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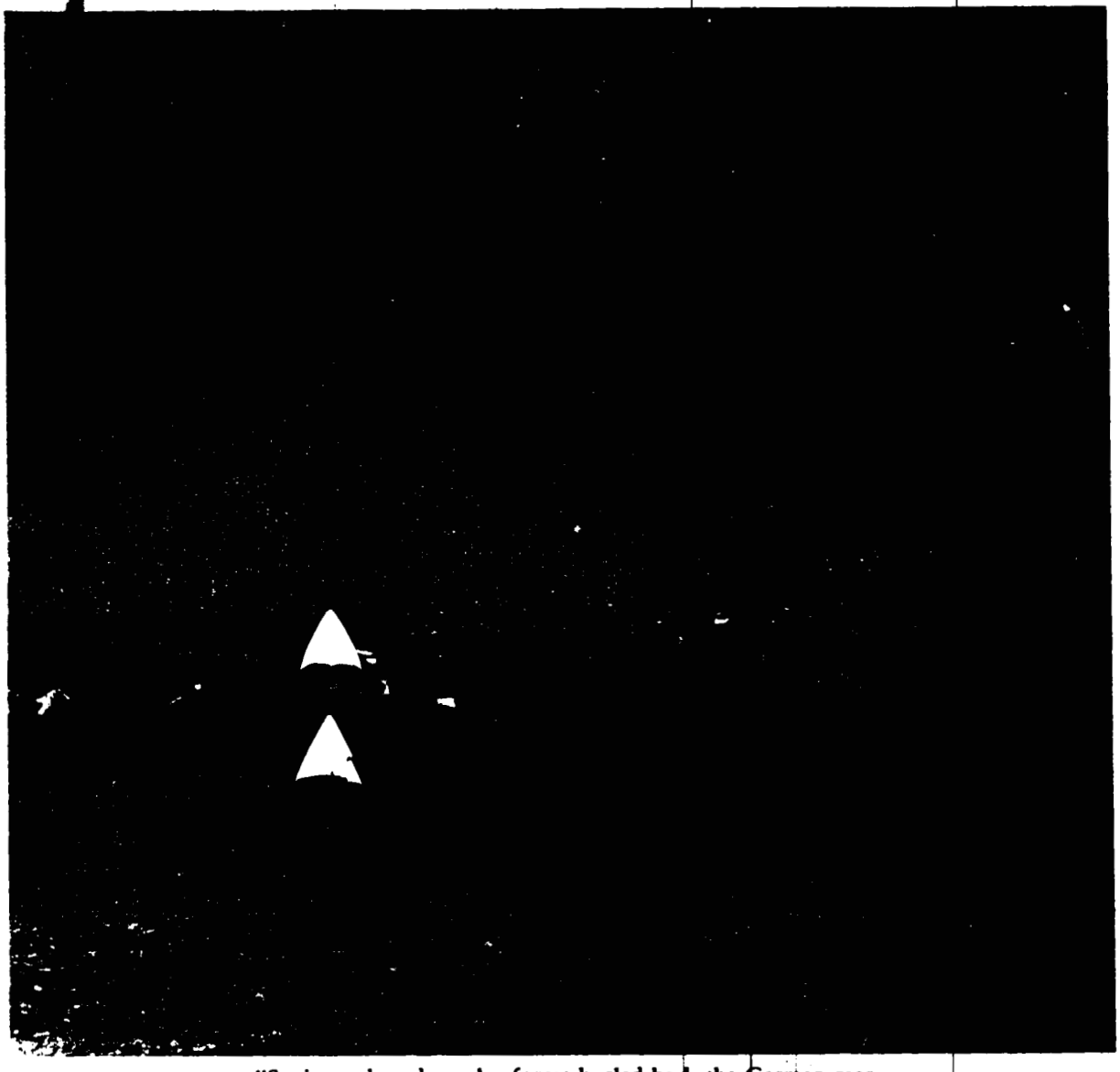

"Soviet tank and cavalry forces hurled back the German rear guard. . . ."—United Press, Moscow, January 13, 1943.

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COSSACKS LEAD ADVANCE INTO KUBAN AREA

MOSCOW, January 12, 1943—Led by Cossacks slashing their way triumphantly back into their homeland, the Red Army has rolled the Germans back into the Kuban River region of the Western Caucasus between the mountains and the Don.

Red Star declared that the Kuban region was penetrated after the Caucasian provinces of North Osetia and Kabardino Bakaria had been freed from the Germans in the continuing Russian winter drive.

A communique announced that the Red Army's cavalry had driven 15 miles into the enemy's positions in fierce night fighting which followed the capture of six more key towns on the Caucasian front.

The 4th Guards Cossack Corps—the Kuban fighting men who fell back from their towns and villages last summer before the weight of the Nazi offensive—were riding in the vanguard of the Russian forces sweeping back across the steppes.

For the black-caped, high-hatted horsemen of the steppes, and for their townspeople, it was one of the most dramatic homecomings of the war.—HENRY C. CASSIDY, Associated Press War Correspondent.

COSSACK TACTICS

By Major P. S[illegible] reu. Red A[illegible]

An anal[illegible] of the successful tactical employment of the [illegible] fighting Corps of Cossack Guards.*

IN modern warfare cavalry, especially when used in coördination with other arms of the service, is able to engage successfully, not only enemy infantry armed with automatic weapons, but also motorized units. This has been exemplified time and again by the Cossack Corps of Guards, commanded by Lieutenant General Kirichenko. (See news items, Page 8.)

The German break-through at Rostov in the summer of 1942 and the subsequent capture of Bataisk created a serious threat in the direction of the Kuban River. Had the Germans made immediate use of their numerical superiority in tanks and planes they could easily have reached Krasnodar, for the open ground favored a swift movement. They failed to take advantage of this, however, so a Cossack division was ordered to cross the road that led south from Bataisk and hold up the Germans at all costs. This was done in order to gain time in which to concentrate units of the Cossack Corps then dispersed along a wide front.

First to start out was a regiment under Major Karapetian. It rode both day and night and made only a few short bivouacs in woods and thickets. German reconnaissance planes appeared over the squadrons several times, and in order to confuse the German fliers the Cossacks changed their direction or turned back each time that the fliers appeared. Because the regiment moved in a number of groups along parallel roads, the German pilots everywhere reported that the cavalry had retreated southward. As soon as the planes would disappear, however, the Cossacks would again head for the enemy. This deception played no small part in their final success.

At night Red Army scouts reported that the Germans were in a near-by village. In order not to arouse enemy suspicions about the presence of Cossack troops in the vicinity, reconnaissance was carried out by men on foot. After having received the necessary reports, Major Karapetian decided on a night battle, and mounted Cossacks thereupon launched converging attacks on the village. Bewildered by the unexpected appearance of Soviet cavalry, the Germans ran out of their huts and fled in whatever direction they could. The battle lasted for only twenty minutes, but the Cossacks destroyed more than 200 Germans and drove the rest from the village.

This attack is of particular interest because the regiment forced battle *immediately after it arrived, although it had just covered about 120 kilometers*. The decision taken was tactically correct, for the village could not have been approached by surprise in day time, and *without the advantage of surprise* on its side, the regiment would have had *no hope of success*. The well organized enemy fire would have inflicted tremendous losses.

The decision for a night battle in itself, however, was not a complete solution of the problem faced by the regiment, for the enemy first had to be stopped and then held until the Cossack Corps took up advantageous positions for defense. Although the Germans had considerable superiority in numbers and matériel, the Cossacks captured and held the village and the near-by crossroads for four days. To accomplish this the regimental commander *employed active defense tactics*. Some squadrons shifted their positions two and three times a day. They would appear first on one flank, then on the opposite flank. This swift maneuvering was made possible by *excellent reconnaissance* and by skilful direction on the part of the commanding officer.

In some cases cavalry detachments launched flank attacks on motorized columns and cut off the infantry from the tanks. With equal success the *Cossacks cooperated with the artillery* against the German tanks. Whenever a tank attack impended in any one sector a mobile antitank detachment, consisting of a sabre platoon or squadron and several antitank or light field pieces, was immediately transferred to the threatened spot. The Cossacks often *operated on foot* and *placed their horses in concealment* under a heavy guard.

As a rule guns were placed behind natural obstacles —blown-up bridges, marshland, rivers, etc. Dummy positions were constructed somewhat to the side in order to stop the German tanks that drove at them with all of their strength only to find themselves under a heavy flanking fire from the antitank guns. About fifteen German tanks were thus destroyed in one week.

At another time Soviet cavalrymen held the Germans at a village for four days. On that occasion *another Cossack division* came up but did not join in the battle immediately. The *reconnaissance* soon reported that the enemy was regrouping his forces, evidently in preparation for a wide flanking movement. As soon as this bebecame known the corps commander ordered the division to forestall the German maneuver, engage the enemy, and exhaust him with incessant counterattacks and ambushes on all approaches to the main Soviet defense positions. Subsequently, the division was to fall back in such a way that the enemy would find himself faced with fresh attacks after each retirement.

This plan was fulfilled entirely, and for two days the

"Swift maneuvering was made possible by excellent reconnaissance and by skilful direction on the part of the commanding officer."

Sixty year old Cossack Pavel Kamnev of the Krasnodar territory sabered 14 Germans during a single engagement near the village of Kuschovskaya. He has been awarded the Order of Lenin for his valor.

*By cable direct to The CAVALRY JOURNAL from the War Department, U.S.S.R., Moscow.

A Red Army cavalryman rides his horse past an abandoned German tank.

advance guard of the Cossack division battled the enemy. After it had inflicted considerable casualties it fell back to a prearranged line, and when the Germans attempted to inflict a decisive blow on the Cossacks they failed; for during the night a fresh division had replaced the weakened one. The Germans had not noticed their chance, and the next morning they were thrown back with heavy losses.

The second attack ended in like manner. After losing 600 men the Germans gave up further attacks in that sector and the next day transferred their division to our right flank in the hope of finding it undefended, but here, too, they met with stubborn defense. In the course of five days the enemy lost more than 4,000 men killed and gained no material success. A well directed rear guard action forced the Germans, who had not divined the Soviet tactics, to hurl their one untouched infantry division in this sector against our fresh Cossack unit. When they finally learned the *strength of the Cossack troops* they lacked sufficient force to engage them. A lull in fighting allowed for a further concentration of reinforcements.

This rear guard action of a Cossack unit is characterized by mobile tactics. Squadrons constantly strike at the enemy from the flank and from ambush and in this manner inflict heavy casualties. *Because of their high mobility* cavalrymen can cross the line along which enemy motorized columns are moving, and hurl fresh units against exhausted enemy troops.

As evidenced by the above mentioned examples, such tactics enable the Cossacks to exhaust the enemy and work havoc with his plans.

Skilful action on the part of dismounted Cossacks in their employment of mobile detachments, makes fighting against enemy tanks possible. Surprise night raids are one of the methods employed by Cossacks to hinder the regrouping of enemy troops and to cause heavy losses in men and matériel. The blow is usually dealt where it is least expected. Thus a cavalry regiment, breaking through the enemy positions near a certain village, *made a circuit and entered it from the rear.* Panic broke out among the Germans, and all semblance of control immediately disappeared. After they had cut down more than 800 Germans, the Cossacks disappeared just as unexpectedly as they had come. Had the regiment remained in the village longer, the Germans probably would have organized a defense. The Cossack commanders chose not only the correct time and method of attack but selected the tactically favorable moment for retirement.

Still more destructive was a night raid led by First Lieutenant Avsenov in which two squadrons of Cossacks, *strengthened by two field pieces and two mortars,* took part. This detachment made a 20 kilometer march before it attacked the enemy. A column of German motorcyclists emerged from the village just as the Cos-

sacks were approaching it. The Cossack detachment left the road quickly and let the column approach, then opened shrapnel fire at close range. In this case, the artillerymen were right in opening fire only when the whole column stretched out along the road with both its head and tail visible. The gunners were directed to restrict their fire to the highway itself. This precaution proved useful, for after the first few volleys, the Germans fled off the road. Then the Cossacks came into action, cut the Germans down and forced them back up the embankment, where the only way of retreat was covered by mortar fire. The Cossacks then broke into the village, where they were obliged to employ different tactics. They dismounted and drove the Germans out of house after house until they had cleared the whole village.

Meanwhile, the guns and mortars opened fire in the opposite direction at the villages where reconnaissance had reported a large concentration of enemy trucks. This artillery and mortar fire in the Germans' rear tended to increase their demoralization.

At a prearranged signal, the Cossack detachment left the village. Noticing this, the Germans attempted to launch a pursuit by sending a submachine gun company after the Cossacks. The detachment commander had foreseen this development, however, and the Germans were met by fire *from m* *horse-drawn vehicles* and wer dispersed. Enemy casualties siderable. Having brilliantly the Cossack detachment retu

The success achieved in t primarily because of the ca mortar gunners, and cavalr mained at his observation p his men with the help of lig ners.

It has been found extrem ing points of advancing s these meeting points shoul machine gun and mortar meters from the objective should make for these m paths, and in case one of pursued by the enemy it away from the enemy anc

The route of mounted out along scarcely popu thickets, and away from escape pursuers across s cyclists, armored cars, an cross-country pursuit.

No position can be he of small groups and nigh

as mounted on owed down or attle were con- the night raid, little loss.

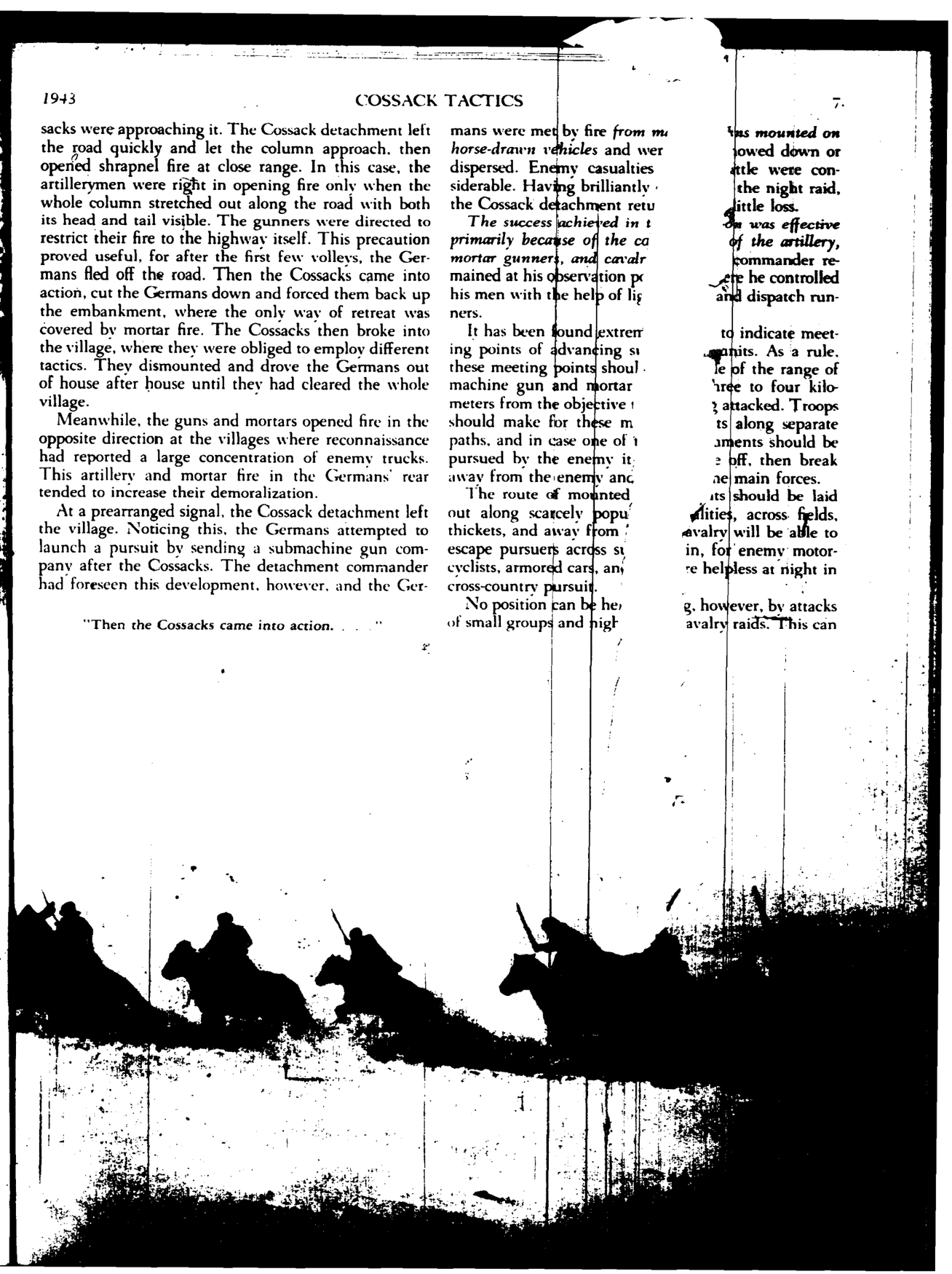
n was effective of the artillery, commander re- ere he controlled and dispatch run-

to indicate meet- units. As a rule, le of the range of hree to four kilo- attacked. Troops ts along separate ments should be off, then break he main forces.

ts should be laid alities, across fields, avalry will be able to in, for enemy motor- re helpless at night in

g, however, by attacks avalry raids. This can

"Then the Cossacks came into action. . . ."



be achieved only by powerful counterthrusts such as those delivered by Cossacks for six days in succession in the area of three particular villages.

Cossack tactics in this case were as follows: Part of the troops dismounted and assumed the defensive along well fortified positions, while several shock Cossack detachments operated along an 80 kilometer front. Whenever the Germans attempted a mass attack, the Cossacks came into the open and charged the attackers from the flank. As soon as the enemy artillery and tanks would come into action the Cossacks would disappear, but these sharp cavalry blows of short duration proved very effective.

Battles near another village are also characteristic of this type of tactics. At extreme range three Soviet armored trains opened fire at a village. Twenty-six minutes later the fire ceased and the Cossacks broke into the settlement and routed the panic stricken enemy. This cavalry charge succeeded largely because of the efficient coordination between the cavalry and the armored trains, and German losses amounted to more than two battalions.

