrapnel, had to be shot. One man was hit because he had failed to lie down.

I believe that it was on this day that a detachment of scout cars from the 26th Cavalry (under Lieutenants Cunningham and Cahoon), was sent to give some relief to a Philippine Army division fighting in the Cagayan Valley in northern Luzon.

The March North

On the afternoon of December 12th, each troop of the regiment marched individually to a forest, midway between Fort Stotsenburg and Angeles, Pampanga. In getting to this place it was necessary to cross a considerable amount of open country. One troop, caught out in open terrain, was strafed by Jap planes but suffered no casualties, for the men were well dispersed and whenever a fighter started to dive, they galloped out of the area covered by its guns.

When Troop "A" moved across this open area, horsemen were sent ahead or to the flanks to observe from the tops of small hills, while certain other men in the troop were designated to watch the observers for aircraft signals. Where there were no hills and the ground on which the troop travelled was such that it caused the horses to make a lot of noise, two men were sent far enough in advance or to the flanks to be able to hear the approach of hostile planes. The principle precau-

U. S. Signal Corps Photo

A unit of the 26th Cavalry is shown moving into Pozzorubio, December 21, 1941. The next day it faced the Japs.

tion, if possible, was to have the men so well dispersed that if caught by surprise, the unit would not suffer unduly.

The regiment stayed in the woods between Fort Stotsenburg and Angeles, undiscovered for one or two days. Rifles and pistols were carried loaded and locked all of the time, and occasionally a man would accidentally discharge his piece. It was difficult at first to make the men conscious of the fact that their guns were always loaded.

At nightfall on the 13th or 14th the regiment marched through Angeles, Pampanga, north to the town of Bamban. There it remained for two or three days. The men gradually became accustomed to carrying their guns loaded and locked, and the problems of guns discharging accidentally practically stopped. The bombing and strafing no longer excited the men, who wanted to fire at the planes but were not allowed to for fear of giving away the position. General Wainwright's headquarters at that time was in Bamban, and I believe also that it was about then that Troop "F", having marched up from Manila, joined the regiment.

The night of December 16th, the regiment started marching to the north, and made camp north of Capas during the day of the 17th. That night the march north was again resumed and the town of Gerona was reached before daylight of the 18th. All day the troops lay in a coconut grove west of the town and, after starting north again at dark, arrived in Rosales, Pangasinan about 0300 the morning of the 19th (another 25 miles) and remained there for two days.

Jap planes were always present. No American planes had been seen for several days. Although security had always been posted night and day, both while marching and in bivouac, it was now strengthened, because reports were coming from the north that the Japs were pushing from Appari and Vegan—where they had made landings a week before.

There was no difficulty about supply; everything came from Fort Stotsenburg. The trucks did all of their moving at night. Hay and grain were dumped off the regimental supply trucks at the nearest place on the road to the troop area, and from that point were hauled by hand to the animals. The mess sergeant picked up the troop's food at the same place and transferred it to the kitchen truck. The horses were in fine shape, and at every stop the horseshoer was busy.

About that time General Wainwright moved his headquarters up to Sto. Tomas near Rosales.

At noon of the 21st at Rosales orders came to be ready to move out in half an hour with lunches and grain bags full. Few men got their noon meal that day, as the kitchen could not get lunches out on such short order. It had been a practice, however, to keep the grain bags always full. In half an hour troops were ready to move. Troop "C" was dismounted and sent north of Baguio by truck, and their animals were turned over to Troops "A" and "B" to be led. From Rosales the regiment marched west, then north along the Baguio highway until dark, and after covering about 20 miles, bivouacked in a coconut grove in the area of Pozorrubio, Pangasinan.

That night the horses had to be watered by bucket from a deep well. This took about two hours for "A" and "B" Troops using the same well. Troop "A" always carried one collapsable bucket per squad, and two, if they were available; also a trench shovel, and a lariat. This scheme proved very valuable many times.

The kitchen trucks did not get up until after midnight, but there were shovels to dig foxholes, and the horses had grain and enough grass to keep them going. The men, however, had nothing to eat. There had not

been time to put up lunches, and it was impracticable to keep sandwich lunches on hand, as they would have gone stale. There was plenty of room in the saddle bags for a box ration had any been available. The emergency was not sufficient to open the canned rations. Pack animals with rations would have been invaluable.

Saddle-up came long before dawn of the 22d and before the kitchen truck was ready with breakfast. Troop "C" horses were left in the bivouac. The day was cloudy—ideal for marching and also for retarding the activity of hostile planes.

At dawn the regiment was marching north through rolling country toward Sison, Pangasinan. It moved in the same strung-out formation along a paved road with barbed wire on both sides. A little after daylight a plane came flying low toward us down the column. The signal for air attack (waving the hat) came just ahead of the plane—so everybody was alert. By this time the troops had a good idea of what it would be like to be surprised by enemy strafers. The horses were quickly gotten into a ditch along the side of the road and the men hit the ground. The plane proved to be a friendly P-40 on reconnaissance, but the dash for the ditch had been good practice.

At about 0900 the troops reached the junction of the highway where the Kennon Road goes to Baguio and Highway 3 turns to Rosario, La Union. The sky was starting to clear. Jap planes were scouting overhead in all directions but had not attacked. The regiment halted and got off the road to rest, while a company of light tanks went on ahead. During the rest period, civilians opened coconuts and gave them to the troops. The march west toward Rosario was then resumed.

Far to the front, planes could be seen diving out of sight then coming up again, but nothing could be heard. At about 1100 the tail of the regiment came into Rosario, where the company of light tanks had also stopped. About a half hour later the regiment, with some of the tanks in the lead, headed for Damortis.

The order of march in the regiment changed to 1st Squadron, 2d Squadron. Regimental Headquarters had gone forward with the tanks. The 1st Squadron had a platoon of heavy machine guns attached and marched in the order Troop "B"—Machine Gun Platoon—Troop "A". The troops were still marching on a paved road with barbed wire on each side.

Just out of Rosario, the Japs started dive bombing and strafing all along the column, with the heaviest at the front. Platoon commanders were instructed to use their judgement as to when to disperse for air attack, but to keep closed up on the unit in front. Whenever planes were seen coming, as much distance as possible was taken between horses, and an effort was made to get the horses into the usual ditch beside the road. When planes got close, the scout car stopped and the crew fired on them with their .50 caliber machine guns, which at least kept the Japs higher in the air. One bomb that I judged to be a 50 pounder, landed within about 50 feet of some troopers, but because it drove deep into the ground the fragments flew at a high angle and inflicted no casualties. In strafing, the Jap guns had little dispersion and caused only slight damage or delay to the column. As soon as the planes had passed over, the troops mounted up and rode on.

Here and there along the road were bomb craters. In some places, telephone wires were down, but only twice did the column pass dead men or horses. Once, where a bomb had landed right in the middle of a cut in the road, there lay a man and two dead horses; and another time, a wounded soldier was sitting beside the road, his dead horse nearby.

Later, while assembling after having made a quick dash off the road to get away from a strafing attack, I noticed that my platoon sergeant was missing. Looking over, I saw him dismounted trying to get his horse out of a carabao wallow. The horse was up to his belly in it and could not move. I rode over with the idea of trying to find a way of getting the horse out, and suddenly realized that there was something more important to do, so got another horse for the sergeant, and the march was resumed.

About 1230 we came to a ridge from which Lingayan Gulf could be seen in the distance. The water was full of Jap ships and the scene brought a full realization of the urgent reason for the forced march from Rosario. There was no time for more than a fleeting glance at this scene, for a message from Regimental Headquarters ordered the troop to move forward at once and in a hurry.

Marching in the order 1st Platoon, 2d Platoon and Light Machine Gun Platoon, the troop moved along the road at the trot. The 2d and Light Machine Gun Platoons were driven off the road several times by heavy dive bombing and consequently lost distance, but the troop commander and 1st Platoon were able to continue forward without this interruption.

Battle in the Lingayan Hills

At about 1300 the 2d Platoon and Light Machine Gun Platoon arrived at the forward regimental CP, which consisted of a scout car with radio. A few staff officers were standing nearby. The squadron adjutant told me to join the troop commander who was in a valley beyond the next hill to the north. We moved over the hill and down into the valley and located the troop commander on a ridge three or four hundred yards to the northwest. As soon as he saw us, he signalled for the platoons to fight on foot. The 1st Platoon had left its horses mobile, with one man to four horses; so the newly arrived platoons did likewise.

In the bottom of the valley, where the troop dismounted, there was a rice paddy which had been recently harvested, and it was now a hard broken field covered with rice stubble. A stream bed running down the center of the field had a growth of cogan grass in it 10 feet high, and as many horses as possible were

hidden there. The rest were put under cover here and there, where clumps of small trees could be found.

The two platoons assembled in column of trooper and moved up under cover behind the brow of the hill where the troop commander was waiting. A few of the men had taken their canteens off their saddles and hooked them to their belts by use of the chain that attaches the cover. Those of us who did not do this, sorely regretted it. All of us were tired, hungry and especially hot, and few realized what was really happening. Planes were still at work but not on the troop at that moment.

The 1st Platoon was already in position on the hill. The Light Machine Gun Platoon was ordered into position with them. The 2d Platoon was ordered to send one squad of riflemen mounted to the high ground to the east to cover any hostile movement attempting to get in our flank and rear. The other squad of the 2d Platoon was sent dismounted to occupy a ridge just east of the right flank of the 1st Platoon position. Two heavy machine guns attached to the troop also occupied this ridge. I was placed in command of this section and given instructions to keep in contact with the mounted patrol on our right flank to the east.

The troop commander's CP was on the ridge occupied by the 1st Platoon and overlooking Lingayan Gulf and the vicinity of Damortis. This ridge, which ran north and south parallel to the shore of the gulf, was ½ to ¾ of a mile long, forming a cut for the highway on the west, and petering out into a gully on the north. A short distance from the northern end of the main ridge, a narrower ridge of about the same elevation ran perpendicular to it. This furnished a fair field of fire for 1000 yards to the north toward another group of hills.

The shore of the gulf was about 1½ miles away. From the shore in, for about ¾ of a mile, the land was level. From this plain to the 1st Platoon's position, there was a gradual rolling rise made up of billowing hills covered with cogan grass. Lingayan Gulf seemed choked with Jap warships and transports. There was a heavy haze in the air, and the sun was already low enough in the west to make seeing in that direction very difficult. We watched the Jap landing barges bringing men and supplies ashore, but could do nothing to stop them.

On the Rosario-Damortis highway to the south of our position, there was a company of American tanks. Farther back on the road to the rear of the tanks were two or three scout cars that from the first were using their .50 caliber machine guns for antiaircraft fire. The Jap dive-bombers were busy trying to get something on the road—either the tanks, the regimental CP, or the scout cars. Somewhere on our left was Troop "B", but I was never able to locate it.

After checking my position, I started over to the right flank of the ridge occupied by the 1st Platoon to have a better look at the ground. Just before I reached the position of the light machine guns, I heard a high pitched cracking sound over me and stopped to look up in the air but saw nothing. The sound was repeated and at first it was hard to figure what it was. Soon I saw one of our light machine guns moving back toward me with the men carrying it crouching low. Then it dawned on me that the cracking sound was the same as that heard in the rifle pits. It was the Jap machine guns firing on our gun position, and they had gotten so close that our gun crew had been forced to move into another position.

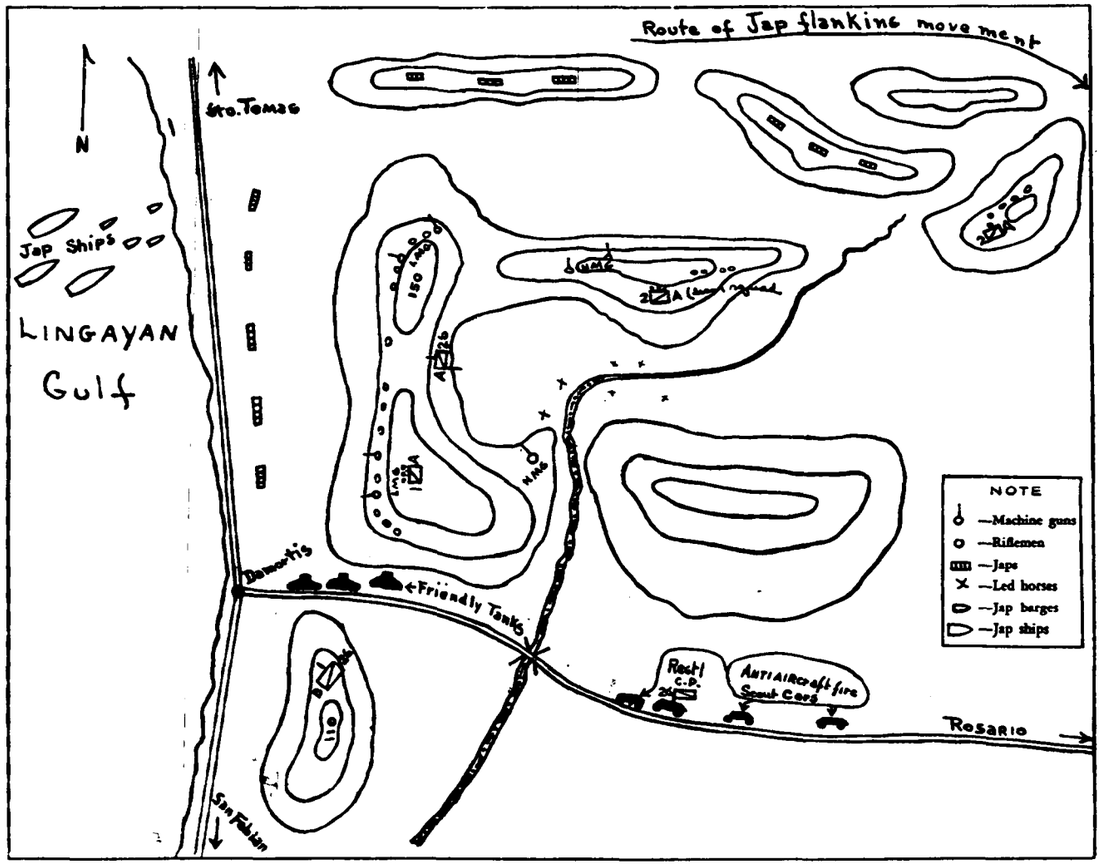
Two or three hundred yards beyond, on a hill to the north of the 1st Platoon's right flank, helmets and sometimes the heads and shoulders of Japs could be seen moving behind the crest. The men of the light machine gun crew were on their stomachs helping each other guess where the next figure would pop up on the ridge to their front.

Returning to the position assigned to me, I found that the men there had also been confused at first by the cracking sound overhead. The air was full of bullets now. Objects on the ridge north of my position were our targets. The firing on the right flank started about 1400. The center of the ridge occupied by the 1st Platoon came under fire from what we presumed to be 75mm from the valley.

Slowly Jap artillery fire covered the whole position. Then Jap tanks, firing their small cannon, began to appear. Moving in column of squads Jap infantry moved up with the tanks and soon had machine guns covering the 1st Platoon's position. I believe that they received a little mortar fire too. A short time later Japs, who had worked around and gotten into a position with rifles and machine guns, began firing directly from the ridge to the north. From time to time squads of Japs in columns of troopers came over the ridge nearly a thousand yards in front of our heavy machine guns and scrambled down into the gully where they were protected. The heavies took good toll of these, but the Japs kept coming. Those approaching our main position facing Lingayan Gulf stopped when about half a mile away.

Watching the firing of the heavy machine guns was engrossing. The first man to see a target would try to show it to the gunner. If the gunner was unable to find it, the man who saw it would aim the gun, then the gunner would do the firing. Realizing that there was something else to do other than watch two guns, I crawled back to where the squad of riflemen had been put in position and found them behind the crest of the hill lying prone doing nothing. The corporal told me that he did not know where he was to get into position. After the men had been put into a firing position in front of where they had been lying they started firing and stayed there without any trouble throughout the rest of the action.

Far to our right and rear, artillery could be heard now and then. I believe that this was about 1530. The squad of mounted men (2d Platoon) had been sent to that locality but up to now no word had been received from



them. For the first time I needed my messenger but looking around I found that it was impossible to locate him anywhere. Finally it was necessary to take one of the riflemen out of the line and send him to contact this squad.

In spite of the heavy toll taken by the machine guns, several squads of Japs had managed to get over the ridge and down into the gully about 700 yards in front of our position, at which point they completely disappeared from view.

I crawled down to the troop commander's CP to inform him of what was going on in my area but was unable to locate him. The infantry had stopped advancing on the position facing Lingayan Gulf. There the light machine guns and riflemen had a field of fire over the short cogan grass for two to three hundred yards, but Jap artillery fire now covered the whole of the troop's position. Their tanks made no effort to advance.

Jap planes were overhead most of the time, but as far as I know, our troop received no casualties from them. The .50 caliber machine guns on the scout cars had been firing nearly incessantly since 1300.

Returning to my area, I found one of the heavy machine gunners firing on the planes. The gunner had been told specifically that the machine guns would not be used for antiaircraft fire, as we were short on ammunition. It was necessary to pull this man away from the gun, set the gun to cover its ground area, then shove him in back of the gun. Still he kept looking up at the planes.

Crawling back to the rifle squad, I verified that they were still in position firing. Then returning to the machine guns, I found that the one gun was firing antiaircraft again. It was not that the gunner was deliberately disobeying. I believe that the idea of those planes always overhead had preyed on his mind to the extent that he could not think of anything else. From time to time he would point at the streams of smoke that our .50 caliber tracers were making and say that the Japs were dropping gas. I then put the assistant gunner to firing.

In contrast to the gunner mentioned above there is a story of another gunner. On one of our light machine guns, the gunner and assistant gunner were cousins. The gunner in the course of the afternoon was hit in the chest. He fell away from the gun and rolled down the hill a little ways. The assistant gunner, calmly, without giving his cousin a look or a thought, immediately got into position behind the gun and continued firing.

About 1600, squads of Japs were noticed 1½ miles to our right rear working toward our rear. They could be seen for just a few seconds at a time as they passed in squad columns over a piece of high ground. For how long this had been going on, we did not know. The troop had no reserve. The squadron commander came up, looked the situation over, and ordered us to pull out and move to another position.

The horses were in the valley to our rear. South of the valley there was more high ground which overlooked our position. The two heavy machine guns and rifle squad were ordered to this hill to cover the withdrawal of the rest of the troop.

One heavy machine gun was withdrawn immediately from action, and the route to and exact locality of the next gun position was carefully explained to the gun crew. The new position could be seen plainly. The gun and crew were then sent back to occupy the new position. The corporal of the rifle squad was instructed to stay in his present position for 10 minutes after the second machine gun pulled out, and then to withdraw his squad and rejoin the machine guns at a point carefully pointed out to him. The next position was not more than a quarter of a mile away.

After the first gun had had ample time to get in position, yet still could not be seen, I started back with the second gun. In a few minutes the second gun was in its position, but the first gun and its crew could not be located. I later learned that on seeing the troop pulling out of the position in front, the crew had taken it on themselves to pack the gun and to take it to the place where the troop was assembling. The rifle squad also never got to its second position. Later the corporal said that he had believed it was necessary to get the horses out then, or they would have been lost.

The one heavy machine gun left to fire, had too much to do because it had an area of over 90° from northwest to northeast to cover. After each burst was fired it was necessary to traverse 90° to fire on some enemy movement in another direction. During the hour that it took to get the troop out of action, checked over, and back on the road mounted, the heavy machine gun kept up an incessant fire.

Toward the last of the withdrawal, the Japs had worked up into positions overlooking our movement and had a good amount of small arms fire on us, but it was mostly ineffective—either because they could not shoot or because the machine gun was keeping them down. In some manner, the pack horse and mounts of the machine gun and crew in the second position had disappeared. The gun was finally withdrawn and carried to a scout car waiting on the road. At the last, the Japs apparently knew that we were withdrawing, and they began pushing forward with increased determination.