In another sector of the front held by a Cossack corps, the Germans had succeeded in driving two wedges between the divisions and had begun to outflank the corps from the right wing. It was then decided that the Cossacks should seize the initiative, exhaust the enemy both physically and mentally, and then retire to a new defense line. This plan was carried through by means of short but powerful blows at the German infantry positions.

At first the Cossacks counterattacked German submachine gunners and motorized infantry on their right flank. Dismounted cavalry, supported by artillery, destroyed about 400 German officers and men and after improving its positions, made considerable advances in some places. Towards evening the Germans, fearing another blow at their advancing left flank, brought a fresh infantry division into action.

In the morning the Cossacks resumed operations in the same area, while the Germans brought an "SS" regiment into battle. When the fighting on the right flank was at its height two Cossack regiments delivered hard blows at the base of the wedge that had been driven earlier at the junction point between the two Soviet divisions. The skilfully concealed cavalry attack bewildered the Germans, and the Cossacks were able to knock out 1,600 Germans, crush the wedge, and force the remains of the Alpine Brigade back across the river.

The next day frequent Cossack attacks continued to disturb the enemy, and during that night there came a third attack at the second wedge on the left flank. Two Cossack regiments forced the river, charged through two near-by inhabited points and cut down about 800 Germans. Three successive blows forced the Germans to hurl their only remaining fresh division into the battle and thus use up their tactical reserve. The Cossacks thereupon seized the initiative completely and fulfilled their operation orders.

The Cossacks' high degree of mobility and great activity, intended merely to forestall enemy blows, had actually enabled them to rout a strong German force.

General Kirichenko's Cavalry Sweeps Through Caucasus

Moscow, **Jan. 16, 1943.**—Lieut. Gen. Ivan Maslennikov's army, with Gen. Kirichenko's crack Cossack cavalry, advanced 19 miles in the North Caucasus to capture the railroad terminal of Blagodarnoe, whence a rail line runs westward to join the Rostov-Baku railroad at Kropotkin, 135 miles south of Rostov, along with Alexandrovskaya, 30 miles up the Rostov-Baku line from Mineralnye Vody, and six other towns.—HENRY SHAPIRO, United Press Staff Correspondent.

Jan. 16, 1943.—Lieutenant General Nikolai Kirichenko's famous Cossacks of the Guards Divisions are playing a brilliant part in the present operations in the Caucasus.

Advancing in company with armored columns and tank-borne infantry, they are rapidly clearing the Germans from the Caucasian foothills and the Kuban Steppes.

Soviet Cossacks wear the traditional uniforms and carry the traditional sabres, but in addition they are equipped with modern arms—machine guns, grenades, etc. After a wild charge, when they have often broken through tank formations, the Cossacks dismount and fight as infantrymen.—*Soviet Embassy Bulletin.*

Red Army Tanks in Winter

By N. Corotneff

The author, who was a captain in the Russian Imperial Army during the First World War, uses his knowledge of Russian winters as a background for this very fine analysis of present Soviet winter tactics. His instructions in the care and operation of mechanized and armored vehicles under conditions of extreme cold are authoritative and timely.

THE second winter of the Russian-German war will probably furnish considerably more data on the operation of mechanized units in winter warfare than the campaign of 1941-42. During the first winter of Germany's campaign in Russia mechanized warfare came to an abrupt end with the retreat of the German Army from Moscow at the beginning of December and did not come back on any considerable scale until spring. The Russian tank forces participated on a limited scale in several offensive operations—especially in the advance on Ludinovo in January of 1942—but details of these operations are still lacking. Small tank units frequently supported Soviet infantry offensives, particularly when they were storming villages and strong points, but all those operations were purely local and of very limited tactical significance.

As to the German tank formations, they were mostly conspicuous by their absence. There are several reasons for the hibernation of mechanized warfare. There is little doubt that the main reason was the tremendous losses suffered by the mechanized forces of both belligerents. The violent tank battles of the summer and fall of 1941 were sometimes fought on a gigantic scale, and if in the early period of the campaign the Russian tank losses apparently far exceeded the German, the score was more or less evened up during the October and November German offensives, which were stopped at the gates of Moscow. There is conclusive evidence to show that the losses of both powerful tank armies—Guderian's group which operated on the southern flank of the Moscow pincers near Tula, as well as the northern group under General Hoth which advanced on

"When tanks operate with infantry they usually form a separate marching column together with ski detachments. Each tank usually takes on board from three to five skiers."

Klin—both suffered crippling losses in machines and matériel.

To this were added the difficulties experienced by the Germans with their synthetic fuel and lubricants, which proved to be unable to stand the sub-zero temperatures of the Russian winter. As a result, the bulk of the panzer divisions were incapacitated and had to be withdrawn deep into the rear to be re-formed and replenished. The Russians were in no better condition insofar as losses were concerned, but both their machines and personnel naturally proved to be better adapted to winter warfare. For years before the war a great deal of experimental work and hard training were done in the Soviet Army in order to adapt the machines and personnel to the rigorous conditions of the Russian winter.

Before the war it was a considered opinion of the Red Army mechanized experts that tanks could operate successfully under the climatic conditions of central and northern Russia for ten months or more out of the year. The exception was the six to ten weeks at the beginning and at the end of the winter. Especially during the latter period, when the snow blanket loses its firmness and the famous Russian mud comes into its own, difficulties for the mechanized vehicles are sometimes insuperable. It is considered by the Red Army that on a firm, compact snow tanks can operate without any special winter equipment, if the depth of the snow does not exceed eighteen inches. With special equipment, like widened tracks and grousers, tanks can negotiate snowfalls of three and four feet, and sometimes more. A sudden thaw, however, that changes a firm snow blanket into a wet and spongy one, can play havoc with the mechanized units. In the depth of the winter in central and northern Russia such thaws are comparatively rare, and do not last for any length of time.

Practice has provided a set of simple rules for winter operations that cover the main pitfalls of driving over heavy snow. The first and most important rule, which is strictly enforced in the Red Army, is that when tanks are moving in column formation, it is absolutely necessary for each machine to avoid the furrows made in the snow by preceding tanks. Every machine must progress only over virgin snow, and the whole column must assume not a regular file, but a slightly recessed, set-back formation.

Experience amply demonstrated that the quickest way to get stuck in the snow, or, as they say in the Red Army, "to sit down," is to disregard this rule. Also important are a thorough reconnaissance of the terrain and great care in choosing the course. The snowfall is naturally deeper in ravines, valleys, and all depressions of the terrain than it is on flat or elevated stretches.

Depressions should be avoided as much as possible.

"The armored sleigh, without any firing power of its own, is towed by the tank to the forward edge of the enemy's defensive zone. Then the sleighs are unhitched and the infantrymen, supported by the fire of their tanks, dismount and go into action."

"With special equipment like widened tracks and grousers, tanks can negotiate snowfalls of three and four feet, and sometimes more."

The best possible course for a tank is along the elevated portion of the terrain, like hillcrests, plateaus, etc.

Usually straight stretches of terrain that are covered with a deep layer of snow are negotiated at second speed. Tracks should not be stretched too tight, since when they are they do not revolve easily. Extra friction is created and an additional load put on the motor. Shifting of gears should be avoided as much as possible to eliminate the danger of stalling. A tank stalled in the snow is sometimes a tank out of action for good.

Unnecessary turns are also to be avoided. If it is necessary to turn, it should be done smoothly and in a wide arc movement, as a sharp turn may cause the tracks to throw-off.

Experiments were made in the Red Army to reverse the tracks in winter, as many tank officers maintained that it would facilitate movement over snow-bound terrain. This, however, proved to be of little practical value. The reverse tracks made deeper furrows, and tanks frequently stalled. Grousers are a much more efficient solution to the problem. Those used in the Red Army are metal cleats, rounded on the edge, 2½ inches long, and extend through the whole width of the caterpillar. They are fastened by means of welding or autogenous soldering, and each track has five or six of them.

Drifts and snow banks are best negotiated at high speed. For instance, a narrow ravine filled with snow can sometimes be taken in its stride by a fast moving tank at high speed, which practically jumps over it. Drifts and high snow banks are sometimes "broken through." In this case the machine is put in reverse and backed up twenty to thirty feet to gather more momentum for the impact.

Marshes and swamps are always treacherous when the snowfall is deep. Solidly frozen marshes under the warming layer of a thick snow blanket begin to ferment and defreeze. In northern parts of Russia, and especially on the Finnish Front, the tanks often got into great difficulties while trying to negotiate supposedly solidly frozen marshes.

Another difficulty peculiar to winter warfare is presented by heavily wooded sections. Moving through woods and forests, the tanks are handicapped by the snow that constantly falls off the branches on the periscopes and portholes, and completely obscures the vision. This makes it necessary to stop the machines frequently in order to permit the crews to get out and clear off the snow. In the dead of winter, when a thick layer of snow covers every branch, the machines sometimes have to be stopped every five or ten minutes. The experience of the Russo-Finnish War of 1940, as well as the German Campaign of 1941, helped to work out an effective countermeasure. In such cases the artillery comes to the assistance of the tanks and, with several rounds of shrapnel, shells the wooded sections through which they will have to pass and shakes the snow off the branches most effectively.*

An operation that requires careful planning is the crossing of a frozen water course. This necessitates, first of all, a most careful and detailed reconnaissance. The tactical reconnaissance, carried out by the mechanized units themselves, sometimes supplemented by skiers, must determine the disposition of the enemy forces in the vicinity of the crossing, the approaches to it, the character of the terrain—which naturally governs

*NOTE: Contrary to the practice of most of the armies, which have virtually eliminated shrapnel shells in favor of H. E.'s, the Red Army considers that shrapnel still has its uses. The same procedure as described above also is used to "comb out" a wooded section from enemy snipers posted in the tree tops.

the choice of the concentration area—and the concealment measures necessary. Additional reconnaissance, carried on by engineering troops, gives the exact topographical data of the banks of the river, the steepness of the slopes leading to the ice, the thickness and condition of the ice itself, and the width and depth of the river.

The thickness of the ice is measured by a special meter. This instrument is a slender steel rod, and when it is driven through the ice, an automatic device on top of it shows the thickness of the ice layer. Not all of the Red Army mechanized units, however, are equipped with it, and in its absence, a wooden rule is used. This requires the making of ice holes, which should be made as small in size as possible and should be done very carefully in order not to weaken the ice. If the thickness of the ice is not less than fifteen to twenty inches and the river is comparatively shallow, light tanks, keeping distances of forty to fifty yards, can cross safely in column formation. When the ice layer is less thick, it is safer for each tank to choose a separate course.

If two crossings are taking place simultaneously, and not more than one hundred and fifty or two hundred yards apart, it is advisable to strengthen the ice, as experience has shown that a simultaneous pressure on the ice within such a sector can produce cracks and fissures. To strengthen it, specially made wooden shields are laid out across the whole width of the river. If shields are not available, mats are made with straw or brush, and repeatedly watered until they are transformed into squares of ice eight to ten inches thick. A squad of sappers using hand operated pumps can prepare enough mats in two and a half hours to cover a crossing seventy to eighty yards wide. The ice must be cleared of snow before the mats are laid out.

Another way of strengthening the ice is to pour water right over it, but this is much more lengthy and involves more labor. In this case the area necessary for the crossing is cleared of snow, and a snow parapet several inches wide is made around it to dam the water within the bounds necessary for crossing.

Camouflage is especially important during crossings. The crews and engineers must wear parkas. Machines and equipment used in the crossing are carefully camouflaged with white cloth, and a thin layer of snow is spread over the fabric. Spades and tools used by engineers are painted white. The crossing itself is preferably undertaken at night. In daylight crossings smoke screens are frequently used. In the latter case care should be exercised in accomplishing it in such a manner as not to create confusion in tank columns by blinding the crews with an excessive amount of smoke. The crossing itself is made under the supervision of special traffic squads, who post men at the approaches, direct the tanks, maintain order, and look after necessary precautions. In very cold weather all sounds are amplified, and carried much farther. It is important therefore to avoid all unnecessary sounds. Commands are issued in the lowest tones possible.

During periods of rest or inactivity, care is taken to preserve the machines as well as the crews from undue exposure. Frequently, if the situation is such that a mechanized unit does not expect to be moved for five days or more, the tanks are buried in the ground approximately up to the base of the turret. Between caterpillars, trenches four to five feet deep are dug. A portable iron stove is placed under the motor housing, or, in the absence of such, a brick stove is constructed. The fire is kept going constantly, and thus frequent idling of motors becomes unnecessary. It is sufficient to run the motor three or four times a day for a few moments, in order to insure an easy start. This procedure not only saves a large amount of fuel, but also provides a warm shelter for the crews. The tanks are covered with paulins and camouflaged with snow. If the situation, on the other hand, is such that the unit may be moved at any time, this procedure is naturally out of the question; although paulins are used, portable stoves are placed near the motor, and the crew can rest under the paulin. Care is taken not to cover up the exhaust, as this creates danger of carbon monoxide poisoning for the resting crew members.

Winter conditions also affect, to a certain extent, the tactics of mechanized units. A rough terrain covered with a deep layer of snow necessitates a careful and elaborate reconnaissance of snow filled ravines and depressions, and generally militates against the use of tanks in large formations. This frequently limits their activity to infantry support. When tanks operate with infantry, they usually form a separate marching column together with ski detachments. Each tank usually takes on board from three to five skiers. A tank battalion thus carries approximately a company of ski troops. When the formation goes through a difficult or little known terrain, the skiers carry on a continuous reconnaissance in an effort to locate the dangerous spots ahead. The tank commanders keep a careful data of the character of the terrain, the depth and the consistency of the snow, the number and character of drifts and snowbanks, etc.; and this data is relayed to Headquarters.

Another winter feature of the Soviet mechanized tactics is the use of armored sleighs, which were first tried out in the Finnish War. They proved to be conspicuously successful, and by the end of the Finnish Campaign the sleighs were used quite widely. Their purpose is to provide protection for the infantry operating with the tanks. It is an armored carrier, without any firing power of its own. The sleigh, with six or seven infantrymen in it, is towed by the tank to the forward edge of the enemy's defensive zone, where the sleighs are unhitched, and the infantrymen, supported by the fire of their tanks, dismount and go into action. When storming strong points this procedure proved to be of definite value and considerably decreased the casualties of the infantry during the initial stage of the attack.

If mechanized units are sometimes severely handi-

capped by cold, on the other hand, the s[illegible] down of motor vehicles on snow and icebound [illegible] offers new opportunities to aggressive tank com[illegible]s. Motorized artillery, for instance, being h[illegible] handicapped on snowbound terr[illegible] comes a much easier prey for t[illegible] than under [illegible] conditions.

Generally, one must remember that Russian mechanized tactics were always more conservative than those of the Germans, and up to the beginning of the war were fashioned along those of the French Army. According to Field Service Regulations of 1936, which still remained valid at the beginning of the war, Red Army mechanized units are divided tactically into two categories: tanks of *distant action*, which constitute independent formations; and tanks of *infantry support*, which are assigned to rifle divisions and regiments. Although the exact figures are not [illegible]

independent tank formations, which the winter enforces, did not affect the Russians' tactics as much as they did the Germans', whose tank strength in the early stages of the war was concentrated almost exclusively in panzer divisions. Only at the very end of the 1941 campaign did the German command begin to show a tendency to break up large tank formations, and in many instances scatter them among infantry units. The Russian winter was one of the causes for this tactical change.

Shaposhnikov and Soviet Strategy

". . . Finally, in the winter of 1942-43, with the help of the Allies in the west, the great offensive against the Reich would begin."

IF the Russians, aided by the thaws, do succeed in thwarting Hitler's plans, whatever they are, and can keep the initiative into next summer, (1942) their war would probably be won. The chances of their doing so are very small. But if they do the next-to-impossible, it will be thanks . . . mostly to the stratagems of Boris Shaposhnikov, the brain of the (Red) Army. . . .

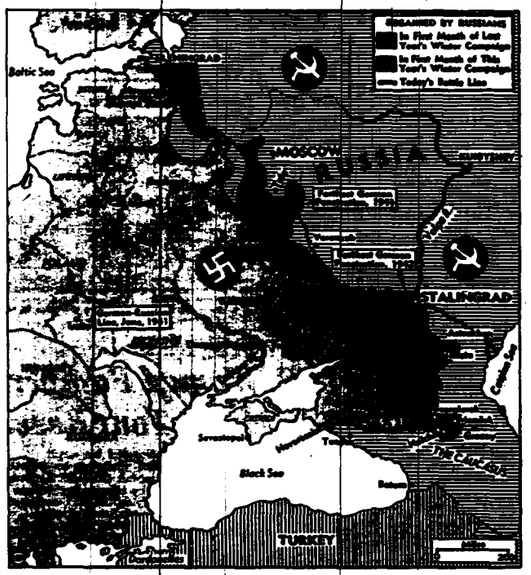
While credit for tactical successes, or blame for reverses, must fall to such regional commanders as Timoshenko, Zhukov, Budenny and Voroshilov, there is only one man who can make the huge strategic decisions on which the war will be won or lost. That is Joseph Stalin. Joseph Stalin never makes a military decision without asking Boris Shaposhnikov what he would do. . . .

Marshal Shaposhnikov has studied winter warfare. He knows what an army can do, and what it cannot do, when snow piles above hub caps.

He knows that bitter winter warfare is old-fashioned warfare, in which man is more important than his machines. He understands winter camouflage. He realizes that in winter cavalry and infantry can accomplish more than planes and tanks. And yet at the proper times he uses planes mounted on skis and tanks painted white. He knows how important the warmth and cleanliness of his men is in the season when frostbite and typhus march with soldiers. He knows that in winter warfare Death takes the hindmost. . . .

Boris Shaposhnikov is probably not over-sanguine about the spring (1942). He would put a little salt on . . . talks of *never* giving the initiative back to the Germans. Marshal Shaposhnikov may have the initiative taken away from him in spite of his efforts to press his advantage. But even if he does lose it, he thinks he can get it back again and eventually win the war, by some such formula as this:

In the spring and summer of 1942, Leningrad would probably be tightly sealed again. Moscow would be attacked, but could hold. The Germans would make their greatest push in the south, would drive the Russians back to the Don River. There the Russians would try to stand, then in the autumn begin a counter-offensive. By that time, if Britain has succeeded in holding Suez and the Middle East, the Germans would be short of oil, men and morale. Finally, in the winter of 1942-43, with the help of the Allies in the west, the great offensive against the Reich would begin.—Reprinted from *Time*, issue of February 16, 1942.