Troop "A" marched about three miles back to a river to water the horses, which had all been fed during the action. The Jap planes had stopped their dive-bombing and strafing, but scouting planes were still overhead most of the time. A company of light tanks was still between Troop "A" and the enemy.

After watering, the troop marched a half mile back toward the enemy and dispersed in cover along the road. Half of Troop "A" was missing, and most of its ammunition was gone. The platoon sergeant who had been sent with the squad to protect our right flank was the only one of the squad who had returned; his face was caked with blood from a shell wound. The squad had met a large force of Japs sent around on an enveloping movement, and although it had held the Japs up for some time, it was finally wiped out by fire from mortar and mountain artillery. (No one from that squad was ever sent to notify the troop commander that contact had been made. I never heard what happened to the man sent to contact the squad nor did I ever find out where my messenger went.)

About 1750 the troop was ordered into a position 1½-2 miles to the rear of our first position of the afternoon. At the time Troop "E" was astride the road, and Troop "A" was off the road to the right of Troop "E". Just after dark the company of tanks withdrew through us and passed on to the rear. About 1930 Troop "A" pulled out and in columns of twos dismounted formed on the road facing east. Beyond Troop "A" was Machine Gun Troop mounted, and we were told that beyond the Machine Gun Troop was Troop "E" forming the rear guard for the withdrawal. The heaviest weapon that they had was a light machine gun, and there had been no time to build any kind of road blocks. (If the troops had had something like the bazooka, the action that followed possibly never would have happened!)

At about 2000 Troop "A" was still waiting for the order to mount and withdraw to its new position when all hell broke loose suddenly. Small cannon, machine gun, and rifle fire came over and into us. Machine Gun Troop, already mounted, stampeded through us, which caused several Troop "A" men to lose their horses. Those who still had mounts, had trouble getting the reins over their heads and then in mounting. As the firing became stronger, the horses got crazier. Jap tanks followed by infantry had come right through our rear guard. The rear guard had had nothing heavy enough to stop them.

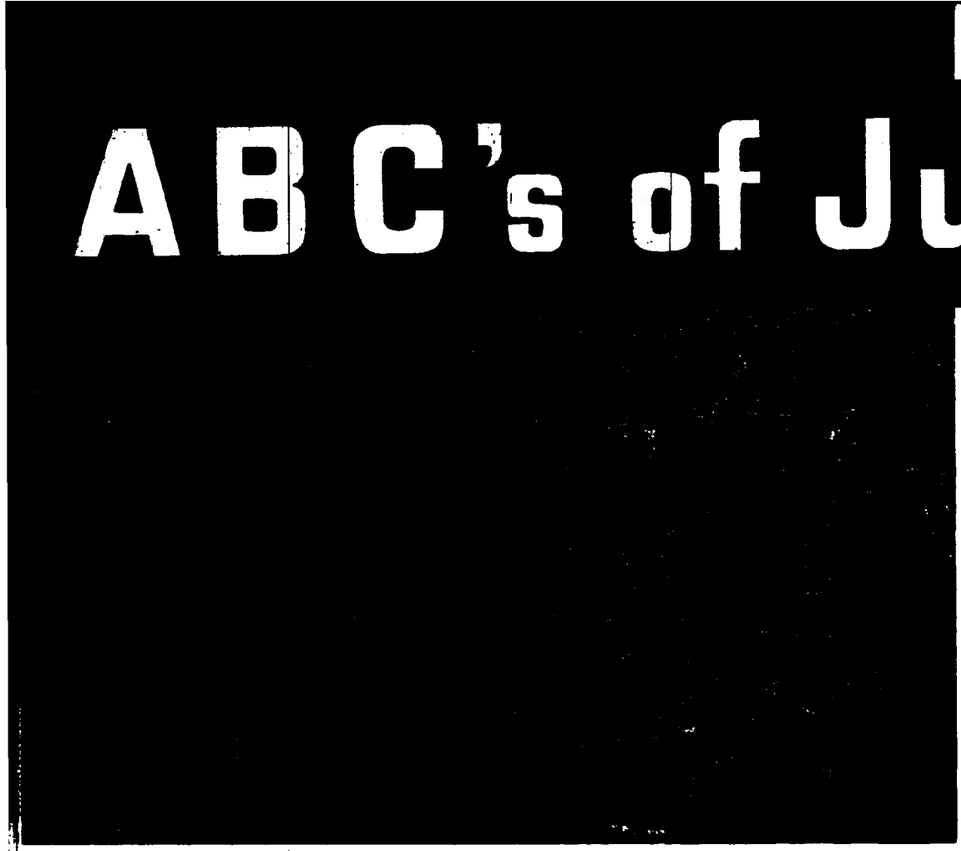
In mounting, my horse bolted—dragging me for some distance and knocking me out. Later, when I came to, the firing had stopped, forms could be seen moving down the road from the direction of the enemy, and there were no cavalrymen around. I jumped a fence and got into a bamboo thicket by the side of the road.

* * *

A further account of Major Whitehead's experiences in the Philippines will appear in the July-August issue of THE CAVALRY JOURNAL.

ABC's of Jungle Combat

Basic but vital rules evolved from combat experience with the Japs



"Dig in whenever halted and improve holes as time permits." This machine-gun emplacement on Guadalcanal offers concealment as well as necessary protection.

Official U. S. Marine Corps Photo

SINCE the early days of the war with Japan, a great deal has been learned about the Jap soldier—his characteristics, weapons, and tactics; also about tropics and jungles in which much of the war is being fought.

The Jap is a master of camouflage. He is meticulous in his task, whether it be concealing a supply dump from planes or emplacing a machine gun along a narrow jungle trail. Obeying orders blindly, he will stick to his post until death. But while he is supposed to excel in judo and bayonet work, his inferior physique handicaps him in hand-to-hand combat with the American. He is a poor shot, compared with the American soldier, and at ranges of more than 100 yards the Jap sniper misses more often than he hits.

The American soldier is now provided with the world's best weapons and equipment, but to a great extent, jungle fighting is a test of individual skill. Before the American soldier goes into action, before he even sets foot in the jungle battle zone, he must receive intensive training in jungle warfare. It is only with this careful training and constant study, that he can take full measure of the Jap.

The following basic but vital rules, which were evolved from combat experience with the Japs in the South Pacific, should be learned so thoroughly as to become an instinctive and integral part of every soldier who is training for the jungle.

Rules for the Individual Soldier

Your Enemy and You.

Do not underestimate the enemy, but also do not overestimate him. The Japs are not supermen, but they are fanatics. Remember, this war with the Japanese is a war of *kill* or *get killed*. You are a better man, better armed and a superior marksman.

Teamwork.

There are no wet-nurses in action. Learn the difference between a hero and a fool; the former has common sense as well as courage. Do not try to win the war single-handed. Use teamwork, live, and be successful.

Lights and Smoking.

No lights of any kind will be used in forward positions during hours of darkness, and *No Smoking* unless specifically authorized by higher headquarters.

Talk.

Silence is essential at the front and on patrol. If the enemy cannot locate you, every advantage is with you. He will try every means to get you to disclose your position so that he can gain advantage over you.

Talk only in as low a tone as possible. Practice whispering, especially in telephone conversations. Use signals, such as hand or arm signals, tapping on the rifle, bird calls, etc., as much as possible. Do not expose yourself any more than necessary when using hand or arm signals.

Do not forget that many Japanese speak English. At night a favorite trick is for them to infiltrate and yell false orders, such as, "Withdraw," or "Sergeant, where are you?" Learn to know the voice of your leader. Japanese have difficulty in pronouncing the letter "l."

Firearms

Weapons will be carried at all times when in forward areas and when away from immediate vicinity of bivouac, camps, or secured areas. *Weapons will always be kept readily available.* Don't shoot unless you have something worthwhile to shoot at. Blind shooting simply gives away your location.

Enemy Fire.

Under artillery, mortar, grenade or bomb bursts, keep dispersed and hold your ground. Running from one burst and collecting in groups only invites disaster. Two shells in the same hole are so rare that the safest thing to do is to move forward or else take shelter temporarily in a shell hole. Running from fire will not save you and will have a demoralizing effect on other troops not involved. It gives a boost to the enemy's morale to see you run.

Japanese light mortar fire is accurate; therefore, grouping of personnel must be strictly avoided, and individuals will not allow themselves to be silhouetted on the skyline.

Caution.

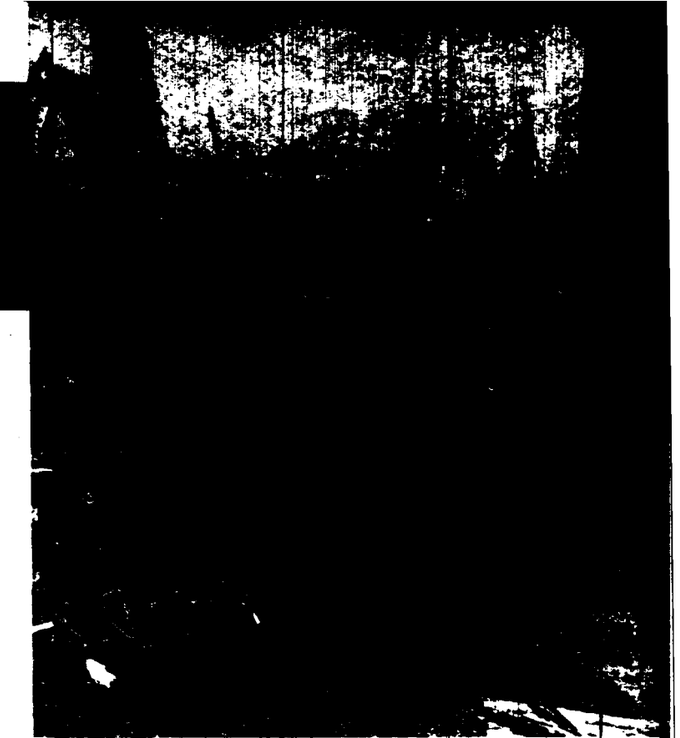
Do not use field glasses openly; observe the same principles as in firing the rifle from concealment.

Do not permit straggling, and do not straggle yourself.

Dig in whenever halted and improve holes as time permits. An entrenching tool is next in value to a soldier's personal arms and must be carried at all times.

Sniping.

When fired on by snipers move at top speed to nearest cover or concealment. As soon as possible quietly change your location, then locate and destroy the sniper. Do not, under any circumstances, stand still in the open. Do not forget to look up before you move. Get into the habit of watching tops of trees as well as their roots.



Official U. S. Marine Corps Photo

"Remember, this war with the Japanese is a war of *kill* or *get killed*. You are a better man, better armed, and a superior marksman." From behind a blasted tree, this marine picks off the Japs in a pillbox on Tarawa. The target is the small opening through which the Japs take sight.

Enemy Tricks.

Be on guard for all types of booby traps and other enemy ruses.

Do not attempt to retrieve enemy wounded. (It may be a trick).

Look out for false surrender; any offer of surrender must be suspected as an enemy ruse.

First Aid.

Use your first aid packet. Scratches must be treated as soon as possible. If wounded, take your sulfanilimide tablets as directed on the metal package.

Rumors.

Rumors are a curse, don't start them or believe them. All rumors are false exaggerations; therefore, discount them, and wait for verification.

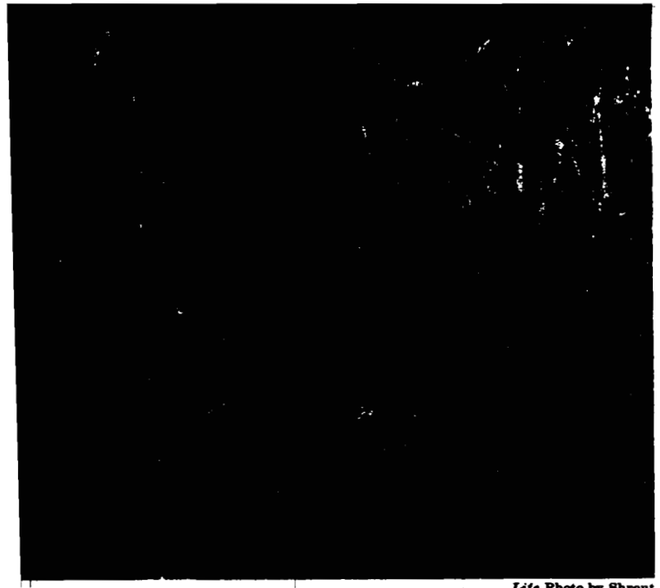
The Leader

The Officer.

It is imperative for morale that every officer maintain a cheerful and optimistic attitude, and that he not show by word or action any discouragement or evidence of fatigue. Every officer must exhibit a desire for aggressive offensive combat, and instill the same desires in his men.

Small Unit Leader.

Each platoon leader or other small unit leader, will



Life Photo by Shrout

"Do not attempt to retrieve enemy wounded. It may be a trick." The Jap in the above picture appears to be dead. If he is, the body may hide a booby trap. Take no chances.

take every opportunity to instruct, talk over, discuss and re-discuss with his men, Japanese tactics, our methods of operating against them, and work out in detail the methods his unit will employ to get teamwork into their day and night operations against the enemy. It is essential that officers and men know and understand each other thoroughly.

Security

All Around Defense.

Movement formations will be adapted to the terrain, but must always provide *all around security by forward scouts, and flank, advance and rear guards with connecting groups.* During a halt, whether for rest, observation or bivouac, men will be kept dispersed and quiet, with alert sentinels and adequate security guards maintained. Remember you are always under observation and subject to machine gun or mortar fire if you present a suitable target.

All around defense is imperative and must be habitual. Do not move without all around security, and when you halt make that your first job.

Sentries.

Sentries operate in pairs—one alert, while the other sleeps. There should be no relief or movements during the hours of darkness. It is usually best to have individuals dig in or have positions in pairs.

Patrols

Size.

Always send at least two men on missions, however simple the task may appear.

Do not send a boy to do a man's job. Patrols will usually be assigned strengths as follows:

(1) Information only: a very small patrol, usually three to six men.

(2) Combat or reconnaissance in force: never less than a reinforced platoon, preferably larger.

Inspection.

Each patrol will be inspected carefully, and clearcut instructions will be issued to cover mission, objective, route or routes, adjoining patrols, formations, precautions, password, and signals. Helmets and web equipment will be camouflaged; canteen and other shining equipment will be covered. All equipment must be adjusted so that it does not rattle or shine. Other headgear may be substituted for the steel helmet *only* on orders from the regimental or separate unit commander.

Rest Periods.

Before the patrol moves out the leader will establish a definite rest period during the time of the march, so that whenever there is a halt the men will know how much time they have to rest.

Maps.

Patrols will be provided with maps or sketches devoid of any military information. New trails and information of similar military value should be recorded on the spot and reports made immediately upon return to bivouac, and copies sent to division headquarters.

Equipment.

Patrols will travel as lightly as possible, only the barest essentials being carried. (See par. 8 a., Individual Equipment, as a guide which can be modified according to requirements.)

Movement.

When a patrol is on the move and obstacles slow up the pace, the leading element, with front and flanks covered, must clear the obstacles promptly, then slow down in order for the rear element likewise to clear the obstacles. After the rear element is cleared the normal pace is then resumed.

Do not attempt to move too early or too rapidly. Make a *thorough* reconnaissance. Remember that false negative information is the most dangerous type. Commanders must estimate the time-factor and limit the extent of the patrol accordingly.

Caution.

Needless talk must be strictly eliminated. Make as little noise in traversing wooded areas as possible.

Never permit a patrol to bunch up.

Never halt in the open—select a concealed spot which affords cover and protection—except where such opening affords night security.

Special Rules for Night Operations

Hostile Attack.

Assign definite fields of fire to front line units for use in event of a coördinated night attack.

Night movement within the perimeter of defense must be held to the absolute minimum necessary to take care of casualties, etc. No movement will be permitted during a hostile attack.

Hearing.

For identification use the prescribed password. When challenging or replying to a challenge, *speak quietly.* Remember, the enemy also has ears.

Warn all personnel about the natural jungle noises, such as falling leaves, and the numerous birds calling at night.

Seeing.

Cover luminous watches or other objects that will shine at night.

Use flares at night to expose enemy movements and positions.

Tracer ammunition will not be used at night except in antiaircraft firing or for prearranged signalling.

Lost.

Individuals, or units, that are lost when night falls should select a covered position and, after establishing a perimeter of defense, remain for the night.

Attack

Bivouac.

Troops designated for attack should be bivouacked for the night as near the line of departure as possible in order to insure maximum rest prior to the assault.

Battalion CP.

Each battalion headquarters, and regimental headquarters will have at the forward echelon only those members of the staff and headquarters company essential to combat functioning. One practical working arrangement is to have only the following personnel at the forward CP: CO, Bn-X, Bn-2, Bn-3, forward echelon of message center and intelligence section, five linemen, and such radio operators as condition of radio communications warrants.

Weapons.

Each machine gun or mortar platoon may be cut from six to four guns during attack in order to allow more men for use as ammunition carriers. If necessary the heavy weapons company should carry only four 81mm mortars and permit the extra men to carry ammunition.

Thorough consideration must be given to the possibilities of employing all supporting weapons and services available. Experience has shown that the Japanese machine gun and other weapons are so well emplaced that close heavy weapon support is necessary whenever the terrain permits.

Advance.

In attack through the jungle, advance slowly but surely. Do not rush in, then stop or fall back. ***Once forward movement has begun, every effort must be made to continue that movement however slow it may be.***

Whenever you have located the approximate position of the enemy, flush him from his foxholes and have action for his elimination prepared.

Battle Supply and Administration

The Communications and Supply Line.

Each unit is responsible for its own line of communication and supply, and should advance only so far as it can secure its line of communication. Exception may be made when the seizing of the objective will uncover a new line of communication, or when relieved of responsibility by higher headquarters.

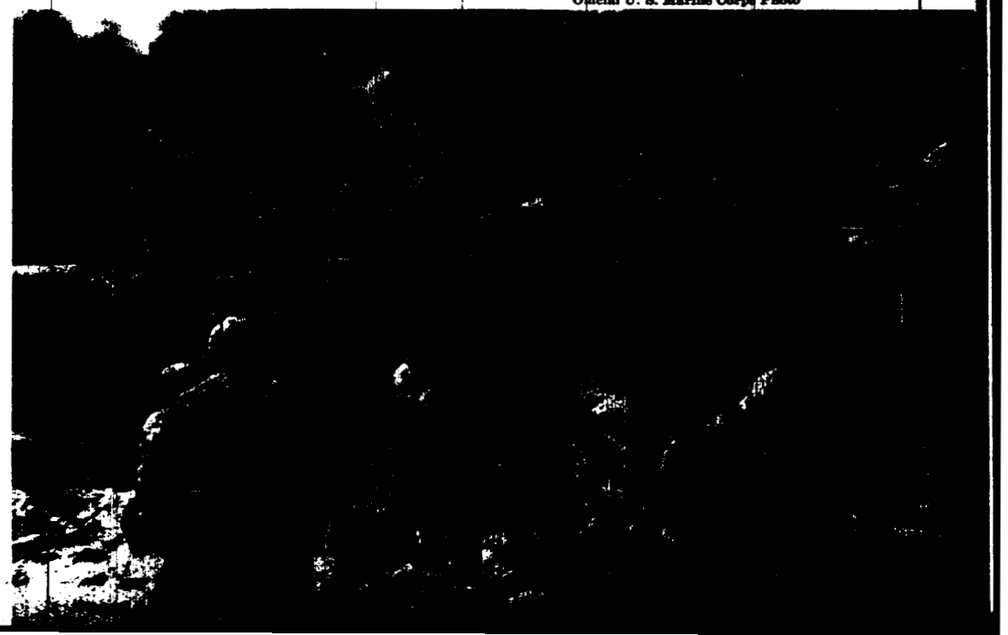
Difficulties of Supply.