TANK OPERATIONS
In the Enemy Rear

The following operation was carried out in the beginning of the great Soviet 1942-43 offensive. These tactics resulted in the encirclement of German troops at Stalingrad and ended in the capture of Kalach.

By Tank Major General A. Rodin, Red Army

THE Soviet tanks were to penetrate deep into the enemy's rear, some 200-300 kilometers away from the main troops and supply bases. There could be no question of relaying war supplies, fuel and food in the enemy rear. Every detail had to be planned.

The first day of the raid, the tanks were scheduled to cover more than 60 kilometers over ground outside the roads. Daybreak brought the artillery preparation which came as a surprise to the enemy. Before the Soviet offensive began the enemy did not succeed in spotting the Soviet group despite constant and careful air reconnaissance. A thick fog veiled the terrain and obscured visibility beyond 200-300 meters.

The tanks entered into battle beyond the first line of German trenches and barbed wire obstacles. Only on the second defense line did the Germans make an attempt to repulse the attack. *The tanks entered the battle straight from the march,* crushed the German resistance, and moving with increasing speed passed over the second defense line.

Movement over the broken ground of the steppe required much time. Day faded into twilight and darkness set in, but the tanks continued to press forward. Headlights were switched on. *Using their compass,* the tankmen "sailed" the blizzard swept steppe. The strong wind swept up snow which covered the visors and windshields of the trucks. Now and again men had to halt and check their bearings.

Finally, the tanks reached a state farm, the first landmark. The enemy was no longer there. He had fled, and his stores which he had left on fire served as a lighting tower for the Soviet columns.

The tanks pressed forward. Enemy artillery opened fire somewhere to the right, and the tanks switched off their lights. Darkness and the snow obscured everything, but the tanks moved on.

After two more hours, they stopped for refueling. The auxiliary vehicles kept pace with them. Some tanks appeared on the left, headed towards the rear. Scouts were detailed, and the column continued on its march. En route, it received a report that the tanks on the left were enemy tanks moving towards the Soviet rear. All the better—they would now be cut off without any retreat open to them.

Attacking straight from the march at daybreak, the Soviet tankmen captured inhabited points Novotsaritsynsky, Valamovsky, Perelazovsky, and later also Yefremovsky. At Perelazovsky, where the German Corps Headquarters was situated, the enemy offered stiff resistance. But with a sweeping blow straight from the march that enveloped the enemy ranks with motorized infantry, the Soviet troops quickly captured Perelazovsky.

The sudden appearance of Soviet tanks deep in the German rear had a tremendous effect. The enemy fled in panic. The Hitlerites had time to set only one food supply store on fire. The remaining German stores and offices remained intact.

*By Cable to The CAVALRY JOURNAL through I.C.N.

In the houses the Red Army men found abandoned staff documents, officers' coats, etc. Trucks with poultry and pork were abandoned on the streets while at Perelazovsky the enemy fuel dumps were captured. The Soviet tanks refueled with German gasoline.

An amusing incident occurred at Novotsaritsynsky. A group of Soviet commanders were standing in the street when a German automobile came dashing up at top speed. They stopped it and the passengers reluctantly came out of the car. Among them was a staff officer of the German Army Corps.

During a brief halt the tankmen summed up the first results of the raid. The enemy had suffered heavily, and retreat had been cut off for the remnants of two enemy infantry divisions. After two futile night counterattacks, the enemy retreated with heavy losses.

Meantime, the advanced Soviet detachments occupied two more enemy support points. In the morning the march was resumed towards Kalach. The thirty to forty kilometer stretch of road was littered with trophies. Groups of war prisoners, 300-400 each, were encountered en route.

By evening, the tankmen paused in the village of Ostrov for refueling. The scouts reported that 200 kilometers from Ostrov in the direction of the Don was the enemy defense zone.

This meant battle, but the tankmen were in no hurry to become entangled. With the aid of the local inhabitants they learned important information about the enemy forces in Kalach. To all appearances there were no less than a thousand German soldiers in the town and much artillery. There was a good crossing built by the Germans across the Don, strong enough for tanks to get across, and German machines crossed the bridge with their lights on.

At 5 AM our trucks and tanks moved towards the Don. On the hill beyond the village, headlights were switched on. This could mislead the enemy. Half an hour later our main forces began to move towards the Don.

A battle ensued near the enemy's fortified zone. The enemy defenses abounded in fire-points and dug-in tanks. Under cover of a barrage, the tankmen probed for the enemy flanks. The fighting continued with increasing force. Kalach was within a stone's throw, but if the Germans blew up the crossing, the town could not be reached. The ice on the Don was too thin to enable the heavy machines to cross.

Another tank unit started to envelop the enemy from the right. The Germans wavered, began to retreat, and later took to flight southeast. At 5 PM news came that the crossing had been preserved for the Soviet tanks. The strategem had worked brilliantly.

Moving on captured German trucks, Filippov's detachment freely crossed the enemy defense line as well as the bridge across the Don. Thereupon the tommy gunners jumped from the trucks, removed the German guard and prevented them from blowing up the important, strategic crossing which was already mined.

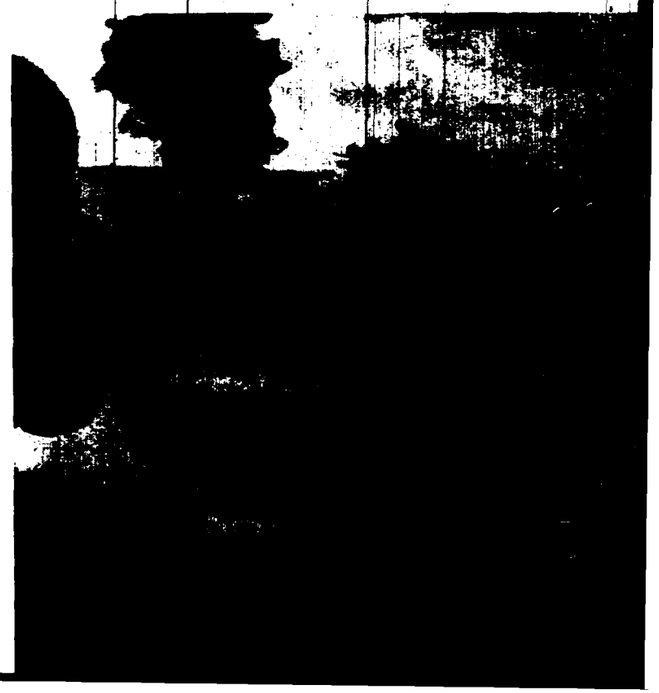
For sixteen hours sixty Soviet tommy gunners and five tanks defended the bridge across the Don while they fought the enemy as he advanced from Kalach and retreated toward the bridge. By the end of the day another tank unit reached the bridge and together they struck a blow at Kalach. This was the third night of the offensive and almost three full days of raid in the enemy rear. Dispatches were constantly received from the units.

The tankmen crossed to the left bank of the Don two kilometers from Kalach, and there was fighting at the approaches of the town. The fighting lasted all night and tense preparations were in progress for the capture of Kalach.

Early in the morning, tankmen under the command of Filippov and Filipenko made a thrust for the city. At 10 AM fighting was already in progress on the western outskirts of Kalach. On the eastern outskirts, the Hitlerites still held their positions. The motorized rifle battalion, detailed to dislodge them, crossed the Don over the ice and broke the enemy's resistance. The surviving Germans fled along the road to Stalingrad with the Soviet tanks on their heels.

The raid was merely the beginning of operations undertaken and accomplished in accordance with the strategic plan of the Supreme Command of the Red Army.

As seen from the inside of one of the tanks, the Red Army armored units pierce deep in the rear of the German front lines in a sector northwest of Stalingrad. A German shell has burst in front of one of the tanks. (Dec. 12, 1942.)



AN ARMORED TRAIN
In Defensive Action*

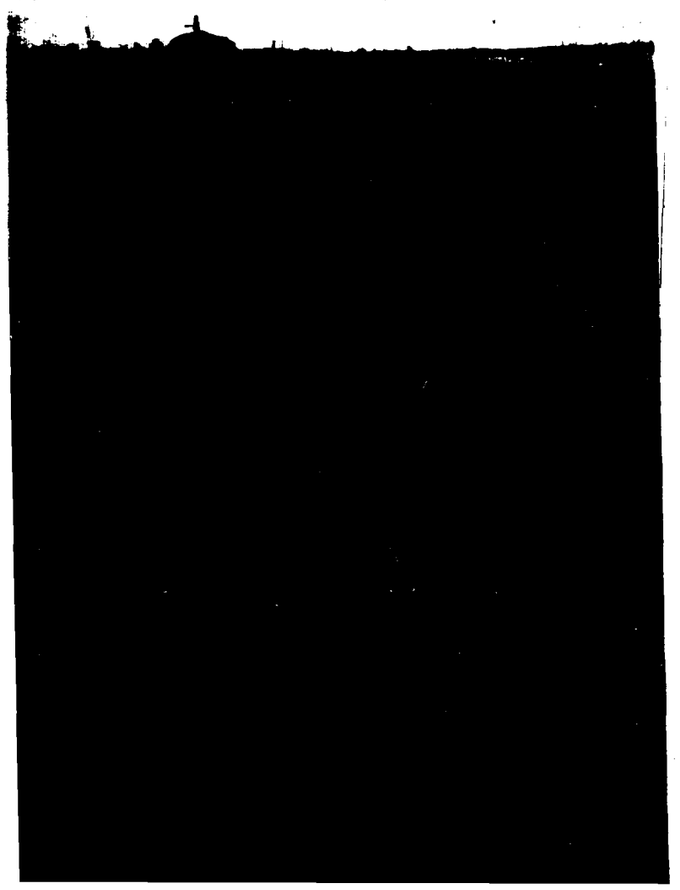
By Captain V. Morozov, Red Army

THE units of one Soviet rifle division, while maintaining a mobile defense on an open plain, had neither time nor available forces to intrench effectively. They were ordered, therefore, to hold the enemy by short counterattacks and, in the event that they were threatened with encirclement, to retire to the next defense line.

In many places the enemy's automatic riflemen, taking advantage of the natural cover offered by the terrain, managed to infiltrate into Soviet positions. German infantry, under cover of their artillery and trench-mortars, massed in a ravine and then launched a heavy attack. The advanced Soviet rifle units were obliged to retire, but according to an agreed plan, as they retired, the enemy was lured along the railroad track.

*By cable direct to The CAVALRY JOURNAL from the War Department, USSR.

Each armored train is equipped with powerful antiaircraft guns. Here Red Army soldiers search the sky for enemy planes.



Despite heavy losses the Germans, encouraged by their initial success, stubbornly pressed forward, but to their surprise, affairs suddenly took a different turn. By a sudden dash a Soviet armored train broke through the zone of the enemy's gun and mortar fire, and after successfully negotiating the gap of 20 centimeters in the rails, plunged into the thick of the enemy's infantry, and cut broad swathes in the German ranks. Simultaneously, the Soviet infantry launched a counterattack and struck at the flanks of advancing enemy troops. German artillery did not dare open fire at the armored train for fear of injuring their own infantry.

Had the defense been of a passive character, the armored train might have limited itself to a firing position, but in that case the Germans' numerical superiority might have weighed the scales in their favor.

After careful reconnaissance had made it clear that the Germans were massing large forces for an offensive in a village not far from the railroad, a plan of action was worked out jointly by the armored train commander and the commander of the rifle division. The whole plan was based on a sudden short surprise blow by the armored train. The infantry was assigned the task of inducing the enemy to move his main forces along the railroad track. Then, after smartly breaking contact with him, they were to re-form their ranks and strike at his flank. Success depended on the speed of action of the armored train which was to advance rapidly for two or three kilometers ahead of the Soviet infantry, break into the enemy's battle order, and take advantage of the fact that in mobile fighting on open ground the enemy would be unable to bring up his light artillery in time or to mask it unperceived.

The element of surprise was insured by the fact that until the moment of action the armored train was in concealment, and its presence was unsuspected by the enemy. The bold and decisive action of the armored train was insured by careful preparatory measures.

Reconnaissance observation and protection of the railroad track was intrusted to infantry posses, which had preliminarily advanced well ahead and effectively concealed themselves. The most advanced posse was equipped with a telephone and all the while supplied valuable information on the enemy's movements.

A Soviet armored train, camouflaged for winter operations, sets out on a mission.

A few hours before dawn several breaks in the railroad track in the vicinity of the enemy (unperceived by him) were repaired with rails prepared beforehand. In the event of breaks in the track during the course of battle, wooden bars were made ready, for experience had shown that such wooden bars can be used for temporary repair of gaps of up to 30 centimeters.

Reliable communication, prior to the attack, between the armored train commander stationed at the infantry observation post and his train, was insured by double telephone lines, from signals, and motorcyclists. All of these precautions, taken beforehand, contributed to the successful action of the infantry and the armored train and made it possible to carry out "pocket tactics," to which the Germans, much to their surprise, fell victims.

Let us relate another episode—the battle for an inhabited place. Because of the character of the ground, the railroad track was not visible for a long distance, and there was a real danger of it being damaged by enemy demolition parties while the armored train was in action. To prevent this, the armored train entered the battle and from the very outset patrolled Soviet positions. The enemy's guns were unable to prevent its movement, as they were forced to confine themselves to the zone of fire.

The armored train's purpose was to retard the attacking enemy, destroy his groups of automatic riflemen near the railroad, prevent him from bringing up reserves, and to cover the Soviet positions.

Endeavoring to probe the weak points in the Soviet defense, the enemy, with the idea of striking in the flanks, began slowly to envelop the railroad track. Thanks to his numerical superiority he was to some extent successful in this, but not for long.

Covered by the armored train, the Soviet infantry parried the enemy's flanking movement and caught him in a pincer movement instead. While the infantry reformed their ranks and attacked the advancing Germans in the flank, the armored train moved on ahead, and with its guns and machine guns mowed down their reserves as they were coming into action. The enemy wavered and began to retire in groups. The armored train's advance was impeded by a broken ridge. Therefore, a party of automatic riflemen descended from the train and advanced pointblank ahead at the enemy.

In carrying out "pocket tactics," when the railroad track is visible for only a short distance, coördinated action between the train and the infantry, and reliable contact between them by means of dispatch riders and signals, is of prime importance.

No less important is it to ascertain the exact moment when the locality around the armored train is clear of one's own troops and occupied by the enemy so that the train may open devastating fire without risk of hitting its own infantry. The proper moment for one's own infantry to attack must likewise be determined.

In order to guard the track the armored train should be assigned a company of infantry which should scatter along the track, keep watch on it and its environs, and serve simultaneously as liaison between the train and the infantry. The armored train should carry raiding parties which, in the event that the track is seriously damaged, should descend from the train and go into action if the enemy begins to waver. These raiding parties will be able to advance under cover of the train's guns and destroy the retreating enemy from the rear with impunity.

When carrying out "pocket tactics," in case of mobile defense it is important that one's own infantry should not concentrate around the train in order to secure protection of its fire. This is dangerous both to the infantry and to the train if the enemy's guns should bombard the train and the track. Furthermore, the armored train, by its tactical character, is best suited for bold, audacious, but short blows and must, therefore, retain its mobility at all costs; and the infantry may hamper its movements.

The purpose of the infantry in such cases is to lure the enemy within reach of the armored train, then break contact with him, regroup, and suddenly attack him in the flank while he is under the devastating fire of the armored train. That is the essence of "pocket tactics" or effective coördination between armored train and infantry.

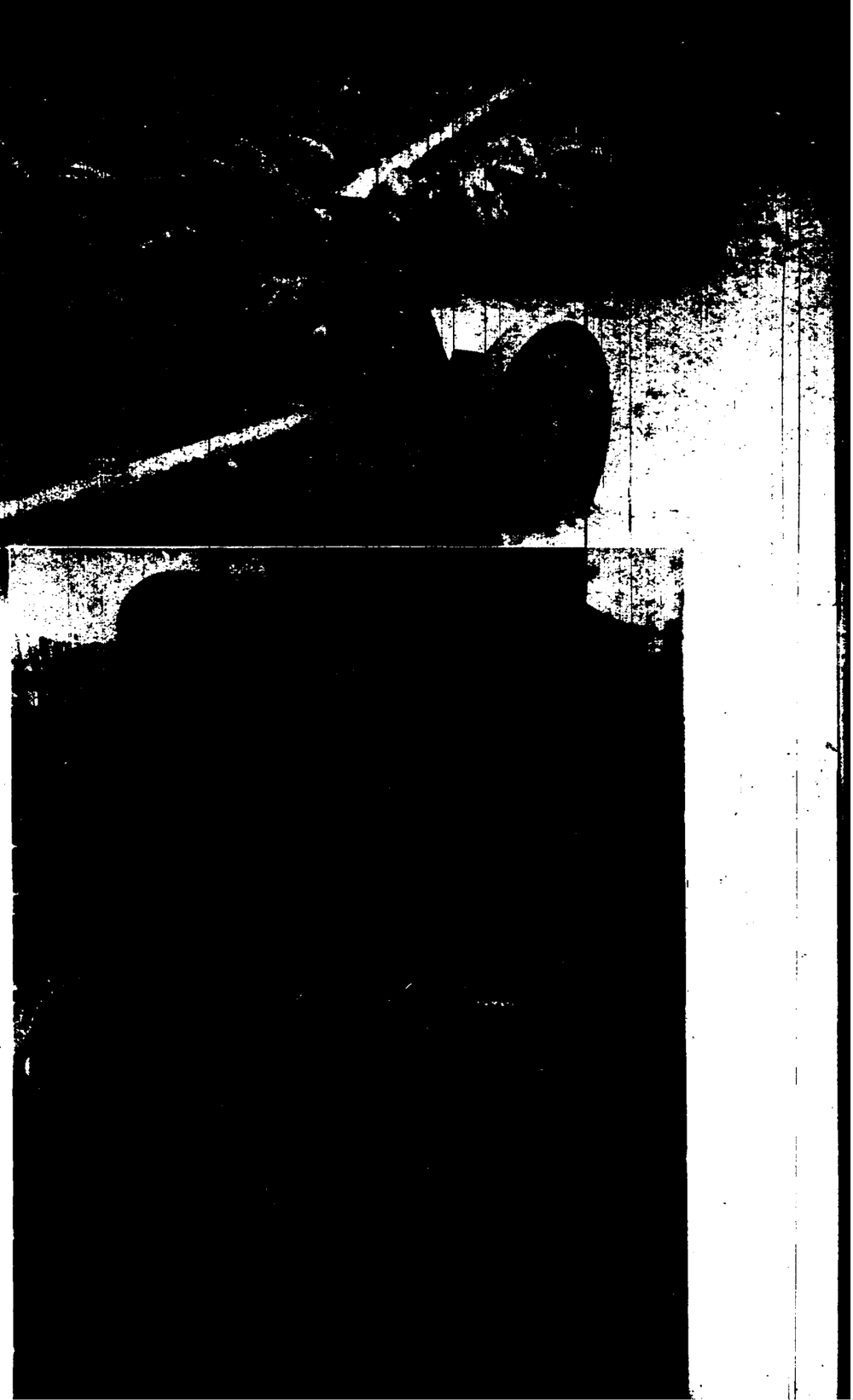
Captured German antitank guns at a salvage center near Tikhvin. The gun in the right foreground is a 50mm model and is missing a wheel at the rear of the trail. Snow conceals characteristics of some of the other pieces.