The difficulty of supply in jungle operations requires special consideration prior to any offensive action. ***The decision as to the routes of attack may have to be based on the supply route possibilities.***

Trails.

Push forward vehicular trails for carrying supplies as

Official U. S. Marine Corps Photo



"Once forward movement has begun, every effort must be made to continue that movement, however slow it may be." Marines in the picture leave the beachhead on Tarawa to storm the airport.

far as possible. A bulldozer will greatly facilitate rapid trail construction. Infantry protection *must* be furnished for all bulldozer crews working in the forward combat areas. Native carriers will be used to the maximum extent available. Even so, experience indicates that about one-fifth of the fighting force of each battalion may have to be employed as carrying parties to maintain the supply of ammunition, food, and water, and to handle the evacuation of casualties. This number should be kept at the minimum, and as soon as carrying parties are no longer needed they must be returned to the front.

Travel Light.

All excess personnel and organizational equipment not absolutely necessary for combat must be left in the rear battalion assembly area to help prevent fatiguing the troops and to increase their mobility.

Engineer Support.

Engineers, and all other units, will improvise cable lines, blocks and tackles and other gear for hauling supplies and casualties up and down hills, cliffs, etc. They must be ready before you go into combat.

The battalion S-4 must always be alert to locate and establish water points at streams, springs, etc. in the forward areas and provide sterilization and thereby save on long water hauls.

Administration.

The battalion executive officer will normally remain at the CP and advance it to predetermined localities as the attack progresses. It is most important that the executive officer closely supervise the "administrative" support given the attack. He must constantly check both supply and evacuation.

Signal Communication

Wire Communication.

Maximum use will be made of wire communication, especially sound power telephones, in preference to radio. Telegraph will be employed whenever operators and equipment are available. In damp jungle country a ground return circuit is often more efficient than a metallic circuit using assault wire. Captured Jap wire can be used to supplement the supply of assault wire using ground return.

Laying and Repairing Lines.

Lines will be repaired in daylight only, except in emergency. In laying lines, install one by the fastest route, then a second on the return trip by a different route, raised high enough to be clear of traffic. Wire will be recovered after need for lines has passed. Wire crews in exposed forward areas will be protected by guards while at work.

Testing and Supply.

Testing of signal equipment, and checking for completeness of accessories must be made daily and especially prior to departure of any parties depending on such equipment.

Spare dry batteries and adequate supplies of field telephone wire should be moved up to forward areas.

Air-Ground Communication.

Be familiar with visual and sound signals given in SOI for identification and challenge between unidentified ground units and airplanes.

To mark targets for supporting aircraft, use mortar smoke shells and arrows composed of panels as shown in SOI.

Individual Equipment

Individual equipment carried into combat in attack situations will include only absolutely essential items. Excess items hasten fatigue and lessen the mobility and fighting efficiency of attacking troops. Individual equipment will include:

Equipment.

Individual weapon.

Ammunition. (Extra bandoleers will not be carried by combat troops except for assault echelons during initial landings on hostile shores.)

Cleaning gear for weapons carried in oil and thong cases, BAR spare parts kit, or extra first aid pouch.

First aid packet. Entrenching tool.

Two canteens and canteen cup. Steel helmet.

Gloves. Head net.

Combat Pack.

Shelter half. Pair of socks.

Mess kit cover and spoon. Toothbrush and paste.

Shaving equipment. Toilet paper.

Dry rations (sufficient for 1 or 2 days or as ordered).

"Always send at least two men on missions, however simple the task may be." Here, two soldiers watch the grass for any sign of movement. One soldier is behind tree.

Life Photo by Strock

Cake of soap.

Jungle medical kit (per each four men).

Extra Pack.

An extra shelter half will be issued to all troops for the purpose of preparing a pack containing the following:

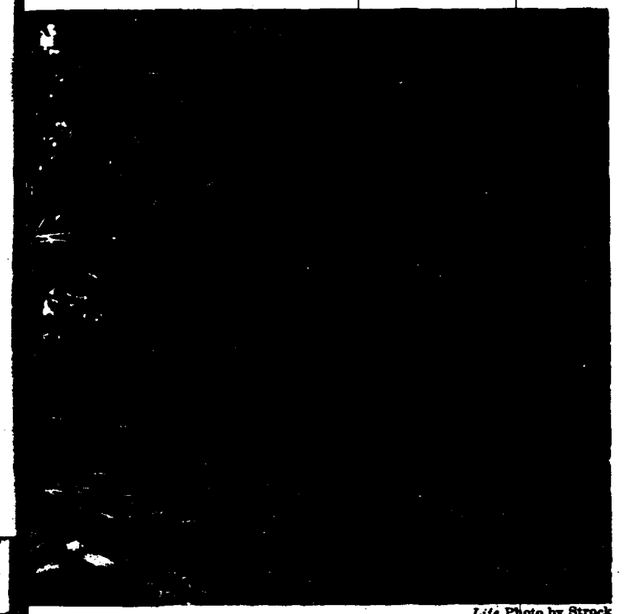
1 Suit HBT. 2 Pair socks. 1 Suit underwear.

1 Pair shoes (Shoes will be placed inside of pack to be kept dry.)

1 Mess kit less cover. 1 Each knife and fork.

Transport.

These packs will be stored in battalion rear areas. In landing on hostile shores assault echelons will drop packs prior to debarkation; the support echelon will drop packs ashore. Jungle hammocks will be carried as company or battery baggage and will be held in battalion or regimental rear areas until such time as they can be used.



Life Photo by Strock

"Do not forget to look up before you move. Get into the habit of watching tops of trees as well as their roots." A soldier looks for signs of movement in a near-by tree.

Care.

Care of equipment will be enforced strictly. Do not let men get separated from their equipment. Unit leaders must require daily care of equipment.

Darken any equipment to make it blend with tropical green, and dull items that might glisten or reflect light. Cover the canteen with a sock or cloth.

Units must never leave equipment and supplies unguarded, even in rear areas.

Sanitation

Since disease is ever likely, it is imperative that every individual comply with the strict rules of sanitation.

Life Photo by Strock

"Use your first-aid packet. . . . If wounded, take your sulfanilimide tablets as directed on the metal package." Here, first aid is being administered to a wounded buddy.

Refuse.

Straddle trenches will be prepared whenever practicable. When not practicable, individuals will dig a small hole and cover defecation.

Foxholes and other positions will be kept free of refuse.

All food cans and left-over food will be buried.

Cleanliness.

Troops will be given every possible opportunity to bathe.

Bedding will be sunned and aired whenever possible.

Clothing.

Head nets will be worn at night unless the tactical situation prevents it. Clothing will be worn to cover the body and limbs between dusk and dawn. Gloves should be worn when appropriate.

Feet.

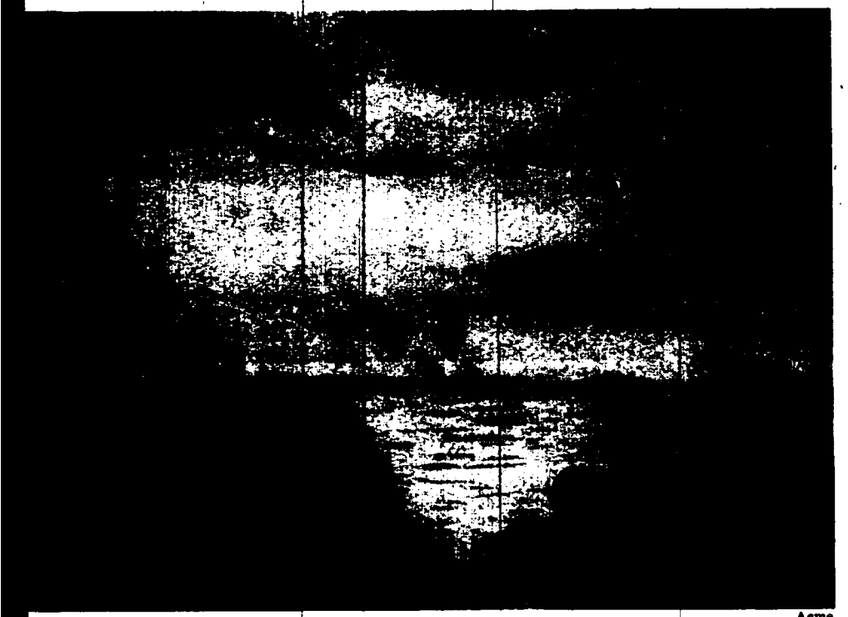
Special attention will be given to care of the feet to prevent blisters and "athletes' foot." Treat blisters and sores at first opportunity.

Mess Kits.

Diarrhea and dysentery can often be caused by dirty mess kits. Mess equipment will be washed and cleansed thoroughly in boiling water before each meal. Two men per platoon should be detailed to wash all mess kits. In some situations mess equipment may be taken to the rear with the mess detail, boiled, and returned with the next meal.

These rules are merely the beginning—the ABC's of jungle combat—but their conscientious application will save lives and shorten the war.

1st Cavalry Division Drives Japs from Admiralties

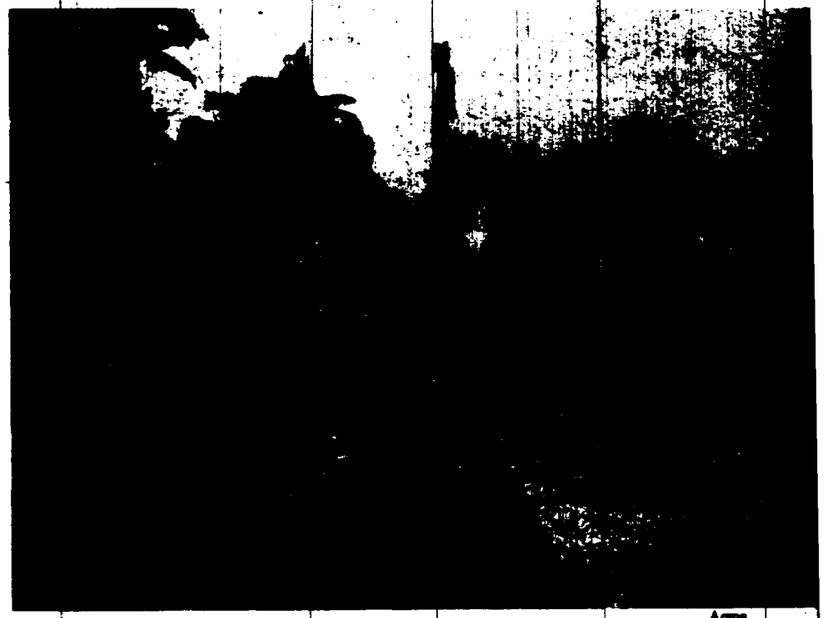


Acme

Troops of the 1st Cavalry Division wait off shore while Navy guns pour shells on Los Negros and planes drop explosives in the preinvasion softening.

Acme

As the first landing boats hit sh[illegible]alrymen tumble out and head for the jungle. Jap hut at left was dama[illegible]ing the heavy naval bombardment.



Acme

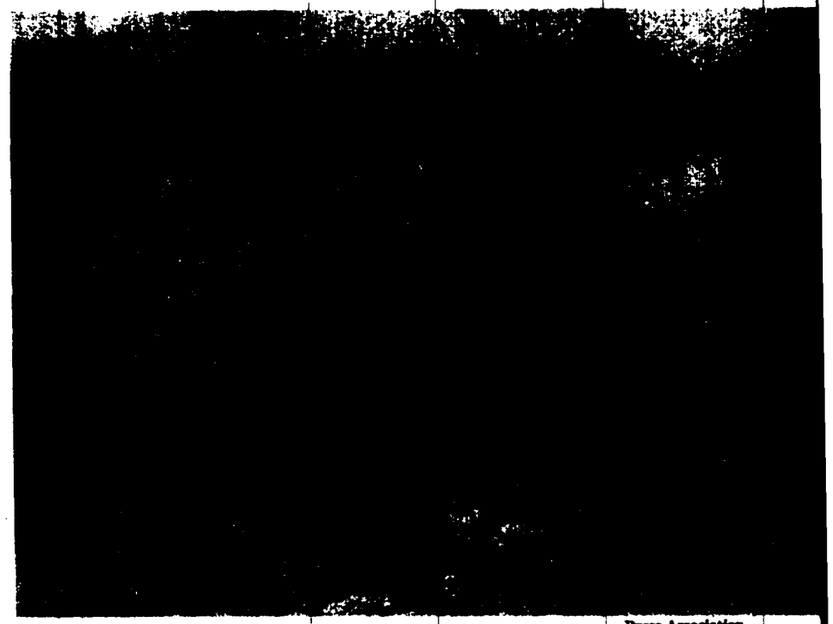
Additional waves follow in quick succession. Japs attempted little resistance at shore, dug in to protect Momote airfield, which fell after severe fighting.

Acme

The landing on Los Negros successfully completed, cavalrymen dig foxholes and gun positions beside the wrecked supply dumps of the conquered Japs.

Acme

These troops are bivouacked in [illegible]ains of a coconut plantation. The trees were smashed and broken du[illegible] terrific air and sea bombardment.



Press Association

Lt. Gen. Walter Kreuger (left), Sixth Army; Maj. Gen. Innis P. Swift (right), 1st Cav. Div.; and Brig. Gen. Wm. Chase (center) were directly responsible.

Offensive Operations of Soviet Cavalry*

by Major B. Korolyov

In the Battle of Korsun-Shevchenkovsky, during the Soviet advance in the Ukraine, Red Army mobile forces encircled and annihilated 10 divisions and 1 brigade of Nazi armor and infantry.

SOVIET cavalry, in coöperation with other arms of the service, has given a good account itself in the course of the Red Army's offensive operations. Cavalry showed itself capable of carrying out battle missions of all types. In this respect, the recent encirclement and liquidation of large German forces in the area of Korsun-Shevchenkovsky was particularly revealing.

In that operation, cavalry was primarily used for deep thrusts. The principle that it followed was to engage the enemy for as far as possible inside his dispositions. Whenever tanks and infantry got stuck because of snow storms and road conditions, mounted troops went into action.

In the battle for Korsun-Shevchenkovsky, outstanding maneuvering skill was shown by cavalry formation guards. The units executed several deep thrusts of from thirty to seventy kilometers each. For the sake of speed, the troopers rode not only at night but during the day as well.

Maneuver

The first movement of Soviet cavalry, from the villages Ositnyazhka and Tishkovka to the villages Topilno and Zelenaya-Dubrava, deserves special attention. One division, which, according to the original plan was to reach the last named points, was unexpectedly confronted by an enemy force pushing southward, and was obliged, therefore, to meet German troops attacking from outside the ring in an effort to relieve the encircled group. Another Soviet cavalry division that was following the first one overtook it and completed the encircling maneuver.

Efficient control and good staff work contributed to the flexibility and speed of the movements executed by the cavalry. The following episode is typical in this respect. Part of a cavalry formation set out to attack the village of Shanderovka. Meanwhile, information was received that the Germans were moving between the villages of Khilki and Komarovka. It was necessary to wheel the regiments immediately in order that they might have time to cut the roads for which the Germans were heading. This change in direction was carried out in exactly thirty minutes. *The mobility of the mounted troops made every maneuevr swift and unexpected.* No matter how hard the Germans tried, they could not avoid encountering cavalrymen. The enemy was constantly forestalled in his attempts to break out of the encirclement.

Coöperation With Other Arms

As to coöperation between cavalry and other arms of the service, the movement of mounted troops behind the tanks deserves special attention. In the Komarovka action, tanks reached the southern outskirts of the village after neutralizing enemy firing points en route. Then dismounted cavalrymen broke into Komarovka immediately behind tanks, and, while the armored vehicles drove to the northern outskirts of the village, the dismounted troops began to clear its central part. This close tactical coöperation between cavalry and tanks was in evidence in a number of other engagements.

As to coöperation between cavalry and infantry, in case of a break-through, the main body of infantry usually enters the breach behind the mounted troops. In battle, however, infantry and cavalry fight side by side, because, as a rule, troopers attack the enemy in dismounted formations. *But at the first opportunity, the cavalrymen remount and maneuver about on the battlefield.*

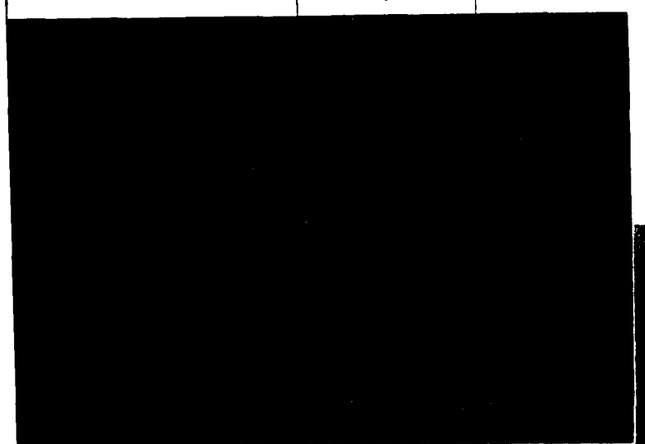
The Breach

It must be noted that Soviet cavalry, which like infantry is constantly accompanied by artillery, is now able to cope with tank attacks much more effectively. The Tishkovka action which took place during the initial phase of the break-through is particularly characteristic of this kind of action. It is a well known fact that under modern conditions it is rarely possible to form an ideal breach through which mobile troops can move. Too much time would be required to achieve complete neutralization of enemy firing points in the zone of the break-through or to attain a hundred percent guarantee against flank counterattacks. The consumption of so much time would likely result in complete failure of the whole operation. Entry of mobile troops into the breach always entails a certain degree of risk.

Sometimes in order to save time, it becomes necessary to hurl tanks and cavalry forward when there is no gateway in the area of the break-through but only channels of infiltration. In such cases, the situation may become extremely hazardous and much will depend on the individual courage and skill of the troops entering the breach. This is exactly what happened in the Tishkovka action. Tanks and part of the infantry had already moved through, and cavalrymen had to engage the enemy at the very bottleneck of the breach. One guards regiment fought heroically against German tanks and self-propelled guns, which were trying to close up the breach and cut off the Soviet troops already through.

It so happened that the regimental command post was isolated, both from the rear and from the cavalry squadrons out in front. The regimental commander de-

*By cable to The Cavalry Journal from War Department. U.S.S.R., Moscow.



Colonel General Rotmistrov (right) and Lt. General Kurkin, commanders of tank forces participating in the encirclement of German forces at Korsun-Shevchenkovsky.

Sovfoto Radiophoto

Soviet cavalrymen survey German war equipment wrecked and abandoned in the vicinity of the village of Shanderovka, where heavy fighting took place between the Red Army and the German divisions surrounded in the Korsun "pocket."

Sovfoto Radiophoto

Above map shows general area of the Korsun-Shevchenkovsky battle. Extra large dots indicate localities mentioned in article. Shevchenkovsky is on the Dnepr River south of Dnepropetrovski. Korsun is to the northwest, south of Kiev. The fall of Odessa in April completed German rout in the Ukraine and sealed the fate of Germans in the Crimea.

fended the command post with the help of a squadron under Guards Captain Ashkhunov. When the German tanks were pressing forward on all sides, the regimental commander said to Ashkhunov, "Tishkovka means everything for us. The counterattack must be beaten off."

"As long as I am alive and have at least one man at my disposal, the enemy shan't pass," answered the captain.

With the help of the artillery reserve and antitank rifles, some German armored vehicles were knocked out; others were pushed back. At the same time the regimental commander reëstablished communications with his squadrons and organized a powerful attack. After heavy fighting, Tishkovka was cleared, and enemy tanks in the regiment's rear were routed. Artillery, which always gives close support to cavalry, played no small part in the battle. Subsequently, Soviet cavalry engaged enemy tanks on several occasions dismounted and after repulsing their attacks, developed the offensive until the surrounded enemy divisions were entirely liquidated.

MILITARY ART
Of the Red Army

DURING the summer and autumn of 1941 the Red Army held and repulsed the heavy blows delivered by the German invaders, and fought on a huge front under extremely difficult conditions. A treacherous enemy had invaded the Soviet Union. His numerous troops, well trained and equipped with thousands of planes and tanks, plus the advantage of two years fighting experience in Europe, secured certain temporary successes.

The mobilization, concentration and deployment of modern armies requires time. Naturally, it follows that for a country with great expanses of territory, such as the Soviet Union, considerably more time is required for this purpose. That is why, at the outset of the war the first strategic echelons of the armed forces of the Soviet Union had to wage a bitter struggle against an enemy possessing overwhelming numerical superiority and consequently had to fall back deep into the interior of the country.

In the course of its withdrawal the Red Army inflicted heavy losses on the enemy in gruelling defensive operations and wore down and exhausted his forces. It is now universally recognized that no other army and no other country could have withstood the blows that the Red Army and the Soviet Union parried during the early months of the war. The Red Army fought back, mobilized its forces and by the winter of 1941-42, having mastered the art of waging modern warfare, wrested the initiative from the enemy.

Battle of Moscow

In the great battle of Moscow the Red Army brilliantly displayed the characteristic features of its military art of this period. From the standpoint of maneuver and mobility the Germans had at that time the advantage over the Red Army. Superiority in equipment likewise lay with the enemy. For example, the Germans had two and a half times the number of tanks that were at the disposal of the Red Army. Yet the Red Army smashed the Germans at Moscow, and, what is more, smashed them in a difficult and complicated battle of maneuver in exactly that pincer form of warfare of which the Germans prided themselves as being unexcelled masters. The Red Army, having bled and exhausted the enemy in defensive fighting, surprised him by suddenly launching a counteroffensive, in the course of which it routed both flanks of the shock groups with which the enemy had hoped to envelop the Soviet capital.

In the final analysis, the outcome of the battle of Moscow was decided *by the armies held in reserve.* The Supreme Commander-in-Chief, Marshal Stalin, displayed remarkable strategic courage and foresight. On Stalin's instructions, these armies had been formed in good time and concentrated behind the lines on both wings of the front. They were brought into action at the decisive moment of the battle, under the very walls of Moscow, exactly at the time when the Germans, having thrown all of their forces into the line, were getting ready to celebrate their victory. The German attempt to realize a "Cannae" at Moscow ended in utter defeat.

It is a well known fact that the change from defensive fighting and withdrawal to a counteroffensive on a large scale constitutes a most difficult and highly complicated military operation. It is an operation that makes exceptionally heavy calls on the moral fiber and valor of the men engaged in the action and demands high quality leadership on the part of the officers leading and directing the troops. Operations of this nature approach the very peak of the Art of Warfare.

In the course of the war the Red Army was tempered and strengthened by experience. Its organization was improved, and its equipment increased in abundant quantities.

Battle of Stalingrad

The military art of the Red Army reached greater heights, whereas that of the enemy declined, as may be seen from the example of the Stalingrad operation. At Stalingrad the Red Army did not have an all around superiority of forces, but because of its skilful maneuvering it succeeded in securing decisive superiority on the main sectors. From the point of view of risk and profound ideas based on a sober calculation of all the circumstances of the situation, the operational plan at Stalingrad represents a brilliant achievement. The

by Lieutenant General E. Shilovsky, Red Army

choice of the right moment for the going over from the defensive to the offensive and the skilful selection of definite sectors for the main blows against the German flanks guaranteed the success of the entire operation at Stalingrad.

The smashing of the enemy troops on the north and south and the encirclement of the main German forces around the city was accomplished with remarkable speed—a total of five days. Officers and men of the Red Army displayed qualities of high tactical and operational skill. Combined blows by artillery and infantry shattered the enemy's front. Mobile forces, often separated by considerable distances from their own infantry, operated boldly and with great success in the depths of the enemy's defenses. Big changes had taken place in the strength and composition of the mobile formations. They had become more powerful and were equipped with far more tanks than was the case at the time of the Moscow operation. The encirclement of the tactical and operational groupings of the enemy was completed quickly and effectively and ended in the utter rout of the trapped Germans.

Stalingrad was distinguished by a two and even threefold increase in the tempo of the operations. Instead of fighting on definite lines as was frequently the case during the Moscow operation the Stalingrad battle was distinguished by fighting in depth and by flexible maneuver.

Battle of Kursk

A feature of the 3rd year of the war, beginning in the summer of 1943, was the inability of the Germans to embark on an offensive on a wide front. Nevertheless for their July offensive in the Kursk salient the Germans concentrated on a comparatively narrow sector 17 tank divisions and 18 infantry and 3 motorized divisions. This was indeed a powerfully concentrated blow. However, the first round of the battle showed that, notwithstanding the immense quantities of manpower and equipment employed by the enemy, the Soviet defense was stronger than German offensive might. At the price of huge losses the Germans succeeded in penetrating only a few kilometers.

Having bled and exhausted the enemy, the Soviet troops attacked and, after throwing the enemy back to his original lines, began to move forward. As a result, the summer offensive of the Germans was quickly and successfully liquidated. For the first time in the history of World War II the defense had proved so powerful, skilful and stubborn that it was able to defeat an offensive operation by the main forces of the German army without any loss of territory and with terrible losses for the Germans.

This remarkable strategic success was a victory of the first magnitude. Exercising an immediate and highly favorable influence on the general course of the war, it prevented Germany from going to the aid of Italy and contributed to the downfall of Mussolini.

Advance from Orel and Belgorod to the Ukraine

Not only did the Soviet troops kill the German summer offensive. They followed up their success by launching decisive offensive operations.

Notwithstanding the boastful shouting of the Germans about the invulnerability of their defenses the Soviet offensive proved stronger than the German defense. The enemy defeats at Orel and Belgorod proved to be the forerunners of a series of Soviet victories. After heavy and bitter fighting the German resistance was smashed right along a thousand kilometers of front from the Smolensk gateway to the Azov coast.

The Donetz basin, the most important mining and industrial region of the country, was wrested from the enemy and the Ukranian territory on the left bank of the Dnepr was liberated. Smolensk was stormed and captured and Soviet troops crossed the borders of Belorussia.

In the south the important Black Sea port of Novorossisk was captured and the enemy thrown out of the Taman Peninsula. Clinging to the heels of the battered enemy, Soviet troops reached the Dnepr and forced it at a number of points. From the Kremenchug area Soviet troops then penetrated deep into the southern part of the Ukraine on the right bank of the Dnepr.

Russian and German Strategy

It can be said that the military art of the Red Army has advanced in a steadily rising curve. Tempered in battle, it has gained in strength, perfected its methods, and received first-class arms and equipment in ever greater quantities. Stalin's brilliant strategy has acquired ever broader and firmer foundations. In the most difficult and critical moments of the battles at Moscow, Stalingrad, in the Kursk salient and elsewhere this strategy has secured a favorable transformation in the military operations, determined the right time and place for delivering the main blows, has seen to the creation and grouping of reserves, and has determined the victorious outcome of the fighting.

At the same time the war has shown up the defective strategy of the enemy. Hitler's gambling strategy drove the Germans to Moscow in 1941. Obsessed with the idea of winning by means of a sudden first blow, the Germans stretched their communications to the utmost, and at the decisive moment of the battle, the enemy troops found themselves without reserves. In 1942 this same gambling strategy drove the crack German troops into the Stalingrad "sack" and doomed them to their tragic fate. Instead of helping the German troops, the Hitlerite strategy frequently led them into situations which doomed them to defeat. Exactly the same thing was observed during the summer and autumn of 1943.

Flexibility

This war has shown that no single recipe for victory can be used on any and every occasion. The Germans can and will be defeated by the employment of various methods. The best method is that which answers the requirements of the given concrete circumstances and which can accelerate the destruction of the enemy.

The Red Army has already won a number of outstanding victories over the German invaders. In the future, too, it will successfully counterfoil its flexible tactics of maneuver to the stereotyped and text book narrow-mindedness of the Germans. The Red Army has beaten the Germans, and will beat them in the future, by the skill, originality and inventiveness of the Soviet military mind and by its rich operational and tactical combination.

Combating German Counterattacks*

by Colonel N. Dushak

IN combating Soviet attacking and pursuing units, Germans often resort to counterthrusts. Generally they mass strong forces on a narrow sector and strive to forestall encirclement or liberate already surrounded garrisons or groupings. In both instances the Germans, employing masses of tanks, have made fierce counterattacks in an effort to pry open the closing pincers or smash through the ring of encirclement. It has been necessary to weaken such German groupings without delay in order to prevent them from interfering with the offensive.

One Soviet tank unit, moving along a vital main highway, emerged near a railway junction and seriously threatened the flanks and rear of a big German grouping. Seeing the danger, the Germans massed a strong force of 130 to 140 heavy tanks, of which number about 20 per cent were Tigers and Panthers. These they hurled in the flank of the Soviet unit advancing on a wide front. This maneuver was aimed at cutting off the Soviet spearhead.

During the first days of the battle the enemy succeeded in driving a wedge of several kilometers deep into positions of the Soviet troops and emerged on the key highway. Further penetration by German tanks on the highway and neighboring sectors threatened to annul all of the successes previously gained by the Soviet forces. The situation thus created was critical for both parties attempting to annihilate one another from the flank and rear and forced them to fight with their fronts reversed.

Extraordinary measures had to be adopted to cut off the German spearhead. Tanks were naturally the only force that could counter and maneuver or forestall it. Thus a tank unit was called in to prevent the spreading of the enemy tanks.

The commander of the tank unit received an order for action while he was still disembarking and while many machines were still en route. Without waiting for a complete concentration, the unit commander moved forward with only a few dozen tanks. During the night he covered more than 30 kilometers over poor roads and before daybreak intercepted the enemy on the highway. The main force of his tanks and reserves, comprising approximately ⅓ machines, he posted near the road. Smaller groups covering the highway on the flanks were from 5 to 6 kilometers away. Thus the whole of the surrounding neighborhood was under observation and fire. The enemy could evade battle only by undertaking a deep outflanking maneuver which was hardly probable in view of the swampy and woody character of the terrain on the flanks.

As soon as the battle started, the Germans aimed their main blow on the left flank, where the highway was covered by tanks under Lieutenant Pavlov. A small group of the enemy succeeded in forcing a passage and attempted an encirclement of Pavlov's and the neighboring unit. The tank unit, finding itself in a half circle, fought fiercely until evening. Soviet tanks counteracted the maneuvers of the enemy tanks and cut off the motorized infantry, without which the Germans could not derive any benefit from their temporary success.

Simultaneously, new lines of defense were sought and fortification work commenced. When darkness set in Soviet tanks withdrew 4 kilometers and again took possession of key positions. In three days fighting the Germans lost another 38 machines and were considerably weakened. Meanwhile, fresh tank and infantry units concentrated behind the defending units. When the German attacks wore down to where not more than 6 to 8 machines were participating in the assaults, the Soviet troops renewed the offensive. During the first days of the fighting, they had advanced from 25 to 30 kilometers and enveloped a strong German grouping from the flank. To avoid encirclement the Germans finally began a disorderly retreat. Thus we see that in a defensive battle, a tank unit in some cases may constitute an important link in the general plan of the offensive. In such a case, it is not employed to accomplish the main objective, but rather as a means to wear down fresh enemy tank units.

*By cable to THE CAVALRY JOURNAL from War Department U.S.S.R., Moscow, April 26, 1944.

The Dnepr Crossing

by Major P. Milovanov, Red Army

THE Battle of the Dnepr enriched the experiences of Soviet forces in overcoming water barriers. The struggle at those points on the Dnepr, which were strongly fortified by the enemy, is of particular interest. All stages of the epic crossing were complicated and required military prowess.

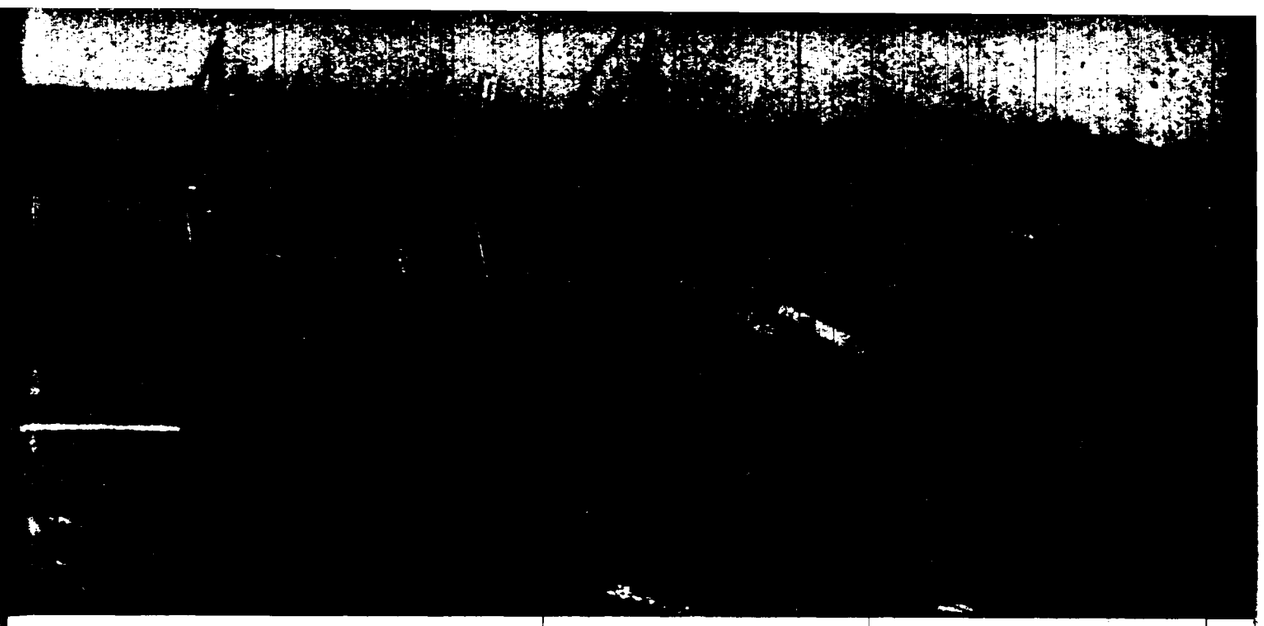
One Soviet division reached the Dnepr at a point where considerable forces of the enemy occupied a number of heights on the right bank. The divisional commander was faced with the problem of organizing the crossing and securing a firm foothold on the opposite bank. There was a possibility of making several rafts and mobilizing a small fleet of rowboats to ferry a group of infantry and a number of guns across the river. However, the Soviet commander realized that this group could not hold out for long on the opposite side. He decided, therefore, to bring up sappers and their engineering materials and with their aid transfer the main forces of the division in the shortest time possible.

The crossing operation began with reconnaissance activities. The division commander, accompanied by his regimental and engineering officers, personally inspected both banks in this particular sector. The narrowest spot of the Dnepr was opposite the inhabited point of Khodorov, situated on the west bank. All approaches to the river at this point were covered with woods. Khodorov itself, as an important junction of highways, was strongly defended by the Germans. The commander selected an area left of Khodorov as the springboard for his forces. There was an island in the middle of the river, which almost ran into a sandy tongue of land on the west bank. Thick bushes and an oak grove lay before steep heights. The bushes and grove permitted the Soviet forces to concentrate secretly for an attack.

While the officers reconnoitered, the Soviet sappers retired to a village on the east bank to collect the boats and build rafts. The boats and four rafts for heavy cargo were ready by dawn of the following day.

The Soviet forces shammed a crossing exactly opposite Khodorov. Meanwhile the chief of staff and the senior engineering officer worked out a schedule of the true crossing. Similar work was done in the regiments. It was decided to transfer two infantry regiments the first night. The third regiment and the artillery would cross over the following night.

Lt. Colonel Lamochkin, the senior engineering officer in the division, reconnoitered the crossing area again with his sapper officers. The landing spot on the opposite bank was selected and the course for the boats to follow in the darkness marked out. Lamachkin appointed his senior sapper officers to take charge of activities on the boats and rafts during the crossing.



Red Army troops cross the Dnepr north of Kiev, October, 1943. This crossing made possible the encirclement of German troops in the Korsun-Shevchenkovsky area.

When night fell, the false crossing was launched. Boats were lowered into the water and the sappers made a great deal of noise with their oars. This distracted the attention of the Germans from the true area of the crossing. The enemy sent up flare rockets and opened fire on the east bank. At the same time, Lt. Colonel Lavrovsky and his men started across the river. Reconnaissance scouts had already reached the opposite bank. Sappers helped to load and unload the guns and haul them onto the sandy bank. The regimental officer remained among his battalions and directed them all the time.

In similar fashion, the second regiment crossed undetected by the enemy. By dawn both infantry regiments with their guns, munitions and food supplies were on the right bank. The operation had been so successful that the Germans only learned of Soviet troops concentrating on the west side of the river when the attack began. This sudden onslaught of the Russian forces, supported by heavy artillery fire, took the enemy by complete surprise. Toward noon the Germans were driven off the heights by the river, and the Soviet infantry battalions entrenched themselves in their new positions. This advance secured a *place d'arme* sufficient for concentrating the division and widening its base of operations on the west bank.

That day Junkers 88 bombers appeared twice, apparently in an endeavor to find and demolish the boats. The Germans, however, could not discover the exact spot of the crossing from the air or the ground. The Soviet sappers had done a magnificent job in camouflaging the boats and rafts which were hidden away before daybreak. The Red Army men, except camouflaged observers, hid in the bushes and the oak grove. The Germans kept firing their guns throughout the day, during which time only one Soviet boat was damaged.

The third infantry regiment, the artillery and several batteries of an antitank unit crossed the Dnepr the second night. The crossing this time was more complicated. The Germans swept the river with their searchlights and fired at the boats and rafts, but the Soviet guns on the east bank silenced most of the German machine guns, located on either side of the captured *place d'arme*.

Thus in the course of two nights the Red Army division crossed the Dnepr at a point where it was 400 meters in width. The Soviet forces lost three men killed and five wounded, several boats and a raft.

Conclusion

The conclusion that may be drawn from this operation is that if the enemy has organized a formidable defense on the opposite bank of a river, the transport of manpower and matériel in *small* groups must be conducted *only* under favorable conditions; otherwise, the operation will fall through. The enemy will rout every *small* group as soon as it reaches the bank.

It is also clear that when weak forces of the enemy occupy the opposite side or the opponent is demoralized by the retreat, the crossing must be carried out without loss of time even though the pontoon units are absent. The water obstacle must be overcome at once before the enemy has time to restore order in his ranks and bring up reserves.

Employment of Tank Destroyers

by Colonel Peter C. Hains, III

IN May of 1940 the German blitzkrieg of France was predicated on fast moving armored divisions coöperating with dive bombers and infantry. The overwhelming successes of the Panzer forces were a challenge to the resourcefulness and inventiveness of military leaders all over the world. The antitank doctrine of the United States Army at the time of the fall of France was contrary to our historical military policy in that it implied a passive defense, rather than offensive action. Only the armored divisions thought in terms of aggressive methods to combat tanks.

General Marshall issued a directive to his staff: "Find a solution to the problem of defense against armored forces—using an *offensive* weapon and organization." As a result of this directive, tank destroyers, armed, equipped and trained for the specific mission of destroying hostile armor, were created. The development of American tank destroyer doctrine has had great influence on the British antitank doctrine, and it is pertinent that both Russian and German doctrine has developed along similar lines.

The first tank destroyer was an improvisation in the form of a half track with a 75mm gun mounted facing to the front. It is interesting that the idea came partly from a French ordnance designer, who related the successful use of an old 75mm gun mounted on a five ton truck. This expedient tank destroyer was adopted in order to make the best use of matériel available, and to provide a substitute for the ideal destroyer, in order that field tests might be instituted and tactical principles evolved at the earliest possible date.