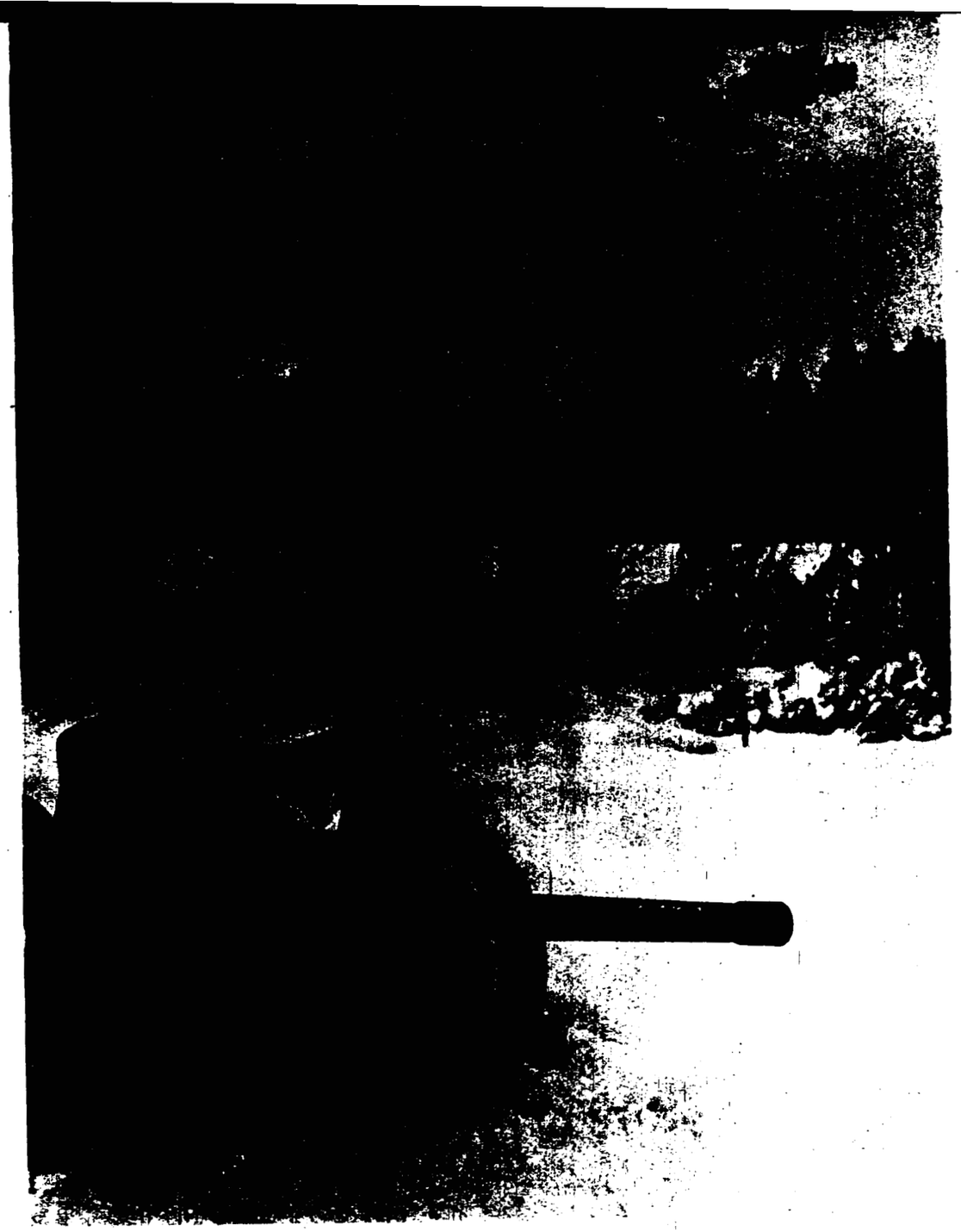
This damaged 210mm howitzer, discarded on the Klin highroad by the retreating Germans, has a range of more than 10 miles and fires a 264 pound shell. It is part of the German GHQ artillery.

Captured German Matériel

Russian Front

Bogged down in the mud is this captured 150mm heavy infantry gun. Gunners' shield is torn away and other parts are damaged. This is probably not of German manufacture, possibly a Hungarian piece. In the right background is the standard German 150mm howitzer.



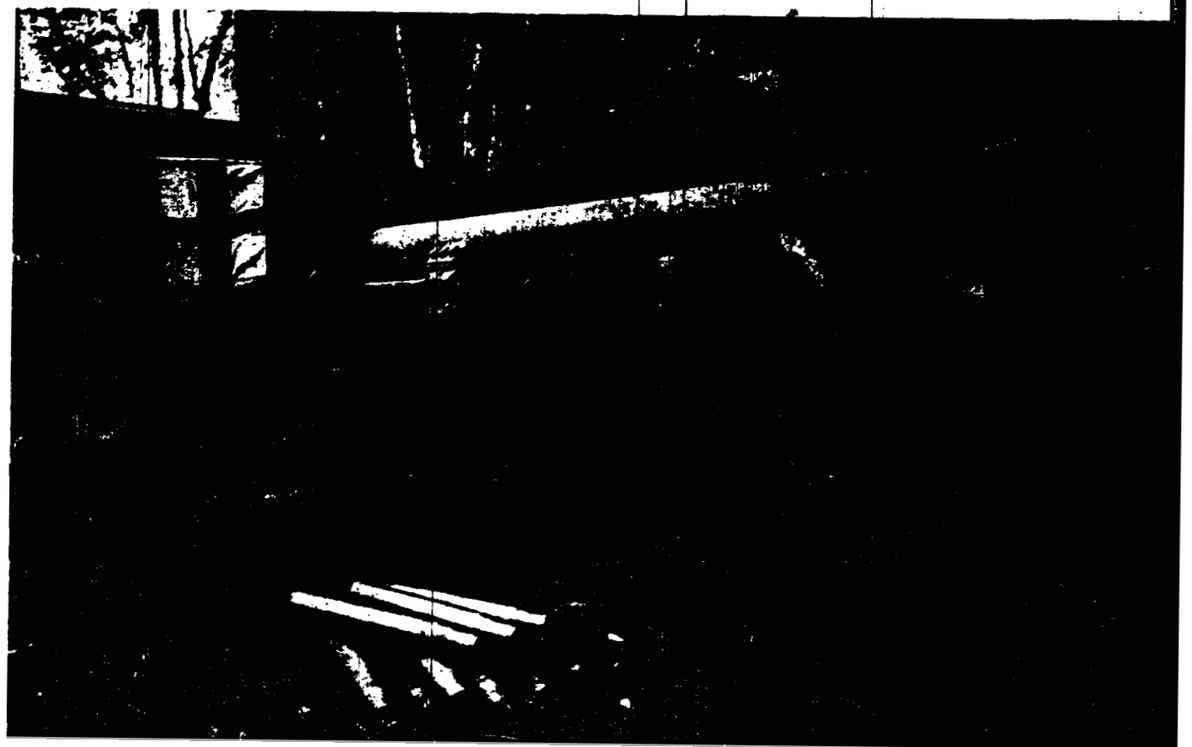


A Krupp Antitank Gun

This 37mm antitank gun was captured by the Red Army near Tikhvin. Thickness of the gun's tube shows that this product of the famous German arms manufacturer is of the high velocity type which the Germans have found so effective. The sloping shield deflects enemy bullets.

This German 88mm dual-purpose gun, captured by the Russians during their winter drive, is of the type that has been used effectively both in Africa and on the Russian front. It was also used in 1940 to smash the bunkers of the Maginot Line. Note the elevating and traversing mechanism which makes it both an antitank and antiaircraft gun.

The German 50mm antitank gun, pictured below, is known as the Pak 38. Ammunition for it lies in front; the flag placed on the shield indicates a lower echelon command post. Note the muzzle brake.



ARMORED INFANTRY
In Armored Operations

*By Colonel James C. Crockett, G.S.C.**

THE application of a purely historic, as opposed to a dynamic, analysis of military operations, principles and tactics is the greatest danger confronting a staff charged with operational planning. Journalists and commentators add to this danger by giving wide publicity to fixed ideas based on past application of military principles.

For instance, the principle of total war has been widely publicized. The ideas as to the application of this principle have become fixed. To a majority of people—both civil and military—total war has come to mean the particular type of war initiated in 1939 by the Germans.

Total war as conducted by the Germans merely represents their maximum effort with the means available. The form which this war has taken depends entirely upon their resources.

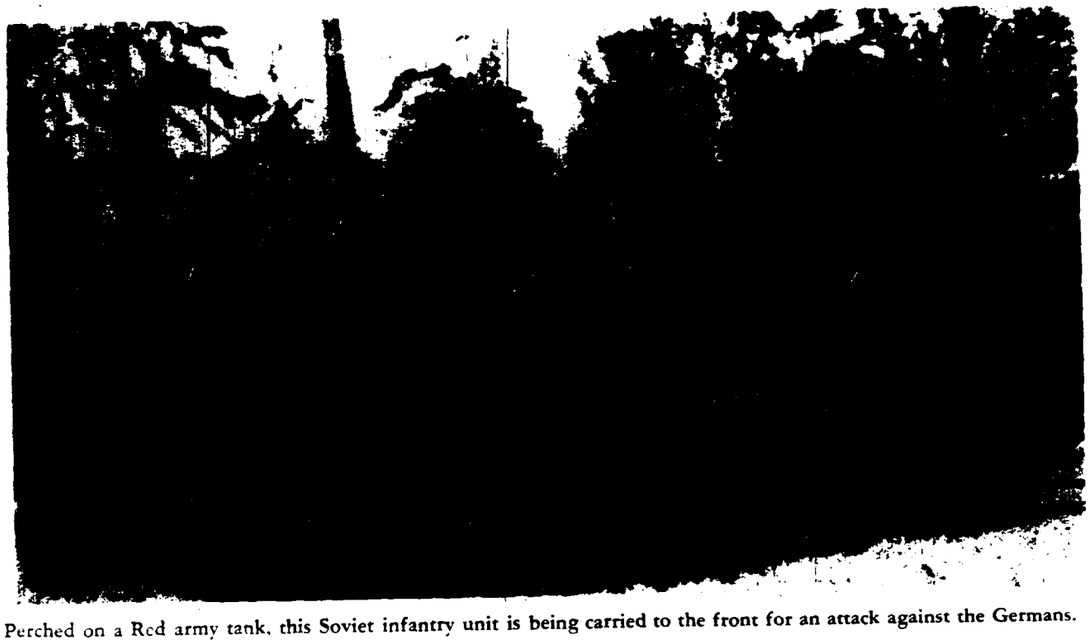
Most of the German concepts brought into play in their conduct of total war have been based on their particular situation—on their military potential. This is strikingly shown in the development of their armored operations. The German armored vehicle production potential was strictly limited; therefore, although their armored operations have been highly successful, the size and use of their armored force have been quite limited. In the light of the success of German armored operations, it seems reasonable to believe that had they had an unlimited armored vehicle production potential, their armored operations would have been far more extensive.

In drawing conclusions as to our armored needs or uses, we should guard against a historic analysis of European armored operations. Analyzing and applying the lessons of the present war we should carefully consider our almost unlimited potential for armored operations.

In the realm of tactics and organization, the fixing of ideas based on past performances rather than on future plans and needs is widespread.

Let us consider a few examples which will illustrate the meaning of the above statements.

*A. C. of S., G-2, The Armored Force—former Asst. Military Attaché, Berlin, 1933-1937.



Perched on a Red army tank, this Soviet infantry unit is being carried to the front for an attack against the Germans.

A detachment of Soviet tank-borne infantry breaks through the enemy lines and dismounts for action.

The armored division was organized as a balanced force of the combined arms, including tanks, for use as a powerful offensive unit. The strength of the armored division is its tank units used as a concentrated striking force. *This striking force must be given the support of all the other arms and services of the armored division.* The infantry, the artillery, the attached air, the engineers are combined in their support of the attacking tanks.

The infantry component of our armored division is called armored infantry. Our armored infantry is transported in armored half-track vehicles—hence its name. In some foreign armies the infantry component of the armored division is transported in armored vehicles; in other foreign armored divisions the infantry is transported in trucks. Whatever the means of transport, the necessity for the immediate and close support of the tank component is a characteristic of armored operations. *Where this infantry support lags or is absent, the tank operations are only partially successful or fail entirely.*

The success of armored operations depends largely upon the *combined operations* of all units of the armored division.

The components of the armored division are so proportioned and harmonized that detaching individual units ruins the fitness of the division for employment.

Similarly the components of the larger armored formations, such as the armored corps, must be so proportioned that the operations of the component armored divisions can be immediately supported by other ground components, such as armored infantry divisions having the same potential tempo as the armored divisions.

The initial success of the armored divisions was, as we all know, very great. In the Battle of France, the armored divisions, with their assaulting tanks ran roughshod over other ground units. Much of this success was, of course, due to the weakness or entire absence of antitank tactics and weapons. But this very weakness of antitank defenses must be largely charged to the application of a historic analysis in the studies of tank operations of World War I.

Since the Battle of France, there has been a large increase in the number and effectiveness of antitank weapons and some development of antitank tactics. During the past year, the tank attack has frequently been brought to a halt by the isolation of the tanks from their supporting units of the armored division. In each case where this isolation has been achieved, the attack of the armored division has been brought to a halt, and in many cases the attacking tanks have been destroyed. The isolated tanks have often been destroyed by defensive infantry employing their various organic weapons. A historic analysis of these operations might say that the value of the tank is declining, and that the proportion of foot infantry must, therefore, be increased. In fact some armies have already decreased the tank striking power of their armored divisions, and have tied tank units to the foot soldier by making the tank units an organic part of the infantry divisions.

A dynamic analysis of these operations certainly calls for a solution of these organic and tactical problems

which does not turn back the clock hands to those massed slaughters of infantry known historically as Passchendaele and the Somme.

The tank was originally invented to get the attack forward through the deadly defensive machine gun fire which caused the attacking infantry such appalling losses. At the time the British introduced the tank, the French were working on an armored infantry carrier which was designed to carry the infantry quickly through the zone of small arm and machine gun fire. These vehicles were mothered by necessity.

Today the increased antitank defenses have brought us to a decisive crossroads. We can either lessen the emphasis on armored operations which have been so successful when governed by sound tactical principles and *properly supported by air*, or we can search for and devise new organization, tactics and equipment for the units supporting the tanks, and thereby maintain the powerful advantage of mobility which armored operations offer.

Armored infantry, which possesses great mobility and has the ability to fight either mounted in armored carriers or on foot, might solve many of the difficult problems that now confront those military men who see in the maintenance of battlefield mobility our greatest opportunity for success and our greatest insurance against the heavy losses of the stabilized positional warfare of World War I.

Both the Russians and the Germans appear to be turning to the latter solution. Both these armies within the past year have introduced new types of infantry organizations to give close and highly mobile support to the tanks in armored operations. The Russians call their tank infantry *Tank Desyanti*.

The Germans have organized a special arm (*Waffengattung*) and given it the name Armored Grenadiers (*Panzergrenadieren*).

A translation of both the Russian and the German names given to their armored infantry carries an implication of troops who fight mounted or dismounted.

Here it may be interesting to quote from the present German regulations pertaining to armored infantry. (September 25, 1942.)

"The strength of armored infantry lies in its speed and cross-country performance, the possession of *numerous* automatic weapons and of protective armor.

"Armored vehicles enable the armored infantry to overcome comparatively weak opposition without dismounting.

"Rapid alternation between fighting from armored carrier and fighting on foot, and the combination of these two forms of fighting are characteristic of armored infantry.

"The chief task of armored infantry is close coöperation with tanks. By following up closely, they can quickly exploit the tanks' success.

"Armored infantry, on account of their speed and maneuverability, can readily adapt their fire to suit any situation. Fire superiority so gained can be exploited more rapidly in armored vehicles than on foot.

"The splinter-proof armor of their transport vehicles allows armored infantry to follow closely behind the burst of their own artillery fire."

In our army, armored infantry is found only as an organic part of our armored division. This armored infantry is trained to support closely the tank operations—sometimes preparing the way for tank attack, sometimes forming the defensive shelter behind which the tanks reorganize. Always this armored infantry must be prepared to operate for periods alone and unsupported, deep in the enemies' position.

The armored infantry supports the tank assault which forms the spearhead of armored operations. To give this support the armored infantry must be as mobile as the tank units, yet it must have the various weapons, light and heavy, and the other auxiliary means to establish and maintain itself defensively.

The real meaning of armored infantry, however, lies in the *armor and speed* afforded by its armored cross-country vehicles. In these armored vehicles, safe from enemy infantry small arms fire and from lateral shell fragments, the armored infantry must remain and fight as long as possible. If the mission or the enemy situation forbids the employment of the armored carrier, the infantry dismounts and fights on foot.

The fight from the vehicle and the fight on foot and the combination of both are the criteria for armored infantry. Their main mission is to take advantage of their mobile and abundant fire power and to put it into effect in combined action with the attacking tanks.