Prior to the development of the tank destroyer, the best known defense against tanks was the use of other tanks to combat them. This was an expensive and unsatisfactory method. In June of 1941, the antitank theory received its first real encouragement when the Germans, employing antiaircraft and other artillery, destroyed over two hundred British tanks near the Egyptian-Libyan frontier.

Another expedient tank destroyer was the 3"-AA gun, mounted on the M-4 tank chassis. This destroyer, known as the M-10, has proven itself in combat, in spite of its limitations.

Concurrent with the development of a self-propelled gun, utilization was made of the towed gun. During this early period, both the 37mm and the 75mm were capable of destroying the tank of their period at close ranges. Since this time, developments in armor have been countered by the development of the higher velocity, heavier caliber, antitank weapon, both towed and self-propelled.

An M-10 tank destroyer, mounting three-inch gun, speeds to the front to engage Nazi tanks. Italy, November 6, 1943.

Signal Corps Photos

A tank destroyer fires as artillery from a dug-in position in the Mignano Sector, Italy. Tank destroyer 3-inch guns like this one are using regular artillery sights. Photo, December 12, 1943.

Principles of Employment

In any discussion of tank destroyers and their employment, the primary mission of the tank destroyer must be kept uppermost in our minds. To quote Training Circular No. 88, WD, 24 June 1943:

"The primary mission of tank destroyer units is the destruction of hostile tanks by fire of a superior mass of guns." This destruction is accomplished by *direct* fire.

Although artillery of 105mm and larger caliber are effective against tanks when direct hits are scored by indirect methods, this method has not proven successful as a means of stopping hostile armor. Training Circular No. 125, 13 Nov. 1943 states, "The primary mission of tank destroyer units is to destroy enemy tanks *by direct gun fire.*"

In analyzing tank destroyer doctrine and discussing the principles of their employment, one should first consider the capabilities and the limitations of the weapons and equipment of these units. Destroyers are broadly divided into self-propelled and towed guns. These guns are high velocity, flat trajectory weapons, capable of penetrating all known armored vehicles at normal battle ranges.

There is available ammunition of various types, including HE, AP, explosive APC and Smoke, to accomplish the various missions. The gun is characterized by great accuracy as a direct fire weapon owing to the small dispersion of its shot group, excellent direct fire sights and an improved power traverse.

Equipment

Since the first inception of the tank destroyer idea, steps have been taken consistently to develop and produce a mount with specific desired characteristics which would include superior cross-country mobility, sufficient flotation to permit employment in varied types of terrain, and speed equal to or greater than that of the opponent that it is designed to destroy. The expedient M-3 with the 75mm was unsatisfactory. The expedient M-10, while possessing these characteristics to a greater degree, failed to possess them to a sufficiently high degree.

The prime mover for the towed gun is, at present, the half-track. This is, admittedly, an unsatisfactory expedient, as in many cases the half-track, cannot negotiate terrain satisfactorily, or must do so at very slow speeds.

The crew of a towed gun goes into action during training. Towed guns are vulnerable when changing position, because they lack the armor and maneuverability of the self-propelled gun. Best protection is afforded by digging in.

One point in connection with the speed of the self-propelled destroyer should be emphasized. This speed represents reserve power. Speed should be utilized only when conditions require rapid movement. Normally, destroyers in contact with hostile forces will move *very slowly*, in order to reduce dust and avoid attracting attention. However, when the occasion arises, it is capable of great changes of pace, permitting rapid movement to threatened areas; permitting quick changes of position when discovered by the enemy; and permitting maneuver to stop hostile armor.

Tank destroyers are provided with light armor as a protection against small arms, machine guns and fragments. Tank destroyers should never attempt to fight as tanks, since their armor is not designed to withstand antitank weapons. It is interesting to note, however, that the M-10 destroyer has armor characteristics which make it comparable to the German Mark III and Mark IV tanks, both of which have proven themselves extremely capable in their rôle.

In discussing equipment, no reference has been made to the auxiliary weapons and the reconnaissance and general purpose vehicles, since they are similar to those of other arms. In summation, attention is called to the requirements laid down for the tank destroyer as a weapon. To quote General A. D. Bruce, who commanded the Tank Destroyer Center from its inception until May, 1943:

> "What we are after is a fast moving vehicle, armed with a weapon with a powerful punch which can be easily and quickly fired, and in the last analysis, we would like to get armored protection against small arms fire so that this weapon cannot be put out by a machine gun."

Organization

In order to understand the employment of tank destroyers, it is necessary to know something about the organization of these units. The primary tactical unit is

the battalion. Tank destroyers should normally be employed *by battalion*. Admittedly there are situations which indicate employment of smaller tank destroyer units, but the temptation to do this must be carefully analyzed by the higher commander. The employment of smaller units seldom gives good results and frequently fails.

The battalion includes a headquarters company, and three gun companies and attached medical personnel There is a difference between the towed and the self-propelled battalions. The towed battalion includes in its headquarters company, two reconnaissance platoons. The self-propelled battalion includes a separate, organic, reconnaissance company of three platoons and a pioneer platoon.

There are considerably more guns in a tank destroyer battalion than there are in a field artillery battalion.

Group and brigade headquarters are provided in order to facilitate the tactical employment of massed tank destroyers. A group is suitable for assignment to a corps, and a brigade is appropriate for the tactical employment of a number of groups against a strong armored force. A recent Army Ground Force directive prescribes that groups be used *tactically*, as they are not designed, organized nor equipped to perform the functions of administration and supply.

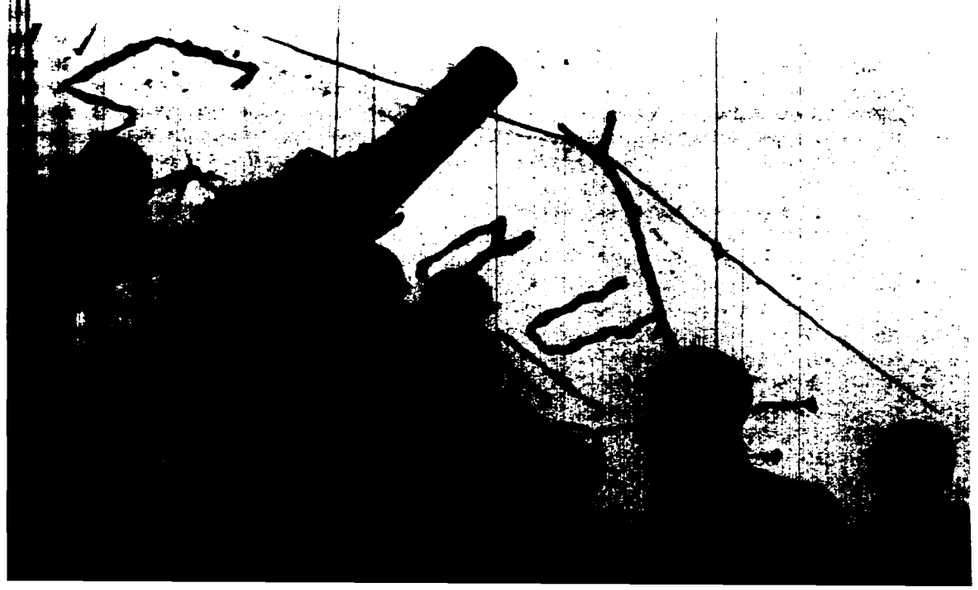
The platoon is the basic fire unit of the destroyer organization. The platoon includes a small security section, mounted in lightly armored and unarmored vehicles, whose mission is the close-in defense of the guns against infiltration by enemy infantry. The platoon leader assigns position areas and sectors of fire to his guns, coördinates these positions within his mission, and controls the time of opening fire, the selection of targets, the distribution of fire, and the occupation of alternate and supplementary positions. The guns in a platoon should always be placed so as to secure depth within the platoon position, to obtain flanking fire with a part of the guns, to cover the dead space of one gun by fire from another, and to obtain surprise and deception in opening fire.

Employment by Higher Command

In discussing the employment of tank destroyers from the standpoint of the higher commander, their missions are divided into two general categories: the *primary* mission—the destruction of hostile tanks by direct gun fire, and the *secondary* missions, which are numerous.

Secondary missions include the employment of the guns to reinforce or supplement those of the artillery, *when it can be foreseen that they will not be needed in their primary rôle*. They may be used to reduce prepared positions, concrete emplacements and machine gun nests by direct gun fire. At night, they are extremely effective in knocking out machine guns, located by observation of the source of the tracer elements. They may be employed on roving gun missions, and are effective in both defense and assault of beaches.

In general, self-propelled battalions are more suitable for attachment to armored divisions, and towed battalions for attachment to infantry divisions. *This is not a rule*, and frequently the reverse may be the case. When available in the theater, one or more battalions, in addition to those attached to divisions, are kept under corps or army control to provide a mass of tank destroyers to meet the hostile armored attack, as it develops. If some destroyers are to be emplaced initially to cover the deployment of the mobile destroyer reserves, it is preferable to emplace the towed gun and use the self-propelled gun for the maneuvering force. Destroyers held in mobile reserve, whether employed on a secondary mission or not, should push vigorous reconnaissance for routes to and position areas in the probable localities of employment on the primary mission. For this reason, battalions used as artillery are



A tank destroyer crew receives instructions before proceeding into battle. The missions of tank destroyers are divided into two general categories: the *primary* mission — the destruction of hostile tanks by direct gunfire; and the *secondary* missions, which are numerous. In general, self-propelled battalions are more suitable for attachment to armored divisions, and towed battalions for attachment to infantry divisions.

not attached, but fill the traditional rôle of reinforcing artillery. The employment of towed guns differs from the employment of self-propelled guns, primarily in that towed guns have less battlefield mobility and less armor protection. However, they are more easily concealed on the battlefield.

The decision to employ tank destroyers rests with the higher commander. The decision of *how to accomplish the mission assigned*, rests with the tank destroyer commander. Tank destroyer commanders are always prepared to make recommendations and submit plans for their employment.

To quote from Second Orientation Conference at Fifth Army Headquarters, 14 November 1943:

> "To obtain the best results the commander should assign the Tank Destroyer unit a mission within its capabilities, then let the unit commander determine the best way of accomplishing the mission. The trained tank destroyer man is best qualified to determine the method and means to get the job done."

Again, from Training Memorandum, Headquarters, Fifth Army, 20 October 1943:

> "The same errors made in the Tunisian Campaign are being made in the employment of tank destroyer units in this theater. Tank destroyer units are employed without regard to tactical unity. Guns, sections, platoons, and companies have been sent on missions and otherwise disposed, without consulting or notifying the appropriate commanders. Tank destroyers have been ordered to assault frontly by movement, enemy gun positions, and in one case, a town held by the enemy. In another instance, a battalion, *without the knowledge of its commander*, was disposed as follows: one company on the left flank of the unit, another company on the right flank, and a third sent on an amphibious operation."

TD Reconnaissance

Hostile armor usually holds the initiative, at least locally, and, for the time being. Tank destroyers gain the advantage through thorough reconnaissance, preselection and preparation of positions, and routes of approach thereto. Complete and thorough plans must be made, and their revision is continuous.

To insure the deployment of tank destroyers in preselected firing positions at the proper time, the reconnaissance element is vital, and to quote Training Circular 88, *"should not be detached for other purposes."* These reconnaissance elements select the routes over which the battalion must pass to reach the various areas of employment. They indicate the general position areas for the gun companies, based on information of the enemy's movements, a thorough terrain study, a knowledge of the organic antitank defense, and the mission assigned to the battalion. After the position is selected, reconnaissance to gain contact with the armored elements should be vigorous. Tank destroyer reconnaissance, once having gained contact with the hostile armor, must maintain this contact and keep the battalion informed of the developments in the hostile situation. During the fire fight some reconnaissance elements will remain in contact between the hostile armor and the friendly guns, while other portions locate the flanks of the armored thrust. When tanks are stopped by direct gun fire, reconnaissance continues or reëstablishes contact with the hostile armor, prepared to select new routes and position areas from which the gun companies may continue the fire fight. This is pointed out in order to show the needs of the destroyer battalion for its organic reconnaissance. All too often in the past, tank destroyer reconnaissance has been diverted to other uses. When this is done, it should be with a clear understanding of its serious adverse effect on the proper employment of the gun companies.

Towed and Self-Propelled Guns

In general, the towed gun is best fitted for employment with infantry divisions, or in situations where it may be dug in and emplaced initially. Its lack of mobility must be compensated for by protection afforded by digging in, and by painstaking concealment. It is preferable to emplace towed guns under cover of darkness or smoke. They are very vulnerable when changing position, because they lack the armored protection and the maneuverability of the self-propelled gun. Their fires should be used to reinforce and deepen those of the organic antitank weapons. When towed guns are held mobile, position areas must be selected and fully prepared, to include such details as the preparation of range cards, and these positions must be occupied prior to the near approach of hostile armor.

Normally, the missions of a towed battalion will be those of strengthening the existing antitank defenses, protecting flanks opened to hostile armored attack, protecting artillery position areas and rear installations, constituting a mobile reserve against a counterattack and employment on their secondary missions, where the enemy situation permits. Where the front is wide and the road net poor, there will be a temptation to commit all of the towed guns initially. This must be balanced against the desirability of retaining a portion of the battalion mobile so as to permit the massing of the maximum number of guns against hostile armor, and to avoid leaving guns emplaced where no tank attack develops.

Self-propelled guns are well suited to employment with armored divisions and to furnishing mobile elements to infantry divisions for the destruction of located tank thrusts. They are capable of being dug in, terrain permitting, or of occupying cover positions adjacent to their fire positions. In the latter case, the fire position is occupied at such a time as to avoid disclosure, but after the direction of the hostile armored thrust is determined.

Routes to and position areas for self-propelled guns

The towed gun, well fitted for employment with infantry divisions or in situations where it may be dug in and emplaced initially, should be well concealed. Movement is preferable under cover of darkness or a smoke screen.

must receive the same careful preselection and preparation as those for towed guns. Self-propelled guns may occupy alternate or supplemental positions under fire, and are especially suited for use as roving guns or roving batteries. When employed on a secondary mission, self-propelled guns may revert to the primary mission with more facility and speed, and are particularly suitable for employment against unexpected flank attacks or counterattacks.

Opposing Armor and Terrain

Before discussing the tactical employment of tank destroyers with other arms, it is necessary to consider the principles under which the opposing armor will operate.

Generally, there are three methods of attack.

Armored attacks may be preceded by infantry, whose objective is the destruction of the hostile antitank weapons.

In situations that are unfavorable for infantry to attack ahead of armor, the tanks attack in the assault waves, followed by infantry. The mission of the tanks in this situation is to place the infantry on the objective with minimum losses.

The third method is to combine infantry and tanks in the assault waves.

The method to be used by the enemy cannot be determined in advance, and it is unsafe to assume that he will follow the same pattern in succeeding operations. The antitank defense against either an attack or a counterattack by hostile armor, therefore, must be fabricated so as to meet all three of these conditions.

How does a commander determine the number of tank destroyer battalions to employ in a given situation?

First of all, there is the ever present question of evaluation of the terrain. Terrain should seldom be classified as tank proof, although it may be proof against large armored attacks. The guiding principle in determining the number of destroyer battalions required is, *that sufficient tank destroyers must be massed to meet the enemy's armored capabilities.* G-2 must discover and keep track of the enemy armored units available for operation in the particular theater at any given time. I have been asked on occasions to state the frontage that a platoon of tank destroyers should be capable of defending in order to give a measure of the number of platoons required in a given situation. This method of employing tank destroyers is fallacious, and will lead to disaster. *Sufficient tank destroyers must be massed to meet the enemy's armored capabilities.*

Employment in Antitank Defense

Tank destroyers reinforce and deepen the organic antitank defenses of the infantry division. The mission of the organic antitank defense is the local protection of the troops and installation. The mission of the attached antitank elements is the protection of the command or area as a whole. In order to be effective, all antitank means must be integrated and coördinated carefully. This is a responsibility of the higher commander, but, in turn, it is likewise the responsibility of each lesser commander within the limitations of his mission.

There are two means of antitank defense, passive and active. They must be integrated closely in order to be effective. Among the passive means are reconnaissance, a tank warning system, choice or selection of terrain, cover and concealment, utilization and improvement of natural obstacles, and the construction of new obstacles, principally mine fields.

Our rôle today is principally that of the attack, and our defense against hostile armor will be directed pri-

marily towards stopping and destroying hostile tank counterattacks. In order that destroyers may be massed to meet hostile counterattacks, it is necessary to have adequate information as to the probable strength and direction of the enemy attack.

Since information regarding the hostile armored thrust will be available only after the enemy has committed himself, an adequate tank warning system must be provided. The warning net should be coördinated through the higher headquarters, and subordinate units must at all times have stations open to receive the flash warning message. Unfortunately, training and coördination in the utilization of the tank warning system has lagged. G-2 of the army must keep track of the strength and location of the various enemy armored elements in his theater, and this information must be furnished to the lower units. In Africa we frequently found that our first knowledge of hostile tank attack came from local sources, after the Germans were in the immediate vicinity.

At Faid in February, 1943, German armor amounting to three divisions concentrated over night to make the drive to Kasserine. Even after the first day's battle, the higher command seemed convinced that not more than fifty tanks were capable of being present in the area. Subsequent events indicated that upwards of 200 were present.

At Faid in April, 1943, it was known to the higher command that German forces were withdrawing. However, the combat command that launched the attack to take those passes, lacked this knowledge, and only discovered it when the attack met with little or no resistance.

The choice of ground may be forced on us, but every measure must be taken to improve and strengthen the antitank defense system, in order that local successes by hostile armor will strike against successive opposition and the counterattack be broken and destroyed. This dictates an organization in depth.

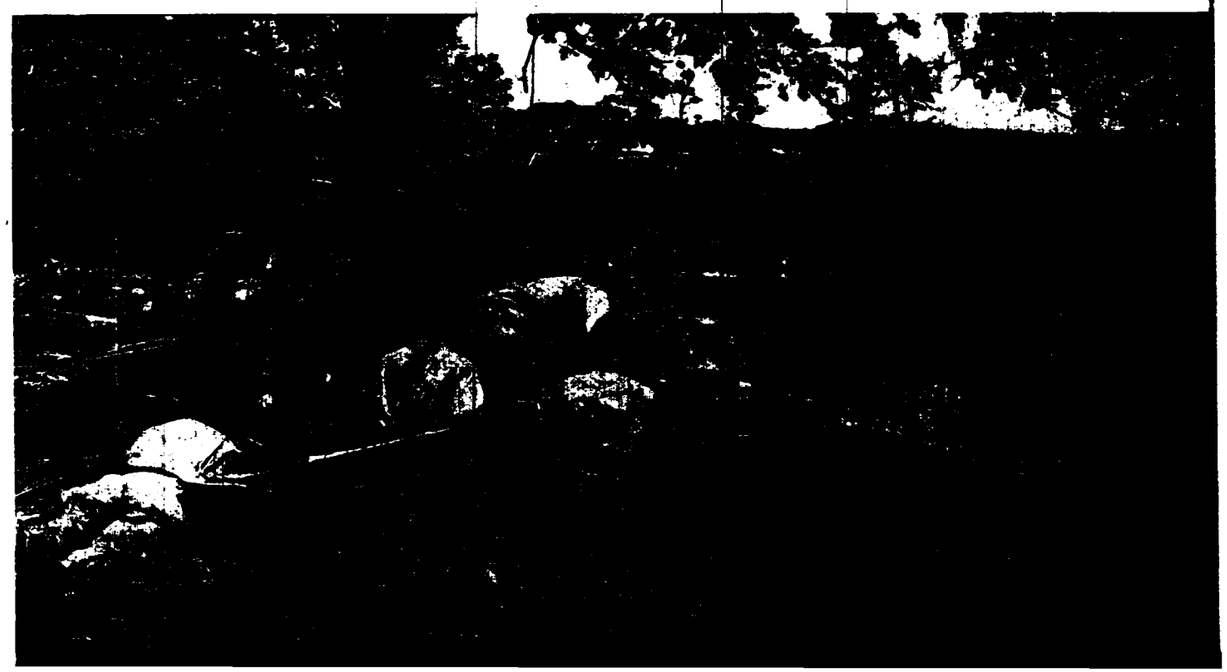
The army or corps commander will indicate the general line or area of the barrier system. Mines and obstacles are then used to strengthen the natural barriers and canalize the attack. The intelligent use of dummy guns, faked detonations and flashes, roving guns, and other deceptive means, assist in directing the hostile tank approach into desired channels. The organic antitank weapons of the division, with the attached antitank weapons and aggressive counterreconnaissance, are the active means for antitank defense. German tank attacks are preceded by thorough reconnaissance, and this must be countered with effective counterreconnaissance.