Often the armored infantry units have to create the prerequisites for the tank assault and must precede this assault. Such tasks are, for instance, attack across a stream barrier, across terrain cuts, against enemy strong points located on tank proof terrain, attack against pill boxes or bunkers, attack against villages and woods, and attack at night and in fog. The most characteristic mission is surprise attack to broaden the success of the tanks.

The tactical possibilities for the armored infantry are of great variety.

Summary and Question

Armored divisions have great firepower and mobility.

Armored divisions grouped in large armored formations have been uniformly successful when properly supported by other ground and air units. This support must have at least the same mobility and tempo as the armored divisions.

Armored vehicles give their occupants considerable protection against enemy fire and have great battlefield mobility.

We have the greatest armored vehicle production potential. Why not study the possibilities of armored infantry divisions as possible supporting elements for large operations of armored formations?

The U. S. Medium Tank, M4*

These official U. S. Army photos show the 30-ton medium tank, M4, during tests by the Armored Force Board. The new vehicle differs from the M3 model in that it has an all-cast instead of riveted body giving it a lower silhouette and smoother contours; its 75mm gun is mounted in the turret with 360-degree traverse; it has several machine guns but no 37mm gun.

*Courtesy, *Army Ordnance*

Fuel Bottles As Tank Destroyers*

Condensed from An Article by Major M. Protsenko, Red Army

IN addition to artillery, aviation, and tanks, the Red Army has found a very valuable means of combating German tanks in the "tank destroyer." This term is applied to individual soldiers or groups especially trained in the destruction of tanks by means of fuel bottles. Literally hundreds of German tanks have been destroyed by this means, and cases are on record of individuals who have reached a score of thirty to forty tanks in three months of battles.

A very effective organization consists of three men. Two of the crew are bottle throwers, and the senior is armed with a tommy gun. After receiving a mission to destroy tanks on a probable approach, the group proceeds to the designated spot, and the senior disposes his men. They dig individual trenches, each capable of containing a couple of men and completely camouflaged. Having prepared their positions, each man then carries out a dry run on objects ten to twenty yards distant in order to adjust their fire. The trio act on a predetermined signal, and when the German tank has reached the approved spot the throwers toss their bottles. As the occupants of the tank emerge the man armed with the tommy gun picks them off.

The primary consideration in the selection of a position is to choose a place where the approaching tanks must slow down to negotiate an obstacle. Favorable positions can always be located near bridges, antitank trenches, escarpments, roads, in forests and on marshy terrain.

Coördinated groups of three can be scattered checkerboard fashion about twenty-five to thirty yards apart in accord with the requirements of the situation. Groups are especially useful along a road that is being negotiated by mortar columns. Here camouflage is most essential, as the head of the column is allowed to proceed to the end of the ambush, and upon signal a simultaneous attack is launched. After the attack the groups return immediately to an assembly point.

When friendly troops are on the march tank destroyers are placed in the column and ordered to be alert for possible attacks. Upon meeting enemy tanks they immediately take up positions utilizing any cover at hand.

Tank destroyers are also placed well ahead of advancing friendly motor columns in areas known to be favorable to tank movements by the enemy. When the column passes the individual destroyer positions the destroyers join it.

In offensive battles tank destroyers penetrate with the automatic riflemen and attack enemy firing points as well as tanks in cases where replenishment of expended fuel bottles is expedited. If enemy tanks counterattack, the destroyers quickly take up positions in trenches captured from the enemy, communication trenches, shell holes, fox holes, or other cover and wait for the enemy tanks.

Dug-in German tanks provide still another mission for the destroyers.

In the enemy rear, destroyers are given missions such as the destruction of staff headquarters, ammunition dumps, fuel bases, etc., and for support they are given a section of automatic riflemen. After completion of the mission the destroyers retire to friendly positions under cover of the automatic riflemen.

Upon discovery by the enemy of destroyers who have penetrated, they are ordered not to give battle but to withdraw to cover.

It must be emphasized that each task is a completely new one, and that very few rules can be laid down for this type of "commando" fighting. It is obvious that the job requires an alert, smart, well trained and brave type of man.

SUMMARY

(1) Tank destroyers consist of *three men*; two with fuel bottles and one with a tommy gun.

(2) Selection and *camouflage* of position is essential.

(3) "*Registration*" is carried out previous to approach of enemy tanks.

(4) Destroyer groups are used to *precede a column for security*.

(5) Destroyers, supported by automatic riflemen, are used in offensive action against targets other than tanks.

A Red Army man, armed with bottles filled with a combustible liquid lies in ambush for enemy tanks.

*Za Oboronu, April, 1942.

Fire Power vs. Armor

SINCE the termination of the First World War, and particularly during the last decade, great improvements have been made in armored motor vehicles of all kinds. Mechanical reliability, speed, mobility, armament and armored protection, all have advanced by leaps and bounds. It finally became obvious that if another European war should come (despite the peaceful dreams of the larger part of our population) then mechanized forces would play a prominent if not a paramount rôle.

Some extremists maintained that air force alone could answer all of our war needs. Others thought that we would need ground forces as well—but only armored forces. It was in vain that some of us, at the risk of our professional reputations, published articles protesting that if or when war came ground forces of all kinds would be needed in great numbers and that armored forces alone would not be sufficient.

It was some years before the attack on Poland that a few of us began to urge the making in great numbers of guns that could successfully oppose tanks. We foresaw that should Germany attempt the conquest of Europe by means of a quick, short, violent attack upon the several countries that would be involved, she would count largely upon the armored forces that she was so obviously preparing. It was evident that with such a head start as Germany had over other nations in the way of armored forces, her opponents would not be able to catch up to her in the production, organization or training of such forces before she launched her attack. Realizing this, a few of us advocated special efforts to devise and produce a weapon that would be effective against tanks.

Of course at that time, the proper type of antitank gun had not been determined. But had it been realized how important it was to have some weapon and some method with which to oppose the violent storm that was so obviously coming in the shape of armored forces, there would have been time for much that could have been done.

It should have been apparent as early as the year 1937-1938 that the storm was coming and that there was not time to build tanks in sufficient numbers. There was time, however, to have made antitank guns, and to have improvised out of old 3 in. field guns, or 75mm guns, enough effective power to make up the deficiency in new and better antitank guns. There was urgent need for immediate action and great haste.

Unfortunately, the then prevailing opinion was, that offensively the only weapons to oppose tanks were other tanks. Defensively, it was believed—at least by the French and British—that artillery, mines and various obstacles, with a few small calibered antitank guns distributed amongst the infantry regiments, would be enough.

The great importance of numerous tank destroyer troops, organized in separate units and armed with mobile guns of sufficient caliber, should have been realized at that time. But if it was, very little progress was made.

The truth is that the assertions of certain tank enthusiasts to the effect that the only way to stop a tank was by a tank, were responsible for the failure on the part of the Allies to have enough effective guns to afford serious opposition to the German tanks in France in the year 1940. Since they did not have enough tanks to take the offensive against German tanks, the Allies seem to have reasoned that the only thing to do was to go on the defensive and rely as before said, on airplanes, artillery, mines and obstacles. As it turned out, these measures were ineffective, and the German armored forces in France ran wild as everyone now knows.

All of this led people in America to believe that the tank was invincible. But the tank is not invincible. As has been written often in these Notes, the proper way to deal with enemy armored forces is not by the initial use of our own armored forces but by the initial use of our tank destroyer forces; and then by counterattack with our own armored forces supported by other ground forces. The use of airplanes in both phases of such a battle is, of course, indicated and, in fact, necessary. The Russians have discovered these principles and have used them successfully.

General Montgomery, in command of the British 8th Army in Africa, used these principles in his attack at El Alamein. His infantry, supported by artillery and antitank guns, and tank destroyers, was used initially, and his armored force was held in reserve. When the Germans counterattacked with tanks they were smashed. The British armored forces were then used very successfully against other troops of Rommel's army.

There are those who think, however, that fire power outside of a tank cannot cope with tanks. We have insisted in these Notes repeatedly that the time would come when tank destroying guns would obtain the mastery over tanks, and that when that commenced to be true the decline of armor in comparison with fire power would begin. It has already begun. This was obvious

in Russia in 1941. It has been obvious in North Africa for a year.

Now it is a well known fact that American made self-propelled tank destroyers were furnished in some numbers to the British 8th Army in Egypt. This new gun is accredited with having smashed the tanks of General Rommel's armored force in Africa and with having contributed much to the recent British victory in that country. If the claims made for this gun are true, we can see the handwriting on the wall. The dominence enjoyed by armored forces on the battlefields of 1939 and 1940 is over.

As mentioned before, this decline had become apparent in 1941 in Russia. In a recent newspaper dispatch, Henry Shapiro recently quoted Lieutenant General Chuikov as giving much credit for Russian successes to their *Katushka*, the still secret Russian gun that is responsible for many tank casualties. (See below.)

It is another example of the old story of *fire power versus armor*. Fire power always wins in the end.

This does not mean that armor will be discarded. Warships have retained armor even though the projectiles fired from big guns can pierce it. Armor gives protection against small arms, and all guns but those especially designed. Therefore, armor will continue to be used to give protection against ordinary weapons and to force the enemy to take special measures to protect himself against armored vehicles. Nevertheless, armored force will gradually lose its abnormal ascendancy, and, although useful and necessary, will never again occupy the powerful and dominating position that it held for a brief moment in the early part of this war. Although the speed of motor vehicles on roads or suitable terrain will continue to be very important, even that value will be somewhat lessened by the coming inability of armored vehicles to give the same protection to motor columns that has been relied upon for the last three years.

We are creating many new divisions of armored troops for this war. And we are right in doing so. Armored force is a branch of the army that will be important for an indefinite time to come and perhaps always. But it may now be noticed that war correspondents and press writers have at last awakened to the paramount importance of infantry and other arms and are giving them more notice and more due credit than at any time since the advent of the two new arms—air force and armored force.

The fire power of the tank destroying guns is restoring a proper balance to our war machine.

Antitank Defense*

THE most important single consideration in the defensive battles now being conducted by the Soviets is the defense against German tanks.

Correctly disposed and camouflaged, antitank weapons can and are stopping the German tanks. One case of a recent battle is recorded in which three antitank guns of the regimental artillery held off fifty-six German tanks in an all day battle and destroyed five others. Another case records that thirty-five to forty German tanks attempted to cross a river over a single bridge. One well placed, antitank gun destroyed five of them and forced the remaining tanks to seek other means of crossing.

No set rule can be laid down regarding the density of antitank weapons on any sector. The system depends upon the terrain and the local situation. In general, there should be greater density toward the rear. An attack by a large number of tanks is met at the front lines by artillery and rifle fire. Then antitank rifles and destroyer tanks come into play. If the enemy tanks still break through they run into tank obstacles defended again by flanking and rear antitank fire. Soviet infantry at this point attempts to cut the German infantry off from their tank support. The tanks then continue to run into tank destroyers and increased mine fields.

Where Soviet tanks are used in the defense they must not be pushed out front but scattered to the rear and dug in to await a possible break-through, where they can then do their best work.

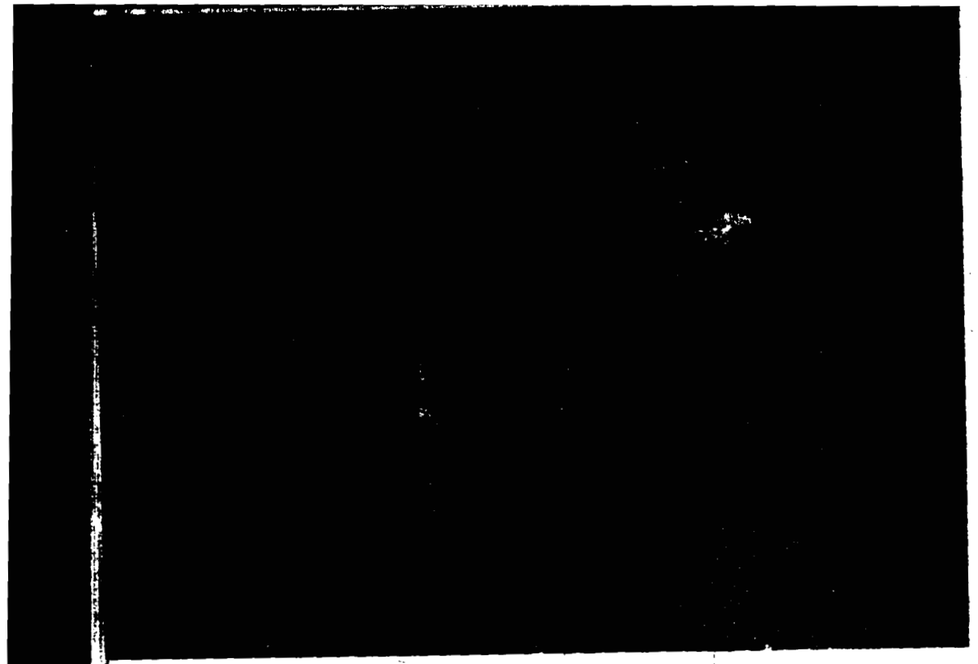
*The brief of an article written by Major General F. Zakharov.

Katushka's 'Unpopular'

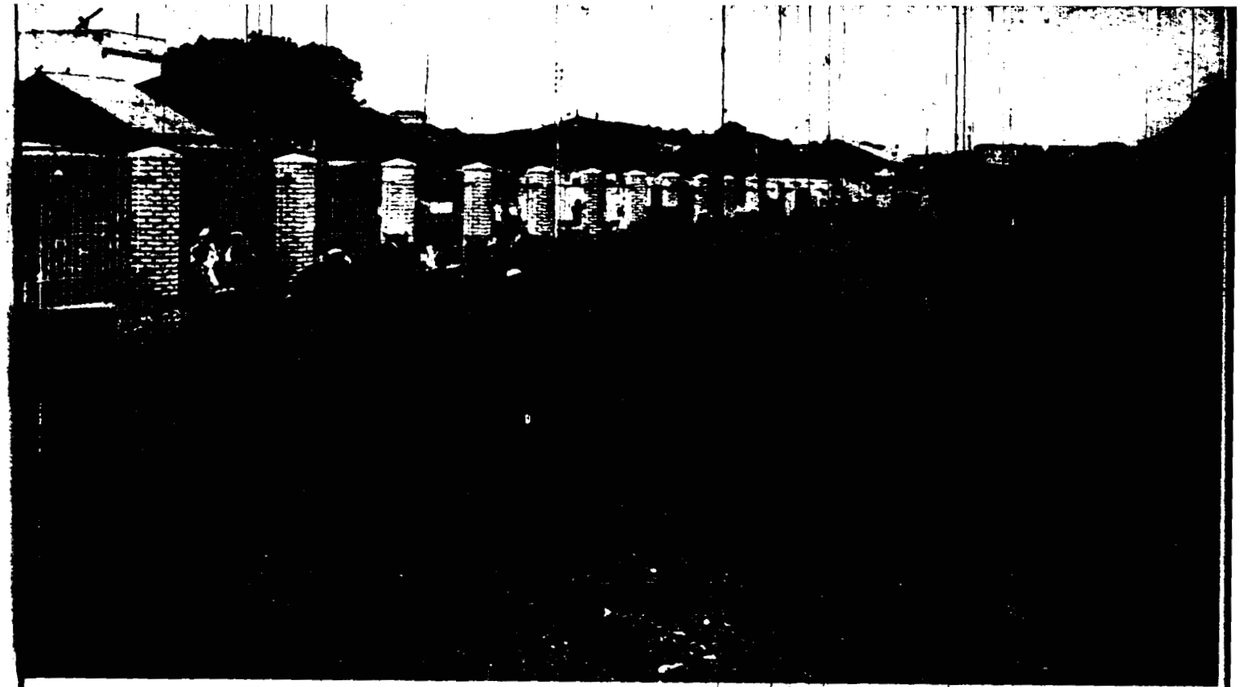
General Chuikov (defender of Stalingrad) said, ". . . In the Battle of Stalingrad the Russian hand grenade won general respect. Extremely unpopular with the Germans is our Katushka (the still secret Russian gun), which the enemy call 'Stalin's machine.' All living objects are destroyed wherever its shells burst."—HENRY SHAPIRO, United Press Correspondent, Moscow.

U. S. Armored Forces in North Africa

A U. S. 105mm tank destroyer rolls across the Algerian countryside after the Allied landings on the North African coast. The picture below shows a tank crew of the U. S. Armored Force in North Africa.



Cavalry and pack artillery mounts are unloaded from ship in New Caledonia.

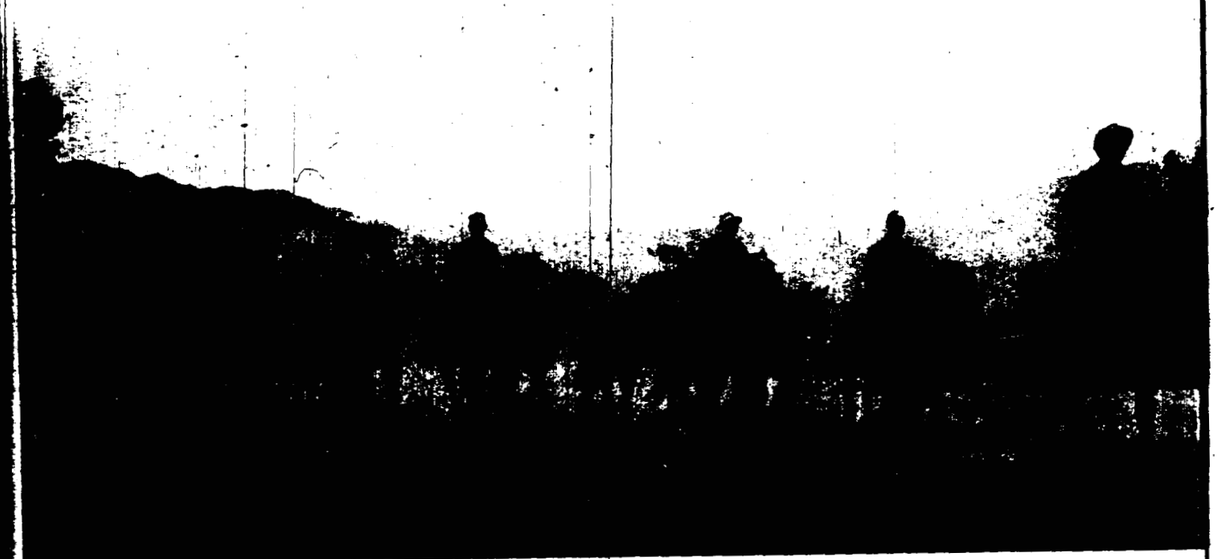


Horses are led to a corral to get their "land legs" after voyage to New Caledonia.

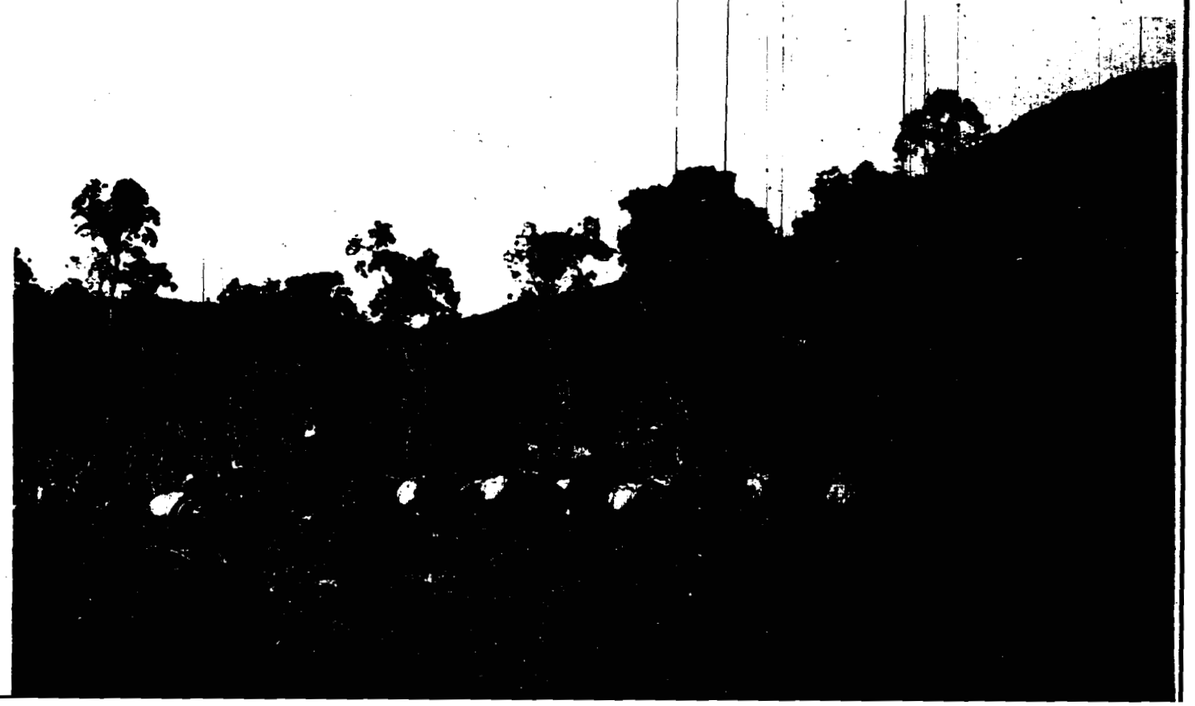
U. S. Cavalry and Pack Horses in New Caledonia

The strength of the United Nations forces in the Southwest Pacific theater of operations now is augmented by the presence of mounted troops from the United States. For certain problems of defense and offense in that area they are indispensable.

Pack train maneuvers in New Caledonia in a settin g reminiscent of our own great western outdoors.



The mules plod along with their packs. These sure-footed hybrids can travel all day over difficult terrain and carry 300 pound loads.



Tactical Data From Fighting Fronts

Each of the last several issues of The CAVALRY JOURNAL has contained a number of authoritative articles on *practical applied tactics* from one of the principal *fighting fronts*—the Russo-German line that extends for over 2000 miles—from north of Leningrad to Rostov and beyond.

Many of the articles have arrived by cable direct from the War Department, U.S.S.R., Moscow. Some have been furnished us by the Soviet Embassy in Washington. A few have come by way of other sources. All are authoritative. All are based upon experience rather than theory.

In times of peace the most reliable military deductions are those based upon maneuvers. In times of war the only deductions that are practicable are those based upon actual fighting.

The CAVALRY JOURNAL, during this time of war, is making a desperate effort to bring to its readers the *essence* of *lessons learned* from combat, in order that both officers and men of the U. S. Armed Forces may profit from the experiences of others.

Many of the articles deal with the most fundamental expedients of survival—simple tactics developed from the necessities of war—kill or be killed.

In these lessons from the war fronts two particular tactical features have been emphasized again and again. They are—

THE TACTICAL EMPLOYMENT OF SMALL UNITS

In a war of survival, tactical expedients grow out of necessity.

A fuel bottle, accurately aimed, stops an enemy tank (Page 26). A pilot runs out of ammunition and he learns how to "ram" his opponent, send him to his death, and bring his plane in safely (Pages 46 and 47). German parachute troops land, and small detachments dispose of them (Page 48). From three to twelve men, with rifles, tommy guns and machine guns, rout forces superior in men and matériel (Page 44).

Experience proves that in warfare the small unit—well trained, determined, and persistent—can wreak much damage upon the enemy. Individual snipers, lying patiently in ambush, are accredited with from 150 to 300 casualties, and they live to tell the story.

The other important lesson from Russian reports is—

THE VALUE OF RECONNAISSANCE

Get as much information of the enemy as you can, before you strike!

In every article from Russia, every description of combat is prefaced by, "After a thorough reconnaissance had been made . . .," "After a patrol had reconnoitered . . .," "After having made a careful reconnaissance of the enemy's position . . .," *ad infinitum*.

Regardless of strength, any action is more powerful if the commander has some knowledge of the strength and disposition of his adversary. Without this knowledge, he moves blindly. He can be delayed, stopped or thrown back *unnecessarily* by any sudden and unexpected encounter *of a hostile force half the size of his own, whose commander is well informed of the situation*.

This is one of the most potent lessons that has come from a *fighting front* and one that we cannot afford to ignore. The age-old principle of conducting proper reconnaissance (regardless of the mission, size, or type of troops involved) is essential to successful combat in any war, no matter how modern the war may be. Too often its value is realized and appreciated most, when "it was not there."

The time to learn and practice this lesson starts during the unit training period. We cannot wait until the enemy is pounding at us to learn the lesson of *"how, what, where"* is the enemy. Let us learn from the valuable experience of those who have fought this war ahead of us.

Let us use our reconnaissance units for what they were intended. Let us practice in maneuvers what we are going to find necessary in battle.

✓ ✓ ✓

"Vehicular Reconnaissance"

The article by this title which appears in this issue is an excellent, succinct summary on this subject.

Innumerable requests have been made of us for this article, originally printed in mimeographed form and mentioned in the September-October issue of The CAVALRY JOURNAL. It is with much pleasure that we present it intact on page 49 and recommend it to all, especially those officers and men on duty with reconnaissance units.

✓ ✓ ✓

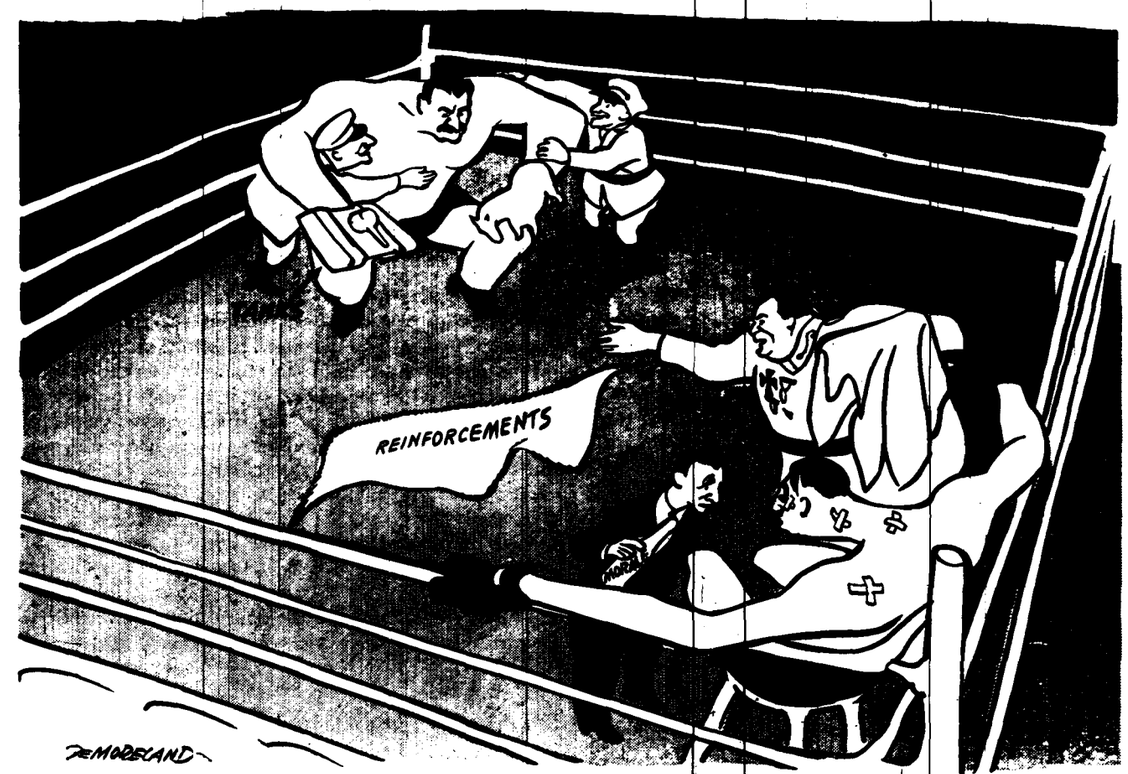
Dirty Fighting Can Be Fair Play*

If there is one single characteristic that is typical of all Americans everywhere, it is good sportsmanship.

That word takes in a lot. Think it over for a minute. Sportsmanship is more than playing clean ball. It is playing clean in the game of life. It is live and let live, it is liberty, it is freedom, it is following the rules of the human game; yes, all that comes under the heading of good sportsmanship.

*Courtesy, Bill Stern, NBC Director of Sports.

THE SELF-STYLED "CHAMP" IS WORRIED!



Rous mit der towels und vater—how do I stop his right jab and left hook?

Perhaps that is why sports in the United States enjoy a popularity such as is known in no other country in the world. Americans are just built that way. They like action, excitement, and thrills, but they play by the rules and expect the other fellow to do the same.

But what happens when the boys come off the gridirons and diamonds and courts, and get into a game where the other team starts playing dirty, a game where there's no "Ref" to impose the penalties? Suppose it's a game of life and death and you are at war with the Nazis and Japs?

Do we still play fair, or do we toss aside everything that our boys have been taught for generations? That is a problem that is facing a lot of the boys in service, whether they are former All-Americans or grandstand quarterbacks.

You hear a lot about the "dirty fighting" being taught the boys in service. It doesn't sound like American sportsmanship, and it seems to bother a lot of "armchair strategists." Let's forget those people and think about the people who are doing that fighting—the boys in uniform.

They are being taught all of the tricks of the trade of war—things that they must know. Like the war itself, we did not ask for dirty fighting, or any fighting. But if that is what the Axis wants that is what we will give them.

We do not stoop to tricks like machine gunning fliers who "hit the silk," or shelling men in open boats, or shooting prisoners. But in the close-in fighting there is not a reason in the world why the boys in uniform should not get tough and rough. If they do not, the Japs and Nazis will. It is a case of life or death.

It is too bad that it has to be that way. But there is just no referee in this game, and unless the boys fight as dirty as their enemies, it is going to be too bad for Americans.

✓ ✓ ✓

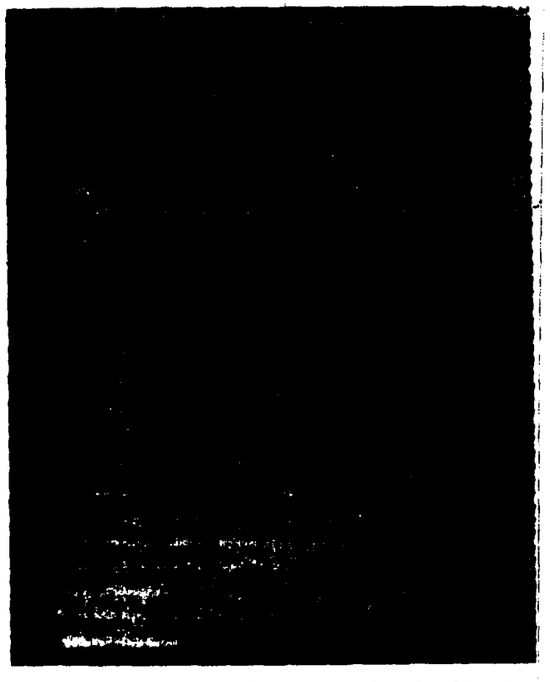
Cavalry Journal Circulation Reaches A New High

If you do not receive your first copy of the JOURNAL as promptly as you might wish, please be just a little patient with us. We make every effort to get the first JOURNAL in the mail within a day or two after receiving your order, but our Circulation department has been so deluged with new subscriptions recently that we have sometimes fallen behind schedule.

Our aim is to print uptodate information on combat experiences and techniques and to get the JOURNAL to our subscribers as quickly as possible. The first is useless

without the second, and we cannot do the latter without your coöperation. Drop us a card when your address is changed and keep us abreast of your APO number if you are overseas. From all the evidence we have, the Army Postal Service is doing a magnificent job and the JOURNAL is being delivered promptly at many an overseas front and camp. Reproduced on this page is a V-mail change of address which reached us eight days after it was mailed from the ETO. The foresighted officer who took three minutes to send us that address will receive this issue of the JOURNAL only a few days after the subscriber stationed right in Washington, D. C.

We appreciate your advising us as to what you like to read and see in the JOURNAL. The Reconnaissance article by Lieutenant Colonel Cook and the increase in exclusive pictures in this issue are the results of the widespread demand from our members. The CAVALRY JOURNAL is your magazine and you make it what it is.



This V-mail change of address reached us in eight days from the European Theater of Operations. The mail and the *Journal* are getting through!

Cavalry Journal Material

Particularly interesting is the concensus obtained from the "proxy card" comments on the subject matter that has appeared in The CAVALRY JOURNAL during the past year.

As usual, the majority of proxy cards gave no answer to our query, "What article did you like best?" But a tabulation of those comments that were received netted the following information:

Reports from the battlefronts	134
Cavalry	120
Armored	107
Reconnaissance	57
"All good"	41
Training methods and new weapons	24
Air-tank-horse in reconnaissance	10
Miscellaneous	44

It is gratifying to find that this tabulation follows so closely the proportionate division of subjects as they have appeared in The CAVALRY JOURNAL during 1942.

It is not always possible to obtain authoritative material on each of the above subjects for every issue. During the past year, however, a number of valuable articles have been published on each of these subjects, and each issue of the JOURNAL has contained several feature articles that have attracted sufficient attention to be reprinted by one or more other military publication. A number of articles have been reprinted as official training data.

During 1943 The CAVALRY JOURNAL will again make every effort to print the authoritative material on those subjects that its readers most desire.

FEDERAL INCOME TAX LIABILITIES OF OVERSEAS PERSONNEL OF THE ARMY*

The Act of Congress approved March 7, 1942 (Public Law No. 490, 77th Cong., 2d Sess.), provides that, when any individual in the military forces is serving outside the continental limits of the United States (defined in the act to mean outside the States and the District of Columbia), at the time a Federal income tax return or payment of Federal income tax would ordinarily become due, the due date for filing the return or making the payment shall be the earliest of the following dates: (a) the fifteenth day of the third month following the month in which the individual concerned ceases (except by reason of death or incompetence) to be outside the continental limits of the United States, unless prior to the expiration of such fifteenth day he is again outside the continental limits of the United States, or (b) the fifteenth day of the third month following the month in which the present war is terminated, as proclaimed by the President, or (c) the fifteenth day of the third month following the month in which an executor, administrator or conservator of the estate of the individual concerned is appointed.

The act above referred to does not relieve an individual in the military service of liability for Federal income taxes; it merely postpones the time when returns must be filed and payments made by individuals coming within its terms. The act is a relief statute and a person entitled to its benefits may nevertheless file his return and make payments if he so desires.

The Commissioner of Internal Revenue also has power to extend the due date of a payment or of a return, which has already been deferred under the above act, if an individual returning from a station outside the States or the District of Columbia has need of and applies for such further extension.

In the event that inquiries are made by the office of the collector of internal revenue concerning the failure of an individual to file an income tax return or to make a payment of income tax upon a due date, a statement by the wife of the individual concerned, or of a responsible person in a position to know the fact, that the individual was outside the continental limits of the United States at the time the return or the payment of tax was due should satisfy the office of the collector. It would appear desirable, however, both from the standpoint of the individual concerned and the Bureau of Internal Revenue, that written advice be given to the local collector in advance of the ordinary due date of a return or of an income tax payment that the individual concerned is in the active military service and is, or will be on that date, outside the continental limits of the United States. The exact whereabouts of the individual need not, of course, be given.

The privilege of deferring the reporting and payment of tax on the income of an individual serving outside the continental limits of the United States applies not only to his military pay but also to his income from sources within the continental limits of the United States even though such income may be received by the holder of a power of attorney, or by the wife or other dependent of the individual concerned. While it is the general practice, and advisable, for an individual, before leaving for a station outside the continental limits of the United States, to leave a power of attorney authorizing his wife or some other person to prepare and file income tax returns for him, the person so empowered need not file a return but may accept the benefits of the act above referred to on behalf of the individual concerned.