What organic weapons has the infantry division available for its own use?

Usually, the infantry division is reinforced by one or more attached units, including tank destroyers. The defense calls for a cellular disposition of battalion areas organized for all-around defense. Often the organic antitank guns available to the infantry regiment may not be sufficient to strengthen all of the battalion defense areas, and in this case, some of the attached tank destroyer guns, preferably towed, must be emplaced initially to augment the organic antitank defenses.

The advantage of keeping the tank destroyers mobile is that it permits the battalion to mass its guns against the enemy, and if the enemy leads off with infantry

Towed guns should be committed sufficiently ahead of the attack to insure their being carefully dug in and well concealed, and in time to permit detailed coördination between infantry antitank weapons and the tank destroyer guns.



and is successful, the mobile guns will not be destroyed before they have a chance to accomplish their primary mission of destroying tanks. On the other hand, towed guns run a strong chance of being immobilized or destroyed by fire, while reaching their preselected fire positions, particularly if these positions are well forward, or where there are insufficient obstacles to slow down the enemy attack. Towed guns should be committed *sufficiently ahead of the attack* to insure their being carefully dug-in and concealed, and to permit detailed coördination between infantry antitank weapons and the tank destroyer guns.

The tank destroyer doctrine is: If the forward infantry units are not protected by obstacles, to such an extent that their organic means are sufficient to prevent them from being overrun by tanks, then some, or all of the towed tank destroyer guns must be emplaced well forward to protect the infantry. When obstacles are such that the forward infantry can protect itself with its own guns, then tank destroyers are best held mobile. Usually, a combination of the two methods will be used, part of the tank destroyers being emplaced initially, in the forward area, while the remainder are held mobile. When a towed battalion is divided by placing the guns within the defense areas, the closest type of coördination, and even attachment, is indicated.

Employment in Maneuver

The doctrine for the employment of the self-propelled battalion is different. In most situations it will be held mobile, prepared to move to any one of a number of preselected, reconnoitered, *prepared* areas. When the terrain is such as to prohibit lateral maneuver, the self-propelled battalion may have to be split, and the lesser part attached to the unit in whose area it operates.

The division must insure close coördination between the tank destroyers and the supported troops. The division commander assigns a mission which integrates the fire power and the tank destroyers with that of the rest of the division. The tank destroyer commander completes the coördination by reconnaissance of the possible localities in which he may be employed, and by studying the dispositions and plans of the various defense area commanders, insuring that his own plan fits the plan of the troops already on the ground. Energetic personal contact between commanders is vital for obtaining final coördination.

An armored division has more antitank protection than an infantry division. Tank destroyers operating primarily with armored divisions, stop and destroy hostile armored counterattacks, in order that the division may continue its assigned mission.

Tank destroyers usually guard the flanks of the armored division to prevent their being turned by hostile armor. When the enemy may be expected to accompany his tank attack with infantry, it is advisable to form an armored infantry—tank destroyer team to meet it.

Tank destroyers frequently strengthen the armored infantry-armored artillery base of fire, to facilitate the maneuver of the tank elements of the division, and to cover a rally position for unsuccessful tank attacks. Towed guns may follow the tanks well forward for this purpose, being emplaced under cover of the tank attack and dug in. They should be closely supported by armored infantry.

At times, a large armored counterattack is not an enemy capability, and he will use his available tanks as antitank guns, roving guns and in local counterattacks against our armored infantry. Tank destroyers must be well forward to destroy these hostile tanks, and located antitank guns, by direct fire.

Enemy armored counterattacks against units reaching their objectives will come swiftly and with little warning. Destroyers must arrive on the objective quickly and protect the reorganization of the friendly armor. Reconnaissance is pushed well forward at this time, and the tank warning net must be particularly alert.

Although tank destroyers in principle hold ground against advancing hostile tanks, when tanks are defeated, intelligent use must be made of fire and movement to destroy the enemy tank forces.

As Reinforcing Artillery

Tank destroyers may be employed on a secondary mission as reinforcing artillery, when it can be foreseen that they will not be needed in their primary rôle. It is for the higher commander to decide when to employ destroyers as reinforcing artillery.

The capabilities of tank destroyers as reinforcing artillery are as follows: One destroyer battalion greatly increases the artillery fire power of a division; the effective radius of burst of the high explosive ammunition is rated at 30 yards. While heavier artillery will inflict more casualties, it has been our experience that the German 88mm high velocity gun neutralizes a position as completely as a 170mm. The lack of warning of the high velocity shell compensates for the heavier detonation of the larger guns, at least as far as morale is concerned.

The added range materially deepens and thickens the zone of artillery fire. Interdiction, harassing, and preparation fires can be laid down by tank destroyers in areas beyond the range of the 105 battalion. The flat trajectory increases the probability of ricochet fire. The tank destroyer reconnaissance company may often supplement the artillery OP's. In fact, on many occasions in Tunisia by communication relays, tank destroyer reconnaissance platoon leaders adjusted fire for artillery battalions. So much for the capabilities.

The limitations of the tank destroyer when in the rôle of reinforcing artillery are personnel, matériel and ammunition supply. There are relatively few enlisted men in a tank destroyer company as compared with the

personnel of a field artillery unit of the same number of guns.

The flat trajectory of the tank destroyer gun makes it necessary to find position areas with low masks and for the same reason, much larger areas are dead space than for the 105mm howitzer. The maximum elevation of the tube gives less than the maximum range for the gun unless the spades or rear of the motor carriage is dug in. There is no angle of site drum, and angle of site must be added or subtracted from the quadrant elevation.

There is no range or elevation drum, and the gun can be laid for range only with the quadrant, which is slower. There is no compensation for cant on the self-propelled gun, and the ground on which the vehicle rests must be leveled. In making a decision for the employment of tank destroyers, *keep this fact in mind.* The life of the tube compared to normal artillery, is short. As a consequence, unless the reduced charge ammunition is available, tank destroyer guns that have fired an excessive number of rounds can be expected to be incapable of the proper performance of the primary mission—the destruction of hostile tanks with direct gun fire. The danger of excessive firing occurs when indiscriminate or extravagant indirect fire missions are assigned. There is no grave danger of the tubes wearing out in their direct fire rôle. Finally, flash and muzzle blast of the tank destroyer gun is considerably greater than that of the field artillery pieces.

Training Circular No. 125 states, I quote:

> "When the need for employment of tank destroyer units in a secondary rôle cannot be foreseen in sufficient time for the unit concerned to haul its ammunition, the higher commander must allot sufficient trucks from other sources."

It is expected that normally the indirect fire mission will be anticipated sufficiently in advance to permit dumping of an ammunition reserve at the position. But if this is not the case, normal requirements cannot be met with the transportation available.

When the decision to employ tank destroyers is made by the higher commander, the tank destroyer company will normally reinforce the fires of a field artillery battalion.

The reinforced field artillery is charged with the following responsibilities: Designation of the company position area and approximate direction of fire; determination and designation of at least one place mark in the company area to include, coördinates, altitude, and direction; target area survey to include location, altitude, and identification of a base point, both on the fire chart and on the ground; execution of fire direction by designating targets by coördinates, altitude, ammunition allotted, and time of firing.

Tank destroyers, when acting as field artillery, are trained to fire scheduled or prearranged fires. In order to accomplish this, the tank destroyer company organizes a fire direction center and survey party. The tank destroyer fire direction center is not expected to lay down immediate fire on targets of opportunity. Neither does it mass the fires of the company in the sense that a field artillery fire direction center does. Its only requirement is the calculation of data for prearranged fires. Weather corrections are determined entirely by registration, and the use of metro data is not contemplated.

The communications for this set-up are principally telephone.

Alternate radio communication between the destroyer company and the artillery CP is provided.

Types of fire are limited to percussion and ricochet. Fire for effect is accomplished at center range only. Any portion of the target not neutralized is covered by another sensing.

All officers are being trained in forward observation and axial precision methods.

Other Secondary Missions

Secondary missions also include the reduction of concrete emplacements and field fortifications by direct gun fire. Accurate, effective fire can be placed on hostile machine guns at night, by laying on the source of their tracer elements. Self-propelled destroyers are well suited for this purpose and for the rôle of the roving gun.

In Tunisia in March, the 1st Armored Division was stopped east of Maknassey by prepared fortifications across high ground at the end of a long valley. During this stabilized situation, the — Tank Destroyer Battalion moved one M-10 into a wadi on the infantry flank, and located a good OP overlooking the enemy rear. By taking advantage of a forward position, and the greater range of the 3" gun, it successfully harassed German supply installations and destroyed, by actual count, 48 enemy vehicles in an area beyond our artillery range.

Conclusion

It should be stressed again that the primary mission of tank destroyer units is to *destroy enemy tanks by direct gun fire.* They are organized and equipped for that specific purpose. Secondary missions should not be undertaken at the expense of maximum proficiency in the execution of the primary mission, nor should training for secondary missions be undertaken until proficiency in the primary mission is attained. The performance of secondary missions is contingent upon three factors: training of personnel; battlefield maintenance and timely replacement of matériel; and tactical dispositions on the battlefield to meet all enemy armored capabilities. To be effective against enemy armor, an adequate tank warning net must be maintained. Continued vigorous reconnaissance by tank destroyer units must be insured, and sufficient tank destroyers must be massed at the proper place in sufficient depth and time to meet the enemy armored thrust.

Radio Pack for Reconnaisance Patrols

*by 1st Lieutenant Paul E. Koefod, Cavalry**

AUTHOR'S NOTE: The development of the pack frame described in this article was made possible by the backing received from the Reconnaissance Section of the Department of Tactics, The Cavalry School. My thanks are due those members of the Staff and Faculty who lent assistance in the project and to Mr. R. A. Gill, supervisor of the carpenter shop.

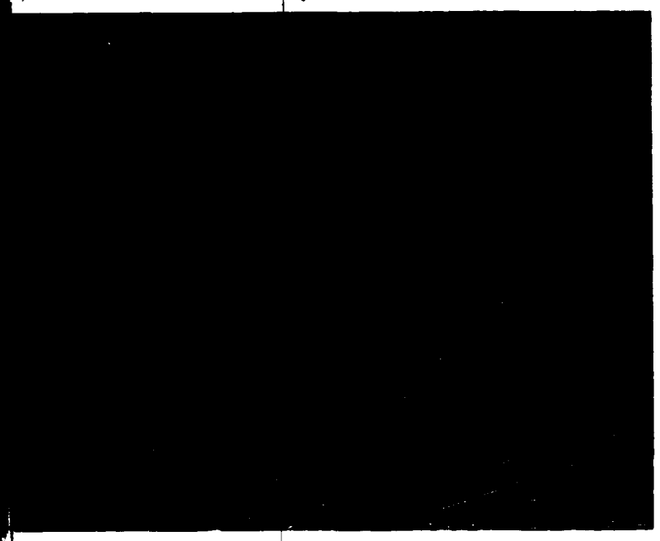
THE nature of reconnaissance in our far-flung combat areas is a matter of considerable interest to most cavalrymen. In discussing various reconnaissance techniques, many officers and men returned from the several fronts have described the difficulty of transporting the 510 radio on patrols and to OP's. Some have carried the set like satchels on long marches through desert, mountain and jungle. Others have slung their sets on poles borne on the shoulders of two-man teams. All agree that the toil of these methods is exhausting.

On dismounted patrols during training, it has been noticed that the officer lugging the 510 radio set was invariably slowed by fatigue and the unwieldiness of his load. The speed of the entire patrol was thus reduced to his pace.

Experience on canoe trails back in peace-time summers prompted the question: Why not a pack frame for the radio? A pack frame would facilitate carrying and leave a man's hands free for other things.

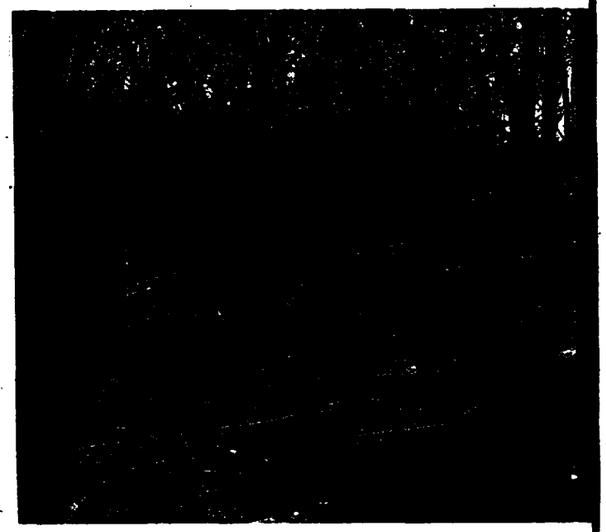
*C.R.T.C., Fort Riley, Kansas.

Shoulder strap adjustment. Load is balanced, hands free.



A request for permission to make a model pack frame in the shop at Kansas State College was granted. The following demonstration of this model at the Cavalry School secured the facilities of the carpenter and saddle shops for further experiments. With the assistance of Mr. R. A. Gill, a series of experimental pack frames led to the development of the two types illustrated.

Though designed primarily for transportation of the SC Radio 510 on dismounted patrols, these pack frames are not limited to this use. Rations, ammunition and a variety of equipment can be lashed to and transported by means of them. Their design is such that troop carpenters can copy them with tools and materials at hand. Materials are noncritical, and the maximum cost, if all materials be purchased, is approximately $2.00.



The two-man pack. Both men can run or crawl . . . and fire from any position when wearing the pack frame.

The type No. 1 pack frame was designed for two-man loads on distant missions. Extra rations or ammunition can be lashed to it, in addition to either unit of the radio. The man using it has both hands free and can make a ten or fifteen mile march without discomfort. It is so balanced and placed upon his back that a man can run or crawl with it. He can fire in the prone, kneeling or off-hand positions with the pack frame in place. Neither unit need be removed from its frame for operation of the set. The units can be connected as soon as placed side by side. The station can be on the air within seconds.

The type No. 2 pack frame was designed for one-man loads on shorter missions. However, its use in two-man loads provides a large space for rations and other supplies needed by patrols out for long periods of time. The man carrying has both hands free, and a "tump line" (head harness) is provided to make carrying easier. When observing, firing, resting or operating the set, the carrier has only to slip the tump line onto his chest to provide freedom of movement for his head. He can also rest his neck in this fashion, carrying the entire weight by the shoulder harness.

Operation of the radio as a "walkie-talkie" is an especial advantage of the type No. 2 pack frame. In addition, only one man is burdened with a load. The units of the set are connected when placed on the pack frame, and the mike and phone combination can be carried in the pocket, plugged in and ready. The station can be opened by extending the aerial and switching on the power. To place the aerial in a vertical position, if necessary, the operator-carrier need only bend forward slightly at the hips.

Hardwood (ash, hickory or oak) provides the best materials for the frames. Softer woods are not recommended, for they will not stand rough use or heavy loads. Nonrusting screws should be used to hold the frame together and for attachment of the harness. Web belting (2") provides the cheapest and best shoulder and head harness and lashing straps. Tongueless buckles should be used to provide adjustment of shoulder and head harness and for fastening the lashing straps. Such buckles are most easily adjusted and will not slip. Four-inch wide strips of heavy canvas stitched to triple or quadruple thickness make comfortable form-fitting back rests. These back rests transmit the load to the back, permitting no part of the load to touch the body. The resultant air space provides for circulation between the body and the load. For specifications and design, see the accompanying worksheet and illustrations.

Experiments and experience have proved the practicability of these pack frames. They can be made easily by unit personnel and they will speed and simplify the work of reconnaissance units everywhere.

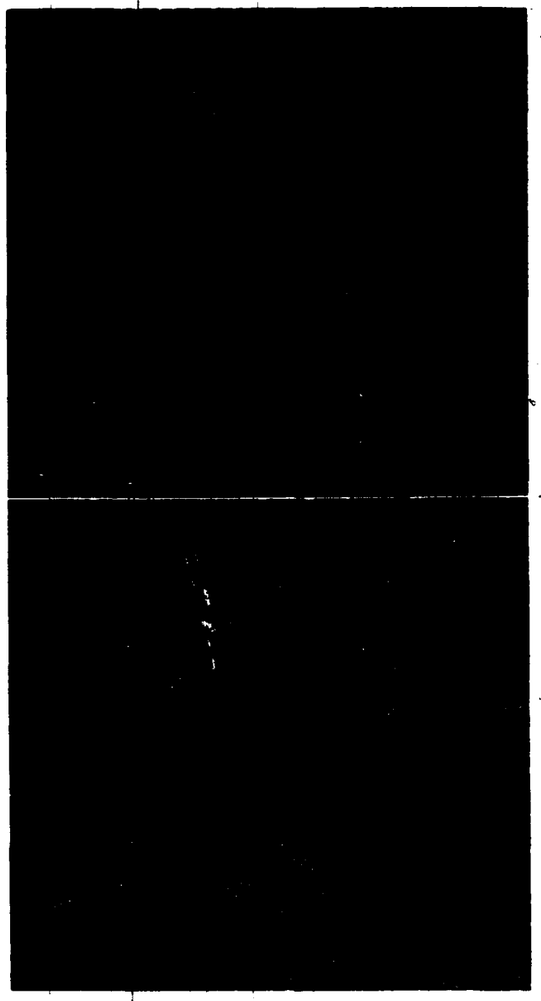
(EDITOR'S NOTE: Packboard, Ply Wood, was standardized for the Army on 18 December 1943, and is now issued to infantry, engineer and medical units. The Cavalry Board is investigating the use of the standard packboard by Cavalry units.)