Allotments from pay are not income to the allottee and need not be reported as income by the person receiving the same. The amount allotted remains the income of the individual making the allotment, to be reported and a tax paid thereon when a return or payment is due, subject, of course, to rights of deferment. Income from property owned by an individual constitutes income of the person owning the property and should be reported by him when he files his income tax return. If, therefore, an individual serving outside the continental limits of the United States, authorizes his wife or other dependent, to receive and spend for her own use income from property owned by him, such income need not be reported nor any tax paid thereon by the person receiving the same. That part of the family allowance granted to and paid by the Government to dependents of enlisted men (Public Law No. 625, 77th Cong., 2d Sess.) which is charged against and deducted from the pay of the enlisted man is to be included in his gross income as though received by him unless it is paid to a divorced wife or a wife legally separated from him in which instance it is taxable to the wife. That portion of the family allowance contributed by the Government to the dependents of the enlisted man is considered as a gift and is not taxable either to the enlisted man or to his dependents under any circumstances. (See. I. T. 3574, 1942 Int. Rev. Bull. No. 36, p. 2; Sec. 120, Revenue Act of 1942.)

The victory tax of 5 per centum imposed by the Revenue Act of 1942 upon income received after December 31, 1942, applies to the income of military personnel, including their military pay, in excess of $624. A return covering the victory tax is not due until March 15, 1944. The act of March 7, 1942, above referred to, will, however, permit deferments of returns and payments of the victory tax as well as the regular income tax. Income in excess of $624 separately earned after December 31, 1942, by wives of military personnel is subject to the victory tax of 5 per centum and, to the extent that such income is composed of "wages," is subject to the withholding of 5 per centum thereof under the Revenue Act of 1942 as an aid to the collection of the victory tax.

The revenue laws do not grant any general deferment to wives of military personnel serving outside the continental limits of the United States for the filing of returns or the payment of income taxes with respect to wages or salaries earned by them or income from property owned by them. Section 507 of the Revenue Act of 1942, approved October 21, 1942, however, provides for the suspension of time limits running against the Government, taxpayers and others in certain cases where, by reason of the war, timely performance of acts affecting Federal tax liabilities and rights is impossible or impracticable. The Commissioner of Internal Revenue has not yet promulgated regulations with respect to section 507. In some instances it may be impracticable for wives of individuals domiciled in community property states to file individual income tax returns on the due date. Furthermore, it may be impracticable for a wife to file a separate income tax return with respect to her separate income in cases where she may have losses more than offsetting her income, which, in a joint return, could be used to offset her husband's income. Or a husband may have losses in excess of his military pay which could be used, in a joint return, to offset the separate income of his wife. Where losses incurred by one spouse or the other raise the question of the advisability of a wife filing a separate return with respect to her separate income, competent counsel or the office of the local collector of internal revenue should be consulted concerning her rights under section 507 of the Revenue Act of 1942.

*The information set forth herein was obtained by informal inquiry of the Office of The Judge Advocate General of the Army.

The Defense of Bir Hakeim*

May 26—June 10, 1942

UNDER orders from General de Larminat, General Koenig was in command of the brigade entrusted with holding Bir Hakeim.

Naturally we are not allowed to furnish a complete picture of the battle order of our forces in Libya; we can, however, in order to give an idea of their nature, mention certain of the units which were included therein.

Foreign Legion. (Elements of the former 13th Foreign Battalion) and Legionnaires rallied during the Syrian campaign.) Veterans of Narvik, and Eritrea. (Keren and Massouah).

Marines. (Veterans of the 24th Colonial (battalion) stationed at Cyprus at the time of the armistice and who joined the Free French Forces at that moment, participated in the first Eritrean campaign, in the Syrian campaign; new elements rallied in Syria, etc.). Battalion composed entirely of Frenchmen from continental France, particularly Parisians and Bretons.

Pacific Battalion. Recruited among the Frenchmen of our possessions in the Pacific and native Maoris.

Makeshift battalion composed of fragments drawn from different regiments of the Chad. Sharpshooters from the Sahara, recruited in French Equatorial Africa, one of whom played a capital rôle in Eritrea, at Kub-Kub, in the battle of Keren.

Batteries of 75mm artillery. Formed around the first batteries from French Equatorial Africa, which participated in the Eritrean and Syrian campaigns.

Battalions of machine guns mounted on weapons carriers (auto-mitrailleuses). Formed in Syria with motorized units of the cavalry.

Light tanks, supporting the machine guns mounted on weapons carriers.

Quartermaster Corps. Strengthened by the experience acquired during the campaigns in Eritrea and Syria.

Mobile operations battalion. Commanded by an officer and formed of elements which participated in the operation of Koufra.

Medical Corps. French doctors and nurses.

The Theatre of Operations

The Bir Hakeim plateau extends for several square kilometers at the crossing of the caravan routes. One route leads towards Tobruk, 80 kms. to the northeast; the second, towards Gazala and El Gubbi to the north; the third, towards Sidi Omar, to the east on the Egyptian frontier.

Through its geographic situation, at the extreme south of the Libyan front, Bir Hakeim constituted a position as important as it was dangerous. The troops which defended it had, at the same time, to face a frontal attack and prevent the enemy's attempt to turn the left flank of the allied forces.

One cannot, therefore, overestimate the confidence shown French troops by the British High Command who handed over to them the safeguarding of this bastion whose fall was, indeed, indispensable to Rommel's operations.

The Battle

It was on Tuesday, May 26, that after a three months' calm Rommel undertook in Libya the offensive which inaugurated what *The London Times* called the Sixth Campaign since the beginning of the war, the first having been launched Sept. 13, 1940.

It was also on that day that, for the first time since the the capitulation of France, Free French Forces participated in a battle against Axis troops. Our men, for the most part, were equipped with French matériel recovered in Syria after the cessation of hostilities against Vichy.

At the moment, General Auchinleck, adopting defensive tactics, used antitank batteries on positions chosen by him. The number of tanks which he had was not inferior to that which the enemy had, but the majority of the British tanks were not fitted with cannon of equivalent fire power.

On the eve of the first engagement the Stuka dive bombers already had attacked the Allied lines, but the two armies were still separated by a vast "no man's land."

What was the principal objective of the enemy? It was still too early to deduce it from his dispositions. This was made even more difficult to determine because it was not known whether or not he was sending in all of his tanks. It was supposed, however, that the enemy

Free French Marines who made such a gallant stand at Bir Hakeim are shown manning an antiaircraft gun somewhere in Africa.

*Extracted from *Publications de la France Combattante* No. 52.

A Fighting French seventy-fiver hurtles shells across the desert toward the enemy. The above picture was dated May 18, 1942 and was probably made in the vicinity of Bir Hakeim.

believed that he could reach Tobruk by crossing the crest of El Akaba which stretches out between Bir Hakeim and the sea. As for the armored forces of General Ritchie, they were disposed so as to answer an enemy attack from the north or from the south, quite ready, as events proved, to face the eventuality which took place.

British aerial reconnaissance was able to observe the preparations of the enemy offensive. To upset these preparations the R.A.F. heavily bombarded the enemy airfields. Raids followed each other all night long and were reinforced at dawn and dusk by low altitude attacks carried out by light bombers and fighters.

"Decisive Attack"

The meaning that the German High Command intended to give to the operations being projected was another uncertainty. This was made little clearer after reading an order of the day from Rommel to his troops, which had come by chance into the hands of the British General Staff. Here is the text of it, dated June 26, 1942.

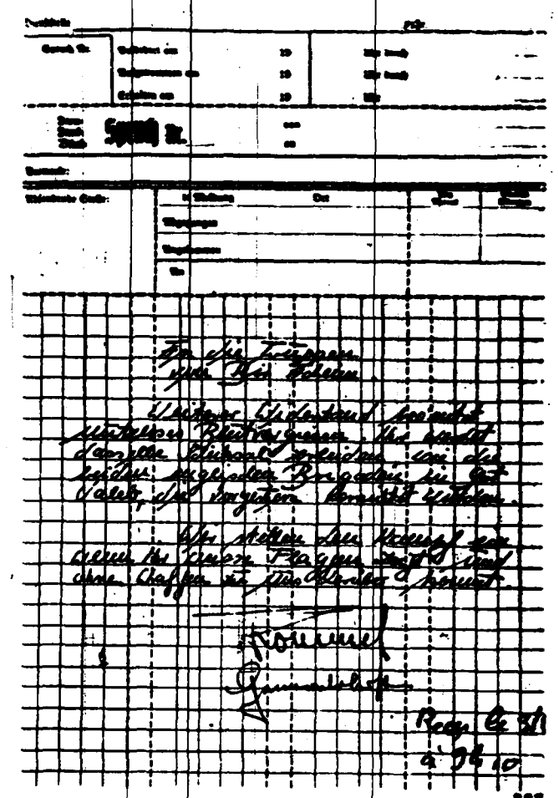
It bears the title: "Decisive attack against the British," and declares: "The African Armored Army, in the course of important operations, passes over today to a decisive attack against the British mobile forces in Libya. Recalling our glorious deeds of the months of January and February, we shall attack and put the enemy to rout everywhere he turns up."

This text was accompanied by a commentary in which Rommel explained to his troops that, in order to make their success easier for them, he had sent out forces superior in number to those of the Allies, equipped with a complete armament and supported by a powerful aviation. He concluded by greeting His Majesty the King of Italy and Emperor of Ethiopia, the Duce of the Roman Empire, and the Führer of Greater Germany.

On the first day of the attack, the 1st Brigade of the Free French Forces was reinforced by the 3d Indian Motorized Brigade. On the twenty-seventh an attack was launched at daybreak by the Italian light tanks of the Mobile Corps; it was repulsed. Enemy orders which fell into our hands bore witness to the fact that Rommel's intention was to subdue Bir Hakeim at the beginning of operations. The defeat which he suffered lengthened his lines of communication, made them very vulnerable and had considerable effect on the outcome of the battle.

Later in the day, all the enemy motorized forces moved to the south of Bir Hakeim, then fell back towards the north on Tobruk.

FACSIMILE OF THE ULTIMATUM DELIVERED BY GENERAL ROMMEL TO GENERAL KOENIG ON THE 3RD OF JUNE AT 9:30 A.M.



Translation:

To the troops at Bir Hakeim:

A prolonged resistance will provoke useless shedding of blood. You will have the same fate as the two British brigades at Got Saleb. We shall stop the fight if you hoist a white flag and come to our lines without arms.

ROMMEL,
Field Marshal.

The Assault

Rommel threw into the attack on the French position the whole 20th Italian Armored Corps including the

102d Armored Division, the Ariete and the 101st Division from Trieste.

On our right an English division was traversed by a German armored column, but repaired the breach. During the night the German advance continued and at dawn, on the 27th, came out exactly to the south of Bir Hakeim. This attack was repulsed with the help of the fighters and bombers of the R.A.F. who violently bombarded the enemy motorized forces.

The intention of the adversary was becoming clearer; it appeared now that Rommel's offensive was developing on a triple line; the Nazi tanks were to press the Allied troops to the north and to the south of Bir Hakeim, as well as along the coast road leading to El Gazala. Of these three attacks Rommel, without a doubt, would push the one which would bring him eventually the greatest initial success.

For the moment, however, it was not yet possible to judge the results of the struggle. In this connection the German short wave broadcast announced that there would be no communique concerning Libya before the next day. It added the following strange commentary:

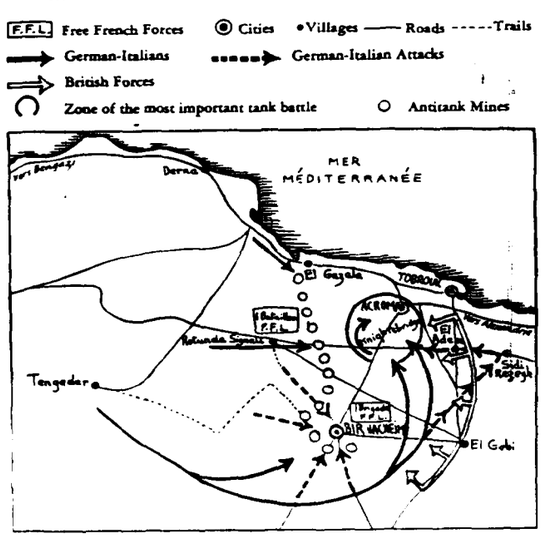
"The English themselves do not explain clearly the tactical or strategic meaning of Rommel's troop movements. They do not seem to consider that these movements are a part of a great Axis offensive."

First Encirclement

At this point, the Free French Forces were cut off from their rear by the advance of German armored divisions rushed forward by General Bismarck, but they resisted the attacks and destroyed forty-five of the tanks. Better still, they effected a brilliant sortie in the course of which they completely destroyed a great number of vehicles and took several hundred prisoners including an Italian colonel.

This was the moment that Mussolini chose to reiterate his claims about Nice, Corsica and Tunisia! A French commander stated to a reporter from Reuter's News Service: "We have already swallowed down six Italian battalions; we ask only to digest others." But the Italians, having had their fingers burned, did not attack again. Soon, the British maneuver forced Rommel to fall back with his troops; the Ariete Division was drawn back with the others; for a time the Free French Forces ceased to be encircled.

Spahis, the French Colonial Cavalrymen, gallop their mounts down the side of a dune in the Egyptian desert.



One of the two enemy columns advancing to the northeast of Bir Hakeim tried to reach El Adem. It did not succeed, but small detachments which stole away from the battle succeeded in making their way through the Allied minefields to some 16 kilometers outside of Bir Hakeim, and thereby created a breach in which Axis troops were able to settle.

During the next two days the Allies put forth all their efforts to close this break, but they were unable to dislodge the enemy although they violently attacked his supply lines and inflicted heavy losses on him. The R.A.F. continued to support our ground forces, not only by intercepting the enemy air attacks but also by causing enormous losses to their vehicles.

On the 28th of May, Air Vice Marshal Conyngham decided to send in all his planes in low altitude attacks against armored transports and enemy trucks in this region. These attacks continued with the maximum intensity during the three days that followed.

It seemed that the armored units of the Axis operating on the southern front in Cirenaica had made a broad fan-shaped movement to the south of Bir Hakeim and concentrated to the northeast at the crossroads found at 40 kilometers to the south of Akroma; that is, between Bir Hakeim and the coast.

The Fifth Day

On the fifth day of the German offensive, the battle reached its climax when the enemy tried to pass through

the breaches. It was at the crossroads, nicknamed Knightsbridge, that the fighting was the most violent. Rommel had his supplies pass to the south of Bir Hakeim, but the ground attacks of our troops and the British air attacks made the job very difficult for him, although he was able to maintain his break-through on the left flank of the British front.

On the 30th the Free French Forces attacked the enemy field workshops twenty kilometers from our position and, coöperating with the 7th English Motorized Brigade, the 29th Hindu Infantry Brigade and the King's Dragoon Guards, destroyed twenty-five enemy tanks which, their gas tanks empty, had been forced to stop near Bir El Gobi. On that same day the Free French Forces took a prisoners' camp by storm and succeeded in freeing 600 men of the 3d Indian Motorized Brigade, who joined them and continued the fighting.

On the 28th, 29th and 30th of May, violent fighting took place continuously between British armored divisions and brigades and the German Afrika Korps supported by the Italian Mechanized Corps. The battle continued with advances and withdrawals in a vast zone that extended from Acroma on the north, to Bir Hakeim, to 65 kilometers farther to the south at the approaches to Tobruk, to our minefields at 60 kilometers to the west.

"To this day," wrote General Auchinleck, "bitter fighting continues, and the battle is far from over. . . . This defeat has cost him (Rommel) dearly in men and matériel."

The Cairo communique stated: "Since Saturday noon, the enemy has been trying to concentrate on the west the most of his armored forces. He is using two paths cleared through our minefields which are near the Capuzzo trail. Although constantly attacked by our armored forces and the R.A.F., the enemy has succeeded in bringing into position his antitank artillery in order to cover the two cleared paths with the aim of preventing our armored forces from closing the break-throughs."

At nightfall on the 31st of May the enemy succeeded in sending numerous tanks and trucks to our rear through one of the two breaches which he had protected with numerous antitank cannon against the Allied attacks that had come from the west.

A great number of enemy tanks and vehicles, however, remained on the exposed side of this barrier. Our troops, with the vigorous support of the fighters and bombers of the R.A.F. continued to harass them without respite and to destroy them. The region east of Bir Hakeim was cleared by the Free French Forces. Enemy losses included at least 260 tanks destroyed or captured, in addition to a great number of trucks.

On the first of June, the King's Dragoon Guards, advancing on Rotonda Segnali, 45 kilometers to the west of the chief Allied positions, found this point unoccupied; a column of Free French Forces had received the order to occupy this spot along with the 3d Indian Brigade.

The Second Phase

The first phase of the attack, in which Rommel aimed to take Tobruk, failed. He later succeeded, we must admit, but the Free French Forces first foiled a new attempt on the part of the Germans to join the Italian infantry which was attacking Bir Hakeim.

During the day of June 2, the Germans launched a violent attack on Bir Hakeim with fifty tanks and Italian infantry, and for a short time the French brigade was threatened. Called upon by the enemy to surrender, it answered by a historic remark which certainly has already served in similar circumstances, but which was none the less apt here.

It became more and more clear that Rommel's intention was to isolate Bir Hakeim.

General Kruewell, commander of the Afrika Korps, was taken prisoner when the reconnaissance car in which he was riding was disabled within our lines.

The personal diary found on this officer revealed that on the preceding Monday he had conferred with Hitler and General Halder, personal military counselor. Two days earlier Kruewell had conferred with General Keitel, Chief of the Nazi General Staff and with General Cabellero, Chief of the Italian General Staff.

In spite of the sandstorms on June 3, the enemy renewed his attack on Bir Hakeim with great violence. Once again, the enemy repeated to the French troops their injunction to surrender—with the same lack of success.

A column of German and Italian tanks attacked the French forces from the northwest towards the southeast: elements of the two divisions of Italian infantry from the southwest towards the northeast. The French garrison, reinforced by infantry elements from the 7th Motorized Brigade, repulsed all assaults. A column of British tanks participated in the defense of Bir Hakeim by attacking from the rear the convoy of German tanks, but General Ritchie, trusting in the worth of the French soldiers, let it be known that he was not anxious about the fate of Bir Hakeim.

(Editor's Note: The French went on fighting for another eight days and did not meet the fate with which they were threatened. On June 9th General Ritchie ordered the encircled garrison to evacuate Bir Hakeim, and on the night of June 10th the break-through was effected. Three-quarters of the garrison reached the British lines in safety.)