ASSEMBLY OF KOEFOD PACK FRAME

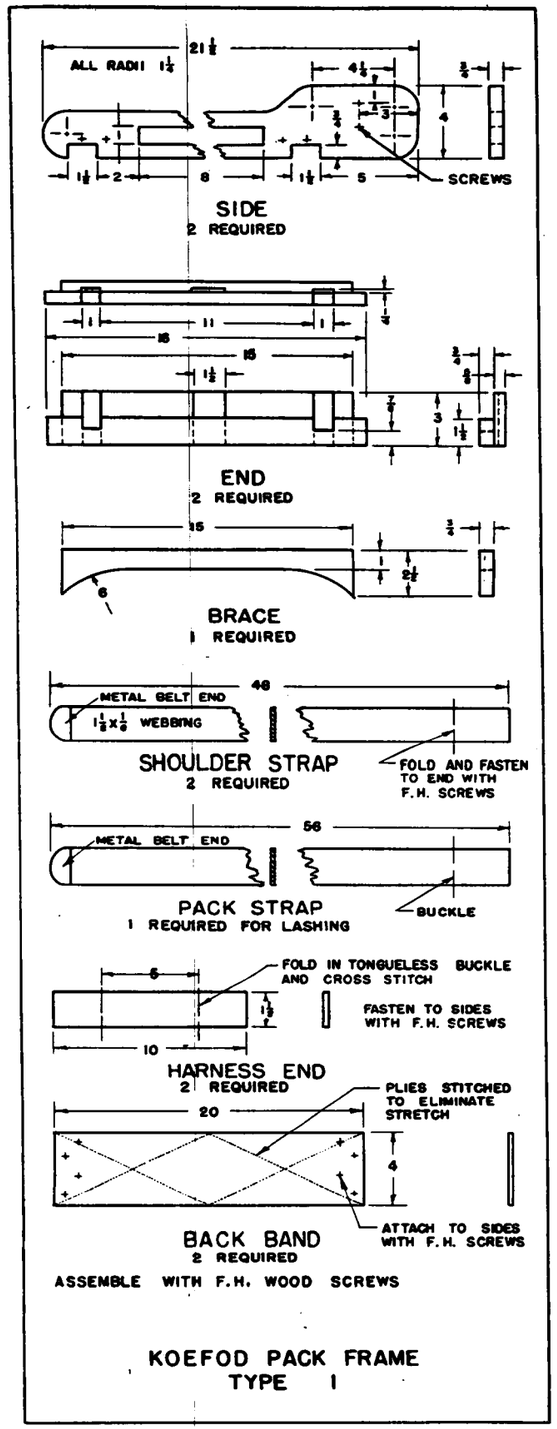
TYPE NO. 1: Cut side members and end cross pieces to specifications and assemble by means of two 2½" No. 7 flat-head screws in each end of cross pieces. While assembling, adjust frame to square. Cut and notch spreaders as specified and assemble to undersides of end cross pieces by means of three 1½" No. 7 flat head screws in each. Ends of spreaders are attached to side members by two 2" No. 7 flat head screws. Cut arch brace and assemble between broad ends of side members as indicated by means of two 2" No. 7 flat head screws in each end.

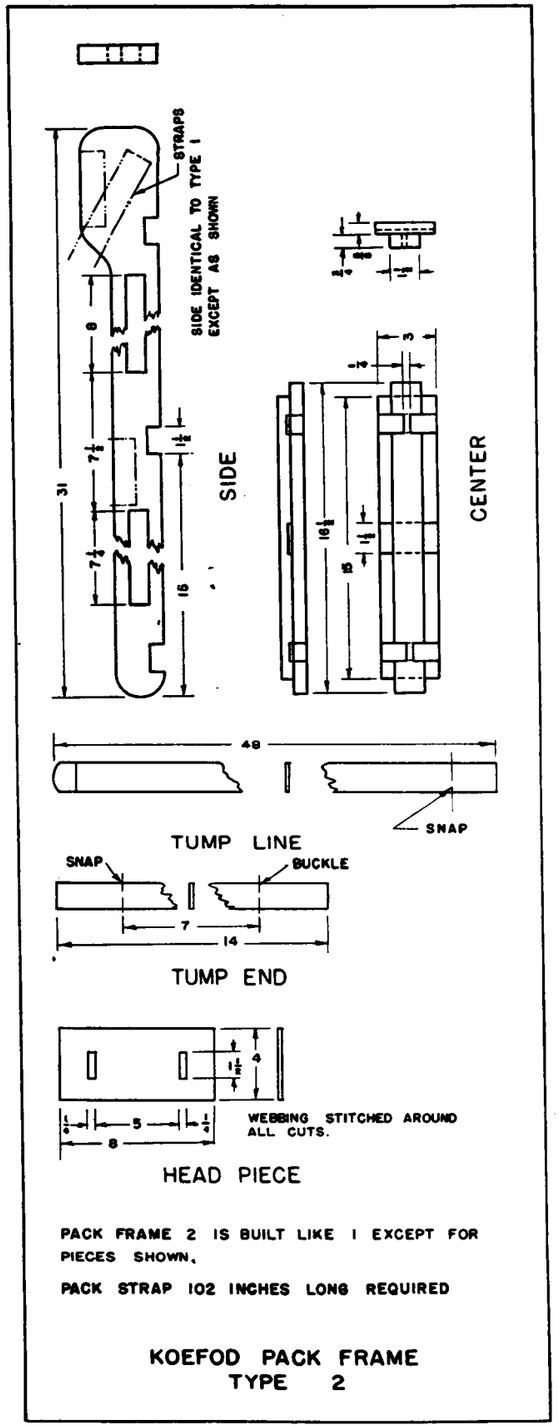
Drill all screw holes and countersink. Use rust-resistant screws and lubricate screws with beeswax.

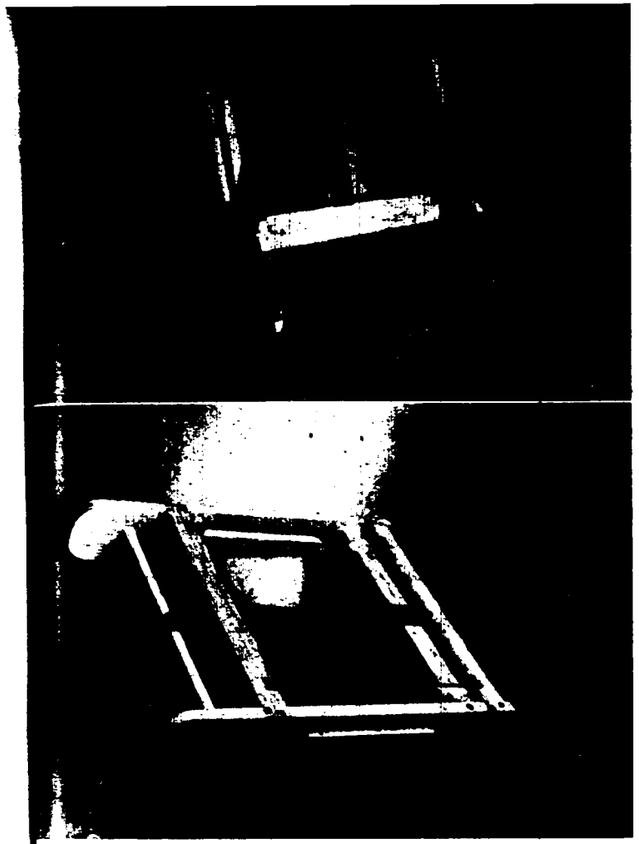
Fold ends of shoulder straps under and attach to center of under side of top spreader by means of four 1" No. 7 flat head screws in each. Fix ends to spreader so that shoulder straps extend outward from each other



***Top.* One-man pack. Load is carried high and well balanced. Attachment and adjustment of tump line are shown. *Bottom.* Tump line is dropped to chest during transmission and for rest. Station can be put on the air quickly.**







Type No. 1. Two-man pack. Back of frame shows web back bands and adjustable harness. Note attachment. Front of pack frame shows recess for set unit and method of attaching lashing strap. Lashing strap is inserted through slots, buckle end to top.

on line from center of spreader to 1″ inside top ends of side members.

Cut and stitch back bands as specified and fasten to outsides of side members with ¾″ flat head screws by folding bands over side members 1″ as indicated. Stretch back bands tight.

Fasten buckle shanks of shoulder harness to outsides of broad lower ends of side members at angles as indicated. Use four ¾″ No. 7 flat head screws in each.

The lashing strap is inserted through the slots in the upper and lower spreaders as indicated, buckle end to top.

Place either unit of the SCR 510 in the socket provided between the side members and end cross pieces, handle up, and fasten lashing strap over the unit.

TYPE NO. 2: Assemble the Type No. 2 pack frame as Type No. 1 except for center cross piece and spreader (see worksheet and illustrations). Shoulder straps are attached to *center* spreader in same manner as in Type No. 1.

The lashing strap is inserted through slots provided in end and center spreaders from top downward, buckle end up. To place set on the frame (place battery pack at lower end), *raise* the lashing strap in each section and place each unit *under* the lashing strap in its section. Bring free ends of lashing strap up and over set to buckle. Units of 510 set are placed on the frame with handles up and connecting cords to the left. Lashing straps will bind handles on set units and so keep them from rattling.

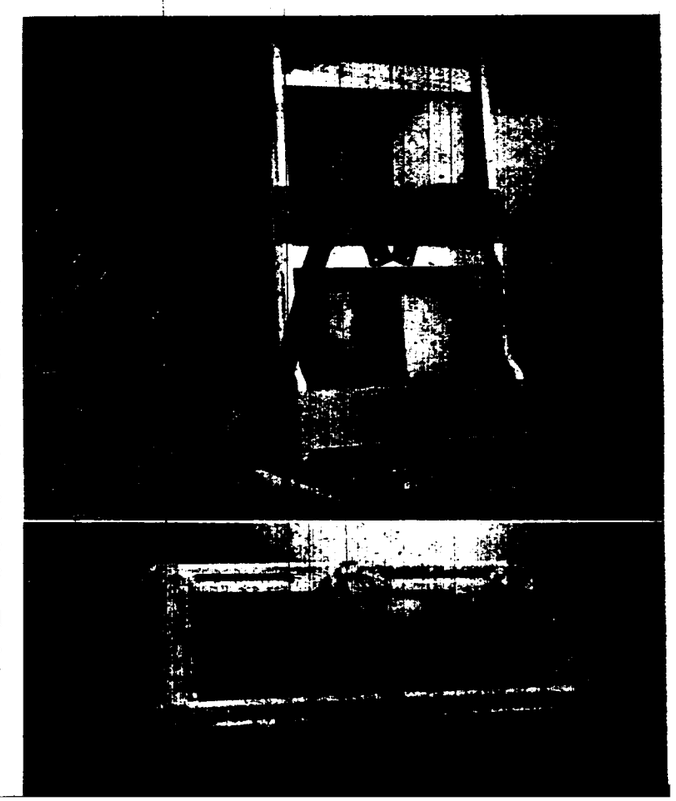
"Tump line" snaps are attached to rings on the upper corners of the battery pack, and the tump line is adjusted to the wearer by means of the tongueless buckle of the short shank portion of the tump line. For tump line see worksheet and illustrations.

Units of the SCR 510 are seated *into* the pack frame between the side members and end cross pieces. This placement of the set prevents shifting when it is lashed in place. The spreaders, notched to receive the lashing strap and "nubs" under each unit, become floor plates to support the units when in place.

Any supplies or equipment desired can be attached to these pack frames by means of their lashing straps and ropes or straps put through the lashing slots in the side members. The lashing slots may be cut with square or rounded ends as convenient.

These pack frames may be painted olive drab or mottled as desired. For dismounted patrols it might be well to mottle both pack frame and radio set.

Type No. 2. One-man pack. Back of pack frame shows attachment of back bands and adjustable shoulder harness. Tump line with tongueless buckle for adjustment and harness snaps for attachment to rings on battery pack. Front of pack frame shows recesses for units of radio set, placement of lashing strap, and attachment of harness.



Science Behind the Soldier

*by Professor J. D. Bernal**

AT the beginning of the war, scientific work in Britain was carried out in three main groups: (1) fundamental science—scientific research unlikely to be of any practical value for long periods, which was carried out mainly at the universities; (2) immediate technical scientific research, mainly in the research laboratories of industrial firms; (3) research controlled by the government through the Department for Scientific and Industrial Research, which was concerned primarily with the intermediate range of technical problems, the maintenance of standards and a number of agricultural and medical establishments.

The only direct military science was in the comparatively small research departments of the Navy, Army and Air Force.

The Royal Society, Britain's premier scientific society, did not form part of the official organization. It remained essentially a meeting place for the leading scientists and an agency for scientific publication. The other scientific societies occupied corresponding positions in their own fields.

Adaptation to War

The war did not lead to any structural alteration in this scheme, but to its adaptation to the immediate needs of war and to a very considerable shifting of the personnel inside it. Just before the war there was established a national register of scientific and technical manpower in which the qualifications of each scientific worker were recorded. This body gradually became a central clearing house for distributing scientists to those tasks for which there was most demand. Naturally this did not mean that they necessarily continued in their peace-time fields. The war showed, for instance, a much greater demand for physicists than could be met by employing professional physicists and many chemists and biologists occupied themselves with physical tasks.

There was naturally an immediate strengthening of the direct war science establishments, and this has gone on steadily throughout the war. At the same time, however, the work of these establishments was very much extended by turning over other laboratories and institutes, of both the government and the universities, to scientific war work. Nearly every section of the Department for Scientific and Industrial Research, such as the National Physical Laboratory, the Road Research Laboratory, the Building Research Laboratory, etc., are now occupied almost entirely with such problems.

Such an extension of work necessitated corresponding central organizations, and this has been achieved largely by the setting up of advisory councils, composed of eminent scientists, and the appointment of scientific advisers. These have had a triple function. As senior scientists with a wide knowledge of the resources of the country, they have been able to find the men and the institutes most suitable for tackling each problem as it arose. Secondly, they have acted as a form of scientific jury to assess the value of the results arrived at by the various scientific institutes. Finally, they have been able to use their considerable influence to see that scientific effort is most effectively directed and applied.

Military Fields of Scientific Contribution

The use of science in war is two-fold: (1) increase of the war potential of the country and (2) provision and use of weapons.

The first use is the extension and intensification of peace-time science in order to make for the greatest efficiency of production in the country as a whole, and to do this with heavily restricted resources both of material and labor. This means maintaining and increasing industrial scientific research and medical research, and, even more, because of Britain's increased dependence on home production, in developing practical agricultural research.

In these fields it is a matter of expanding and speeding up existing work. The main innovation has come rather in the application of science than in its discovery. Owing to the new controls in industry and agriculture, it is possible to see that the results of scientific research are applied widely and quickly. As a consequence Britain is better fed and healthier as a whole than in any previous period in her history.

In military science proper, it has not been sufficient merely to increase the scale of work; there have been many innovations in method as well as in detail. Military science has three main aspects: the development of weapons; the countering of enemy devices, and the direct utilization of science in strategy and tactics. In peace-time only the first of these had been extensively practiced. In war it was necessary not only to speed up the processes of developing new and better weapons—aircraft, tanks and guns—but to consider production problems under war conditions, with lack of certain raw materials, use of unskilled labor, and so on.

Weapons

By the use of research the quality of weapons has steadily improved and production increased with a great economy of time and material. An example of this is the case of gun design. By the rational study of the phenomena of the explosion in the gun, it has been possible to economize both in the quantity of the metal required, which has made a lighter and handier gun, and in the quality of the metal, which has saved precious alloying elements. In the use of explosives there have been enormous improvements based on new knowledge of the physical processes of explosion—work largely carried out by men trained in the more abstruse branches of mathematical physics.

Countering Enemy Devices

Before an actual war breaks out, it is impossible to know exactly what kind of weapons are needed, and even in a war this takes some finding out. Weapons as developed in peace-time are necessarily modified both by practical conditions of war and by the counter weapons used by the enemy. It is consequently necessary to be revising designs continually in the light of experience. Here again, science has played a large part.

In the early part of the war, much was done in countering the various "secret" weapons with which Hitler tried to scare the world. A great variety of mines and bombs with most ingenious fuses had their stings drawn by the application of high speed and heroic scientific research in which a number of workers lost their lives.

In the field of radio research also there has been what is practically a battle of scientists. Each enemy radio device has had to be detected, analyzed and countered in an incredibly short time.

One of the characteristics of the war has been the increasing use of highly complicated scientific apparatus in the front line itself. This apparatus could not just be handed over to troops with only general technical training. It was necessary for the scientists who developed it to follow the apparatus to where it was being used and to analyze its performance in order, at the same time, to train people to use it and to learn how to improve the apparatus itself.

Operational Research

It was in this way that there began, about the second year of the war, a third and almost entirely new use for science, the actual scientific study and analysis of military operations, a process which is now called Operational Research. In the Navy, Army, and Air Force there are now attached to the commanders in the field operational research groups whose business is to keep close contact with all phases of military operations—bombing, artillery fire, antisubmarine work, communications and transport. These scientists act as a link between the actualities of warfare and the research and development departments attached to war industry at home. They are able to specify more quickly and accurately than could be done before what the real needs of the forces are and to see that they are satisfied. But they are able to do more.

The war has become very largely mechanized, and the performances of various parts of the war machine are analyzable in the same way as factory operations. Statistical methods can be and have been successfully used for calculating the actual effort required to reduce enemy positions by the use of different tactical methods and thus to help to decide the most effective tactics to use. This began even before the war, in the analysis of air combat, and was one of the reasons why the Battle of Britain was won by the Spitfire.

The general method is a straightforward scientific one. Although the actual situations in war are extremely complicated, it is usually possible to isolate a certain number of variables, the value of which can be determined in different actual instances. For instance, aircraft can fly in to attack at different heights, their effectiveness and the loss they sustain as a function of the height can be measured. From a sufficient number of instances, the arrangements giving the greatest advantage can often be found by calculation and checked on by practical trials. The bombing of Germany is now largely being carried out in this scientific way.

It is clear that such use of science in no way diminishes the importance of the decision and skill of the military commanders. It simply provides them with new knowledge as to the probable result of dispositions they choose to adopt and is of assistance to them much as musical theory is to the composer. In recent months there has been an increasing tendency for this union of science and military leadership to become even closer by the attachment of personal scientific advisers to senior commanders. Britain is moving toward an almost complete fusion of the scientist with the fighter at the front and production at the rear.

Mobilization of Scientists

This great transformation of the use of science has not only been a matter of organization at the top. The actual scientists themselves, many of them through the Association of Scientific Workers, have played a large part. They have insisted that their mobilization for war service should be complete, that long-range schemes of a peaceful nature be put on one side, and that every scientist should be given a chance to be used where he is likely to be most effective.

At a great conference on the Planning of Science in January, 1943, a program was put forward for a more rational, effective and closely knit organization of war science. Many earlier recommendations of this group have in fact been adopted, particularly in the appointment of a small body of three scientific advisers to Britain's Ministry of Production, with the general charge of seeing that science is most effectively used in the war effort.

This brief and necessarily general picture of science in the war shows what Britain has achieved and hopes to achieve; but the war is not the effort of any single nation.

The United Nations are fighting against a common enemy and linked very closely in a common purpose. They require as close a collaboration in the scientific as in the military field.

*University Professor of Physics, Birkbeck College, London; now Scientific Adviser to Combined Operations Command.

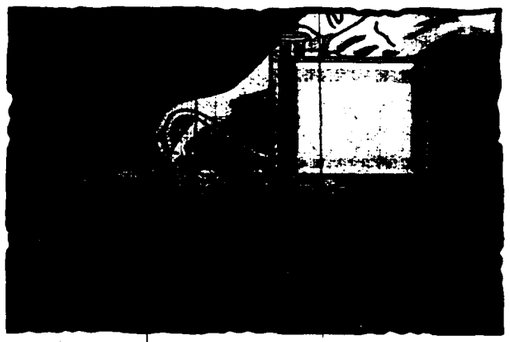
DO'S and DONT'S on *Vehicle Care in Warm Weather*

Vehicles have to "sweat-it-out" like everybody else when summer comes boiling along. You can keep them off the "summer deadline" by following the simple precautions outlined on this page.

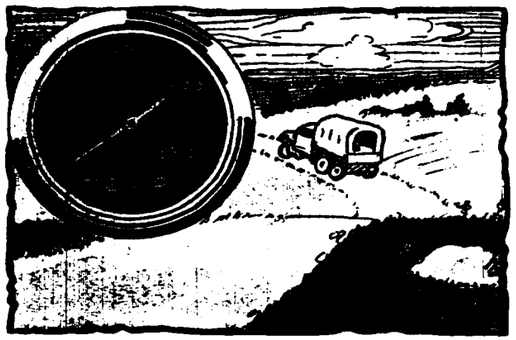
Flush cooling system thoroughly. Check thermostat. Inspect and replace hose connections if necessary. Fill radiator with clean, "soft" water. Add rust preventive if specified in Technical Manual.

Remove insects and dirt from radiator exterior. Keep exterior of oil pan clean so heat can escape from oil and help cool engine. Service air cleaners and filters more often because of dustier summer air.

Check tension of fan belt and adjust. Belt operates water pump as well as fan and must be right. Inflate tires in morning when they are cool. If tire pressures increase during heat of day, don't deflate.



Replenish battery water more often in summer. It "boils" away faster. Never fill above specified level. Check timing and adjust exactly as specified. Late timing particularly can cause overheating.



Shift to a lower gear to speed up fan and water pump if engine overheats on hard pulls at slow speed in high gear. Keep an eye on the temperature gage. Take corrective action at first sign of overheating.

TEN YEARS IN JAPAN. By Joseph C. Grew. Simon and Schuster. $3.75.

America's former Ambassador to Japan has drawn on material from three firsthand sources—his own day-to-day diaries, his personal and official correspondence, and his dispatches to the State Department—to tell the story of the decade of conflict, intrigue, and surprise that culminated in the inevitable tragedy of war.

Mr. Grew's own words best describe the aims of his book: ". . . to present to our people and, I hope, to the people of all the United Nations, a more accurately focused view of Japan than is now widely held, for only through a correct conception of that country and its people can we approach with intelligence the difficult problems which will have to be solved after our military victory is complete. . . . We have been presented for some years past with cumulative evidence of unmitigated subtleties, trickery, brutality, and cynical faithlessness on the part of the Japanese military caste and machine. . . . The present book will not have served one of its purposes, however, if it does not bring home to my readers the fact that there are many Japanese today who did not want war, who realized the stupidity of attacking the United States, Great Britain and other United Nations, and who did everything in their power to restrain the military extremists from their headlong and suicidal aggressions."

Whereas the American public is more or less familiar with the background and temper of their German enemies, they are not so well versed on the subject of the Japanese. Ambassador Grew has spared no effort to give a complete and fair account of his experiences in Japan, in order that his compatriots may envision the caliber of the enemy they are facing. *Report From Tokyo* was a brief, informative volume. *Ten Years in Japan* is a comprehensive book that should be thoroughly digested by all who wish to understand the problems of the east, not only as they affect us in this war, but as they will undoubtedly influence us in the future.

NEWS OF THE 45TH. By Sgt. Don Robinson with art by Sgt. Bill Mauldin. University of Oklahoma Press. $2.00.

Sergeants Robinson and Mauldin have collaborated to produce one of the most down-to-earth stories of the soldier in training and at war yet published. It is a little premature to state that they are in Ernie Pyle's class. That takes years of hard work. But Mauldin as a cartoonist, and Robinson as a writer, are certainly well on the way to making names for themselves in human reporting. They are keenly sensitive to the average man's reactions and have a delightful sense of the ludicrous that combine to make their book both realistic and entertaining.

If you enjoyed *Here Is Your War*, you will enjoy *News of the 45th*.

THE GERMAN ARMY. By Herbert Rosinski. Infantry Journal. $3.00.

Dr. Rosinski was a lecturer in Naval and Military Theory at the Naval Staff College in Berlin from 1932-36. After leaving Germany under duress of the Nazi Party, he lectured at Oxford in 1937 and was a member of Professor E. M. Earle's famous seminar in military subjects held at Princeton from 1940-41.

The German Army is a rewritten and expanded edition of Dr. Rosinski's earlier book published in England in 1939. It gives the historical background, organization, doctrines, training, strategic ideas and tactics of the German Army. It is a less detailed account of much the same material incorporated in *Axis Grand Strategy*; however, for men who have to take note of the weight and size of a book, Dr. Rosinski's volume has a marked advantage.

BATAAN: THE JUDGEMENT SEAT. By Lt. Colonel Allison Ind. Macmillan. $3.00.

Colonel Ind's account of the conditions existent in the islands prior to Pearl Harbor as well as his story of the retreat to Bataan are vitally important additions to our knowledge of that action. There is no evasion in this book, it is a straight-forward record of what was and was not available, a clear and unvarnished picture of what occurred.

Out of the discouraging recital of over-confidence and lack of preparation rises the figure of General "Pursuit" George, then Colonel George, who by dint of his personality impelled his men to the impossible. It is a glowing picture of a hero's hero and his tragic and untimely death.

The author is a capable writer and has produced much more than a mere record of military events. He has created a living history of the men who fought on Bataan.

ATLAS OF GLOBAL GEOGRAPHY. By Erwin Raisz. Global Press. $3.50.

With the rise of air power, global geography has changed. Distances are now marked as the plane flies and the shortest distance between two points has become an arc on the contour of the globe. This new vision is the key to the *Atlas of Global Geography*.

Erwin Raisz' book is a fascinatingly informative volume. It not only contains a quantity of valuable data on flying routes, air currents, ocean currents and related subjects but brings into focus the global point of view of the modern world, with pictorial commentaries on poverty, disease, hunger, inaccessibility, illiteracy, and other major problems.

The new trend toward the use of pictures and maps where possible for reference and teaching is admirably exemplified in this beautiful product of the cartographer's art.

New, authorative

BOOKS

for military men

ELEMENTARY TOPOGRAPHY AND MAP READING

An elementary book covering the fundamentals of map reading. Includes information on problems of map making, distance, direction, elevation and relief, contour lines, profiles, construction of maps, aerial photographs, and special maps, explained in an easy-to-follow form using only simple arithmetic. By Samuel L. Greitzer. $1.60.

MILITARY APPLICATIONS OF MATHEMATICS

Brings together the problems in all branches of the armed forces which can be solved with a background of high school mathematics. Explains practical military problems by means of examples and exercises, and shows how the various activities involved are related to each other in combat operations. By Paul Hanson, $3.00.

THE THERMODYNAMICS OF FIREARMS

The first book in English to place interior ballistics on a sound theoretical basis by means of thermodynamics. Covers the behavior of propellant explosives in firearms in an elementary manner geared to the practical problems of the interior ballistician today. By Clark Shove Robinson, $2.50.

PERSONAL LEADERSHIP FOR COMBAT OFFICERS

A concise manual of objectives and methods for leaders of tactical elements, combat teams, and fire units. Provides a comprehensive framework for an officer's attitude and gives him the methods he will use in his work. By Prentiss B. Reed, $1.50.

MILITARY CORRESPONDENCE AND REPORTS

Brings together regulations and directives of the Army regarding written forms, including the presentation of reports, writing of letters and messages, and preparation of orders, bulletins, and memoranda. An authoritative pocket guide-book and style manual on Army writing practices. By A. C. Howell, $1.50.

MAP INTERPRETATION WITH MILITARY APPLICATIONS

A clear, concise treatment, requiring no previous knowledge of geology, of the geologic fundamentals underlying the most effective military interpretation of maps and aerial photographs. Explains the characteristics of contour maps and aerial photographs, describes landforms of all varieties, and shows how they appear on maps and in photos, and points out significant military features. By William C. Putnam. $1.25.

THE MILITARY STENOGRAPHER

Offers practice material for military stenography, with Gregg shorthand outlines for military terms and phrases, solid-matter dictation, and glossary. Covers, with definitions and outlines, court-martial proceedings and terminology, military ranks and functions, and complete service phraseology. By Queena Haselton, $1.00.

Order these books from

The Cavalry Journal

1719 K Street N.W. WASHINGTON 6, D. C.

DICTIONARY OF ORDNANCE TERMS. By H. Strom. Frederick Ungar Publishing Co. $5.00.

There has been considerable demand for foreign language dictionaries covering military subjects. Mr. Strom has coordinated in one volume the terms used in connection with ordnance—arms, ammunition, explosives and other war matériel—in English, French, German, Italian and Spanish.

The first section gives the words in all five languages with an identification number for each group. Indices are given in each language with page and group reference numbers that enable the user to look up a word in any language by taking the page and group number and finding the translation in each of the other four languages.

MILITARY MAPS AND AIR PHOTOGRAPHS. By A. K. Lobeck and Wentworth J. Tellington. McGraw-Hill Book Co. $3.50.

This text is designed to do duty both as a basis for a course of instruction and as a reference book. Its chief purpose is to combine under one cover the information necessary for an elementary course in topographic drawing and a revised use of symbolic drafting as it has recently been developed by the allied engineering industries.

Symbols and maps are reproduced to practically the same size that the student should draw them. Directions, included for use in compiling various kinds of maps, thus eliminate the necessity for a large amount of desk instruction. Ruler, Schunemunk and Mannheim maps are enclosed.

ARCTIC MANUAL. By Vilhjalmur Stefansson. Macmillan Co. $3.00.

This picture of the Arctic as it really is, by one of the world authorities on the subject, was originally prepared to offer the United States Army realistic advice on how to survive when stranded in that generally misunderstood region.

Mr. Stefansson begins with a discussion of our changing attitudes since the days of the Greeks, and discards many of the erroneous old-time ideas of the polar regions. His practical information covers the physical geography, climate and weather, light, animal and insect life, vegetation, shelter (how to build as well as how not to build a snow house), food and drink, clothing, health, diet and travel on land, water, and ice.

26TH DIVISION. Summary of Operations in the World War. Prepared by the American Battle Monuments Commission. Government Printing Office. $1.25.

This account of the participation of the 26th Division in World War I, covers activities of the division through May 1919. Bound in the book is a general map of western Europe. Detailed maps of the various actions in which the 26th Division took part are contained in a pocket within the book. It is an excellent record, in convenient form, and the maps are extremely good.

JAPAN, ITS RESOURCES AND INDUSTRIES. By Clayton D. Carus and Charles L. McNichols. Harper and Brothers. $3.50.

The authors of this comprehensive study of Japan's resources have realistically faced the problems that will be generated in the postwar world by the fact that for years the Japanese Empire has had the greatest industrial capacity in Asia. It is maintained that the security of the Pacific area depends on the utilization of the human, geographic and industrial resources of these islands. This is predicated upon five conditions: complete military defeat and occupation; Allied administration during reconstruction; assurance that Japanese industry, as reconstructed, cannot rebuild her war machine; readjustment of social values; and the abolition of subsidies to uneconomic industries.

There is important material here for possible administrators of occupied territory in the Pacific and for all students of foreign affairs.

TRIUMPH OF TREASON. By Pierre Cot. Ziff-Davis Publishing Co. $3.50.

Pierre Cot has served France and fought Fascism through a long career. As a captain in the French army (1914-18) he received the *Croix de Guerre*. He has served the state as Undersecretary for Foreign Affairs and Minister of Aviation, and the world as President of the International Peace Conference (1936-40). An exile from Fascism since 1940, he has recently joined the new French Consultative Assembly in North Africa.

A number of participants in the military collapse have written of the fall of France, but this is the first book by a government official on the disintegration of the state that was primarily responsible for the military catastrophe.

Whether or not the reader agrees with M. Cot in his analysis of the present National Committee of Liberation, his absolute sincerity and scrupulous efforts to be fair make his book a truly valuable one. He comments:

"The 'citizens' have taken up arms. 'Liberty guides their steps.' If they alternate the *International* with the *Marseillaise*, it is to signify to the world that their sacrifices will serve the interests of humanity as well as the liberation of France."

THE NETHERLANDS. By Hendrik Riemens. Duel, Sloan & Pearce. $4.50.

The Dutch people in their own land have always commanded the respect of the civilized world. Mr. Riemens, Commercial Secretary of the Netherlands Embassy in Washington, deftly interweaves the story of his nation's history and culture with that of their commerce and expansion abroad.

In the handling of the expansion of the East and West India Companies Mr. Riemens permits himself to overlook the fact that his reader may have an analytical mind, and may not be converted to the idea that the end justifies the means. On the whole, however, the book is an interesting introduction to the Dutch, and reveals much of the national psychology, particularly in relation to the war.

Dictionary of Ordnance Terms

Arms • Ammunition • Explosives

In Five Languages

English • French • German

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Q-7 on The Cavalry Journal Booklist.

Military Manuals and War Strategy

Administrative and Supply Notebook	$.75
Armored Warfare	1.00
Articles of War Annotated	2.50
Bombardment Aviation	2.00
Combat Aviation	2.00
Company Administration — Paper	1.50
Company Administration — Cloth	2.00
Decisive Battles of the World	3.00
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Surprise	1.00
Through Hell to Dunkirk	2.50
The Use of Air Power	1.00
War In the West	2.50
Winged Mars	2.50

MAP READING

	Cavalry Journal Number	Price
Maps. By D'Agapeyeff and Hadfield ..	S-20	$1.75
Map and Aerial Photo Reading Complete	Z-19	1.00
Map Reading for the Soldier	R-12	1.00
Manual for Instruction in Military and Aerial Photographs By Maclean and Olson	R-11	1.75
Elementary Topography and Map Reading. By Greitzer		1.60
Military Maps and Air Photographs. By Lobeck and Tellington	Q-16	3.50

HORSE MAGAZINES

	Per Year	Sample Copy
Cavalry Journal:		
Bimonthly	$3.00	$.75
National (Saddle) Horseman:		
Monthly	5.00	.50
The Horse:		
Bimonthly. (Breeding, schooling, training, sports.)	5.00	.50
The Chronicle:		
Weekly. (Breeding, fox hunting, racing, shows.)	5.00	.20
Saddle & Bridle:		
Monthly	4.00	.50
Thoroughbred (Horse) Record:		
Weekly	4.00	.10
Rider & Driver:		
Monthly. (Horses, sports, pleasure.).	3.50	.50
Mid-Western Horseman:		
Monthly	2.50	.25
Western Horseman:		
Bimonthly	1.50	.25
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Monthly. (Horsey.)	1.50	.15
Palomino Horse:		
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Monthly. (Rodeos.)	.50	.10
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Spokesman & Harness World:		
Monthly	1.00	.10

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PRIVATE BREGER'S WAR. By Dave Breger. Random House. $2.00.

Those who are already familiar with Private Breger's reactions to camp life in this country will undoubtedly want to see what happens to this incorrigible personality in Britain and on the war fronts. If there are those who have not yet discovered this naïve example of humanity, it is suggested that his early training be investigated before his more recent amusing experiences. He is still the exasperation of noncoms and officers.

BASIC MATHEMATICS FOR WAR AND INDUSTRY. By Daus, Gleason and Whyburn. Macmillan Co. $2.00.

MILITARY APPLICATIONS OF MATHEMATICS. By Paul P. Hanson. McGraw-Hill Book Co. $3.00.

The first of these books has been presented with the idea that the same principles of elementary mathematics are needed for the armed service, war industry and ordinary civilian activities. Chapters cover arithmetic, algebra, geometry, plane trigonometry, and solid geometry and spherical trigonometry.

Military Applications of Mathematics serves as a refresher course in the fundamentals of mathematics and a course to prepare students for definite activities in military life. It brings together in one volume the problems likely to be met that can be solved with a background of high school mathematics. The problems are grouped under Army and Navy classification—Maps and Map Reading, Field Artillery, Air Navigation, and Miscellaneous.

OUR EQUINE FRIENDS. By Wayne Dinsmore and John Hervey. Horse and Mule Association. S.25.

DOGS FOR DEMOCRACY. By Thomas Young. Bernard Ackerman, Inc. $1.00.

Our Equine Friends is a small practical pamphlet giving a brief coverage of the types of equines, usages, conformation and character of the different species and results of cross breeding. Its purpose is primarily to encourage an interest in breeding in order to increase and improve the waning stock in this country.

Dogs For Democracy tells in pictures and text the story of what dogs are doing in the war of today. It is a delightfully presented little book, and will find wide interest among those who have given up their dogs to the army.

STICK AND RUDDER. By Wolfgang Langewiesche. Whittlesey House. $3.75.

Wolfgang Langewiesche, author of *I'll Take the High Road* and *Light Plane Flying*, has written an analysis of the art of flying based on his own flying experience. He believes that the difference between an experienced flyer and an inexperienced one is a matter of images—the experienced flyer "carries in his head truer, more vivid images of the airplane and of 'what really goes on' when he flies it." This conviction has led him to write a most comprehensive description of flying.

Here Are This Month's New Books of Current Interest

Q- 1 **America Unlimited.** *By Eric Johnston.* The President of the United States Chamber of Commerce outlines his ideas for a "Peoples Capitalism." $2.50

Q- 2 **Arctic Manual.** *By Vilhjalmar Stefansson.* Information on subjects of interest to those who expect to spend some time in the Arctic. $3.00

Q- 3 **Atlas of Global Geography.** *By Erwin Raisz.* A new atlas for the coming air age. $3.50

Q- 4 **Bataan.** *By Lt. Col. Allison Ind.* The Story of the air corps in the Philippines. $3.50

Q- 5 **A Bell for Adano.** *By John Hersey.* An Italian-American major tries to rebuild the life and spirit of a war-torn Italian village. $2.50

Q- 6 **Border Command.** *By Carl Coke Rister.* The life of General Philip Sheridan from the close of the Civil War until his death. $2.75

Q- 7 **Dictionary of Ordnance Terms.** *By H. Strom.* Dictionary in English, French, German, Italian and Spanish. $5.00

Q- 8 **Dogs for Democracy.** *By Thomas Young.* What the war-dog is doing. $1.00

Q- 9 **The Dyess Story.** *By Lt. Col. William E. Dyess.* The complete eye-witness story of the death march from Bataan. $2.00

Q-10 **Ernie Pyle in England.** A portrait of England at war during 1941. ..... $1.49

Q-11 **The German Army.** *By Herbert Rosinski.* An account of the historical background, organization, doctrines, training, strategic ideas and tactics of the German Army up to 1942. ..... $3.00

Q-12 **Is Bombing Decisive?** *By Capt. F. O. Miksche.* A study in the organization and tactical employment of modern air fleets. $1.75

Q-13 **Japanese for Military and Civilian Use.** *By Richard D. Abraham* and *Sannosuke Yamamoto.* A handbook. $2.00

Q-14 **Japan, Its Resources and Industries.** *By Clayton D. Carus* and *Charles L. McNichols.* Japan's economic condition and possibilities, analyzed on the basis of information secured prior to the war with a view to postwar reconstruction. $3.50

Q-15 **Military Applications of Mathematics.** *By Paul P. Hanson.* A refresher course in fundamental mathematics as applied to problems in military life. $3.00

Q-16 **Military Maps and Air Photographs.** *By A. K. Lobeck* and *Wentworth J. Tellington.* A practical course of instruction and reference book developed by the allied engineering industries. $3.50

Q-17 **A Modern Foreign Policy for the U. S.** *By Joseph M. Jones.* An examination of the relation of our foreign policy to U. S. democratic processes. $1.35

Q-18 **The Netherlands.** *By Hendrik Riemens.* The story of the Dutch people and their colonies, including their part in the present war. $4.50

Q-19 **News of the 45th.** *By Sgt. Don Robinson.* Behind the battle lines with the Forty-fifth Infantry Division, with illustrations by Sgt. Bill Mauldin. $2.00

Q-20 **Old Master.** *By René Kraus.* The life of Jan Christiaan Smuts, soldier-statesman of the Dominion of South Africa. $3.50

Q-21 **Our Equine Friends.** *By Wayne Dinsmore and John Hervey.* Pamphlet giving general description of species most frequently used in this country. $.25

Q-22 **Private Breger's War.** *By Dave Breger.* An album of cartoons. $2.00

Q-23 **Requisition in France and Italy.** *By Maurice K. Wise.* The dangers of requisition of private property as a prelude to dictatorship, shown by the experience of France and Italy. $2.75

Q-24 **Stick and Rudder.** *By Wolfgang Langewiesche.* What goes on in an airplane when you fly it. Illustrated. $3.75

Q-25 **Triumph of Treason.** *By Pierre Cot.* An account of the fall of France by a member of the late French Government. $3.50

Q-26 **26th Division.** Prepared by the American Battle Monument Commission. Summary of operations of the 26th Division in World War I, with maps. $1.25

Q-27 **Wingate's Raiders.** *By Charles J. Rolo.* The story of the incredible raid into Burma made by Brigadier Wingate and his men. $2.50

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