Machine Gun Fire in Flank Attack

*By Captain S. Leonov**

EXPERIENCE has shown that in winter the Germans stick closely to inhabited places. They are unwilling to accept battle in open country and convert every village into a stronghold.

In the village of Semenovka almost every building had been made into a fire position, all approaches toward the village were covered by machine gun and mortar fire. In a brick barn near a ravine, the Germans had set up three machine guns to fire through loopholed walls while a short distance away an antitank gun was hidden in some bushes.

The country around the village was quite open, so that a frontal attack on such a strongly fortified position would have meant tremendous losses. The Soviet battalion commander decided to take the stronghold by a flank attack, whereupon the company commander detailed Sergeant Sevtsov's machine gun platoon to silence the enemy fire position in the barn and attract the whole of the enemy's fire while the other troops were carrying out their flanking movement.

The machine gun platoon commander selected a position for his observation post, his main and reserve gun positions, and then covered his lines of communication between these points. There were bushes growing opposite the barn, and in front of them there was a very deep ditch. These furnished good cover for the machine guns and gave a good view of the whole of the enemy's defenses. The machine gunners took up their positions under cover and awaited the signal to open fire.

*By cable from Moscow, December 30, 1942. Courtesy, The Soviet Embassy.

Red Army soldiers man a gun in the firing line on the Russian battlefront.

The attack began with an artillery barrage. A direct hit was scored on the ammunition dump behind the barn, and one group of Germans rushed to extinguish the fire. At the same time, however, the enemy machine guns opened up fire, so Sergeant Sevtsov's machine gun platoon first directed all of their fire strength on the barn itself. Well placed bursts aimed at the loopholes quickly silenced two machine guns. Through his field glasses Sergeant Sevtsov studied the enemy position closely, and seeing that the Germans were running toward the fired munitions dump, he ordered gun layer Tsigankov to open fire on them. Through his glasses he had a good view of enemy soldiers falling as they were mowed down by the machine gun fire.

Meanwhile, machine gunner Smorodinov had directed intensive fire at the surviving loophole in the barn and at the same time covered approaches to the barn from the right.

Having dispersed the group of Germans at the munitions dump layer Tsigankov turned his fire to a position on the left of the barn and thus gave the Germans no opportunity to obtain munitions.

A company of mortars coöperated splendidly with the machine guns in this action. While the machine guns were silencing the fire points on approaches to the village, the mortars kept up fire on its outskirts, knocked out the antitank gun, and prevented the Germans from digging in to repulse the attack.

The art of maneuvering machine guns lies in the ability to transfer to fresh targets immediately that one has been dealt with but at the same time not to permit the enemy to move. Sergeant Sevtsov proved to be a fine machine gun commander, for when the Germans opened a withering fire on his machine gun position, the guns were no longer there. The sergeant had changed his gun position in time, and when the Germans opened fire the Soviet machine guns were all ready to turn on the new German fire positions and quickly came into operation. The Germans were not immediately aware of the danger which threatened them from their flank, and tried to turn their fire in that direction to prevent an attack. The machine gunners were ready for them and kept the Germans pinned to the ground. When the Germans began their retreat to the center of the village, gun layers Smorodinov and Kalachev concentrated their fire on them while Tsigankov cut off the retreat of the left group.

The plan drawn up by the commander of the attacking force was carried out in full. The drive from the flank captured the German stronghold and a greater part of the garrison was annihilated.

Taking their guns from a perfectly concealed arsenal, these white clad Russian artillerymen are moving them to a new firing position in the Leningrad area.

Artillery Fire Against German Tanks*

By The Guard's Major Azarov, Red Army

TANKS are the main striking force of the Hitlerite armies. In the struggle against German panzers therefore, the most important task of Soviet troops is the skilful employment of all active and passive antitank weapons. Soviet artillery plays the main part in this struggle. Hence the artillery commander must carefully study the ground in order to determine the direction from which the hostile tanks are most likely to appear and then organize an all-round defense, of which he is the center.

The struggle against the tanks will be successful only if every gunner has a practical knowledge of the tactics of the enemy tank units and sub-units, their favorite maneuvers (outflanking pincers and infiltration on flanks), and a thorough knowledge of the gaps between our units and theirs.

The success of the artillery action will depend on the extent to which the gunners have been trained to shoot at moving targets, both point-blank and from under cover. In this respect the battle for the point of Danilovka is interesting. An air reconnaissance reported that at about 30 kilometers from Soviet positions a large enemy tank column had been seen moving. The numerical superiority was on the side of the Germans. Soviet units had the advantage because their artillery had been previously placed in favorable positions. Every gun had an excellent fire zone. The mutual support of guns, well equipped gun positions, and the unexampled coolness and fine courage of commanders and men determined the outcome of this battle. Twenty-nine German tanks were destroyed. The gun crew under Lieutenant Lisin particularly distinguished themselves by destroying nine tanks.

*Courtesy, The Soviet Embassy

Experience has shown that the effect of fire and maneuverability of the guns depends to a considerable extent on the equipment of the gun positions, their camouflage, and the punctuality with which they open fire. It is best to open fire at 400, 600 or 700 yards. The exact distance depends on the caliber of the guns and the nature of the ground.

Firing on moving targets has its particular features. When movements from flank to flank deflect, changes are made with accompanying range adjustments. First, the rounds are fired at one tank's length ahead of the target, and then subsequent rounds are adjusted in accordance with spotters' observations. If the first burst shows a lateral deviation of one tank's length or more behind the target, then the range is not changed, but an angle of the deflection is adjusted.

The ranges of the angle is between the line of burst and the line of the center of the tank, unless this is less than five divisions. For smaller deflections behind the target and also for lateral deflections ahead of the target, corrections are made in the adjustment of sighting when movements towards the gun position target is

bracketed by ranging on the center of the mass of tanks. If the lateral deflection is less than the size of the figure then it is usual to change the point of aim.

When deviations are very great, adjustments are made with an angular instrument. Sighting for the first rounds are made in accordance with measured range as laid down for antitank fire. When bursts are over, the sightings are reduced to two, three or four divisions; the number depends on the distance beyond the target, the speed of the tank and the rapidity of fire. When a tank approaches within point blank range, firing is continued without any change in the sighting of the gun. If the bursts are beyond the target, then we change the range by lowering the elevation about one-half division at a time.

It is very important to remember the methods in conducting fire on the tanks during various phases of the battle. If the enemy tanks are in large numbers and have broken through the defenses, then independent fire must immediately be opened. First of all, fire must be opened on that tank which can do the greatest damage to our infantry or even to the guns themselves.

After the first tank has been knocked out, fire should be immediately transferred to other tanks. Careful watch must be kept on the knocked out tanks, however, as they have a habit of suddenly coming to life again. It is very important to be able to take immediate advantage of the moment when a tank is turning or is stuck by some obstacle and exposes its most vulnerable point—its side with the engines, etc.

Success in battle against tanks is decided by the courage and determination of each gun crew, multiplied by the ability to conduct accurate fire. Enemy tanks are not terrifying to those who know their business, and who know how to combine knowledge with war experience and fearlessness.

Massed Trench Mortar Fire*

THE trench mortar is a powerful defense weapon and is widely used in the Red Army not only to neutralize and destroy the enemy's fire weapons, but often also to stem the enemy attacks on inhabited places.

Trench mortars first acquired prominent importance in the Spanish war of 1937-1939, where regular trench mortar units appeared for the first time. The mountainous character of the terrain in Spain encouraged the employment of mortars because of their high plunging trajectory. They could be used to fire over hill crests and at invisible targets, the destructive effect of their bombs being heightened by rock splinters.

Since then trench mortars have been adopted on a wide scale in all armies, and in many cases special units armed with them have been formed. This has been particularly true in the Soviet-German war. Trench mortar fire constitutes a powerful support to the infantry in both the offense and defense.

A case in point was the attack undertaken by the Germans, with the object of seizing the village of Nazarovka. The attack was launched from three directions. When the enemy tanks approached within 400 meters of the village, Soviet guns opened fire. The tanks came to a standstill, but the German infantry continued to advance. At the signal from Senior Lieutenant Frolov, the trench mortar unit under his command, opened heavy fire at all three German groups.

Thanks to the accurate aim and staunchness of the trench mortar crews the attack was repulsed. The Germans thrice attempted to resume the attack, but each time the devastating trench mortar fire barred their way to Nazarovka. In the end they abandoned the attempt and left 600 Germans killed and about a dozen shattered tanks on the battlefield.

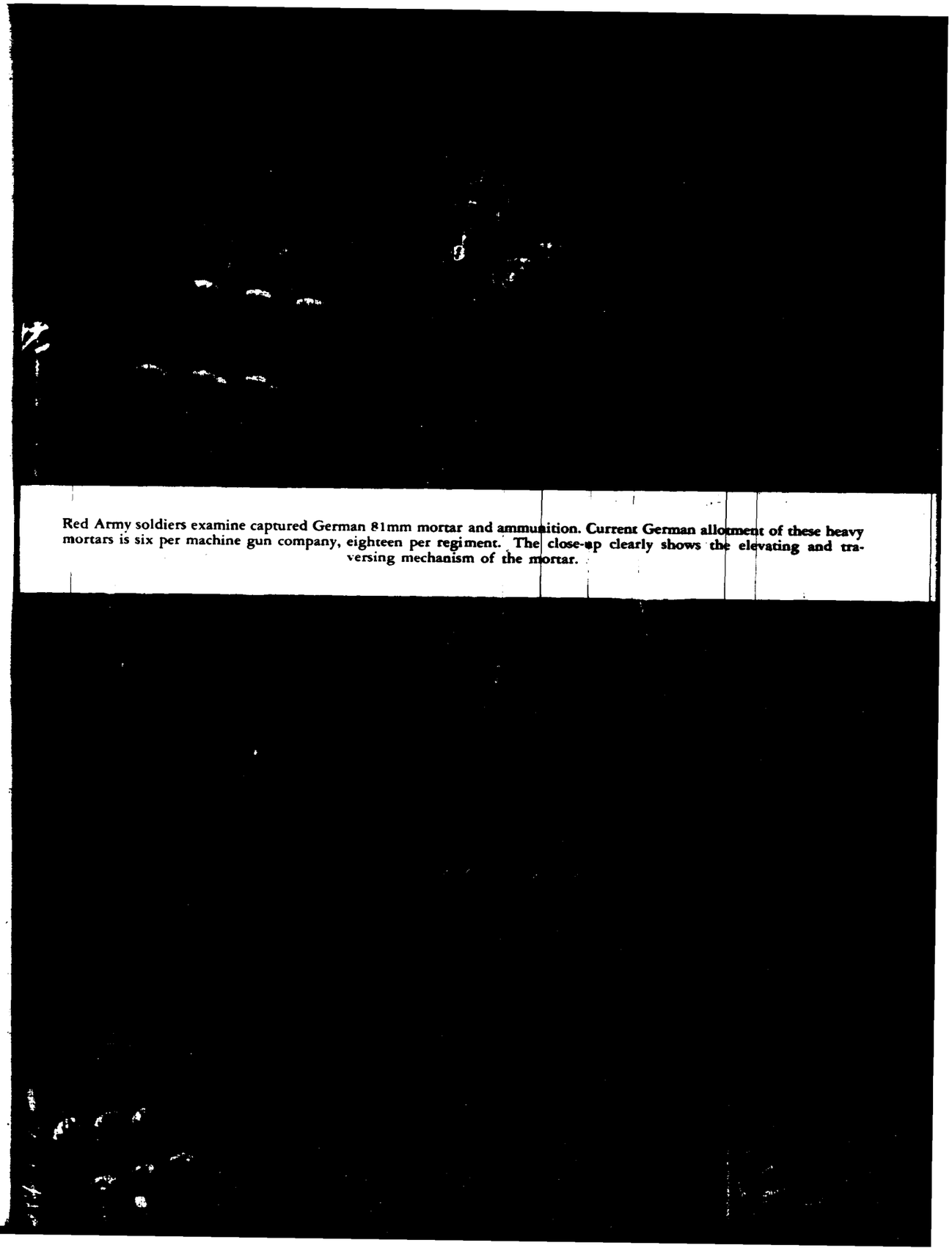
*Courtesy, The Soviet Embassy.

The qualities chiefly demanded of trench mortar gunners are persistence, coolness, and the ability not to betray themselves until the enemy comes within striking distance.

Here is an instance. The trench mortar unit commanded by Senior Lieutenant Butkevich was defending the outskirts of the town of Khoroshkovo when the Germans attacked. The Germans advanced in a column. The trench mortar gunners waited patiently until the Germans came within range of where their fire would be most devastating. Then at a given signal, several dozen mortars belched bombs which burst in the very thick of the German column. The Germans were taken by surprise. Over 300 of them were killed, and the attack was foiled.

The other day the Germans attacked a certain inhabited place, but were detected by Soviet mortar gunners who opened fire. The bombs burst in the midst of the enemy's infantry with a devastating effect, but they pressed obstinately forward. Several times they were forced to drop to the ground by the intensity of fire, but again rose and advanced in spite of heavy losses. They had already approached within 50 meters—the range within which trench mortar is ineffective because of its angle of elevation. Several mortar layers, however, continued their fire. They held the mortars in their hands although they ran the danger of being struck by splinters from their own bombs. Their hands were lacerated by the recoil, but they persistently kept firing. Their fortitude and courage won the day, and the attack was beaten off with great loss to the Germans.

Uninterrupted contact must be maintained between the infantry and trench mortar units, so that at the needed moment, the services of the latter may be called upon to destroy the attacking enemy by massed fire.



Red Army soldiers examine captured German 81mm mortar and ammunition. Current German allotment of these heavy mortars is six per machine gun company, eighteen per regiment. The close-up clearly shows the elevating and traversing mechanism of the mortar.

Setting out for the advanced line is Soviet sniper Faronov, one of Russia's ace snipers. He has shot 136 German officers and men, taken 7 prisoners and destroyed one tank. Notice the telescopic sight on his gun.

Small Patrols Wreak Havoc*

By Captain M. Sedyakin, Red Army

THE German defense positions in a mountainous region usually consist of a series of support points scattered along tactically important heights. Each one of these heights is surrounded by a system of machine gun nests and trenches for submachine gunners.

This is a typical all-around defense system. The German is rather sensitive to blows from the flanks and the rear, and small groups of submachine gunners can always infiltrate between the heights and attack the enemy communications.

On one occasion Lieutenant Mokritsky was ordered to blow up three bridges on the road along which the Germans were constantly bringing up reinforcements and supplies. The importance of this operation was increased by the fact that the attack was imminent in that area.

After carefully studying a map and questioning local inhabitants Lieutenant Mokritsky laid out a proposed route. Before the day set for the operation Mokritsky and three men made their way close to the bridges, and from a distance of a few hundred meters made a thorough examination of the terrain and location of the sentry posts.

Having approached the furthest bridge Mokritsky directed one of the men to move some distance off and fire the submachine gun a few minutes later. The man did so. As soon as the enemy patrol was fired upon, a group of Germans appeared on the opposite side of the bridge and returned fire. Meanwhile, Lieutenant Mokritsky crawled up to the bridge, placed explosives there, and crept back. An explosion was heard; then two more. All three bridges were destroyed.

Although there is no continuous front in the mountainous region, submachine gunners should always be wary. German troops often attempt to infiltrate the Soviet rear, and for that reason submachine gunners should advance with great caution. A two man patrol should move along the path itself and be followed by a nucleus of a group walking through the bushes beside the path. Other two men patrols should move along a parallel route some 70 meters away. Thus, the whole area surrounding the path is virtually combed by patrols. They run from bush to bush, and move on only

*Courtesy, The Soviety Embassy.

after they ascertain that there is nobody ahead.

The nucleus of the group should advance only after they have received the prearranged signal, which may be an imitation of a bird call. No conversation is allowed, for at an altitude of 1,000 to 1,500 meters even ordinary conversation is audible two to three hundred meters away.

As the scout group under Sergeant Kubanets was making its way into the enemy's rear, Kubanets suddently heard footsteps and German speech. He gestured to the scouts to conceal themselves. First, a German soldier appeared; a few minutes later others followed. They walked along the path and stopped every few steps to listen. When they were inside the circle of our submachine gunners, our men opened fire. One German soldier was taken prisoner, the rest killed.

On another occasion, First Lieutenant Golzunov's detachment was ordered to destroy the German submachine gunners who held possession of a height and hindered the movement of our troops. It was known that the Germans had entrenched themselves strongly. All previous frontal attacks had proved unsuccessful. At dawn the scouts reported that on the height there were about two German battalions as well as mortar batteries and one field gun.

It became clear to Golzunov that the only way to destroy the enemy with his weak force was to strike panic in their ranks. He divided his detachment into two parts. The first group was ordered to attack the Germans from the rear and destroy the artillery piece; while the second group, led by the first lieutenant himself, was to launch an attack from the left flank. The right slope was purposely left as a sort of safety-valve for the Germans, who, bewildered by the unexpected attack, would probably fall back in that direction.

At the prearranged signal the first group attacked. The gun crew was instantly destroyed by accurate submachine gun fire. As the submachine gunners defending the gun were retreating towards the summit, they heard firing and loud cheering from the left slope. The Germans lost their heads and, frightened at the possibility of complete encirclement, rushed into the safety-valve. That was the move for which the attackers were waiting. Most of the Germans were destroyed; some fled from the mountain under the heavy cross fire of our men.

Because of the daring accurate plans and fire maneuver, First Lieutenant Golzunov succeeded in dealing the enemy a painful blow without any loss among his men.

Recent mountain fighting has shown that small groups, pairs of snipers, and submachine gunners are steadily enlarging the scope of their activity. They hold the roads and mountain paths under cross fire, await the enemy patiently, and destroy him mercilessly. They may also cause the enemy a great deal of trouble far in the rear. Thus by perfecting the tactics of small groups it is possible to do the enemy even greater harm than by frontal attacks of considerably larger units.

This small detachment is fighting for a village in the northern Caucasus. Notice the three kinds of weapons—machine gun, tommy gun and rifle—used by these men. They are fighting with full pack. An enemy shell is bursting less than 20 yards away.

Frontal Attack In Air Combat

Two outstanding Aces of the Red Army Air Force describe the Soviet practice of "ramming" enemy planes. These daring tactics, developed from personal encounters with the *Luftwaffe*, have destroyed many German planes and pilots around both Stalingrad and Moscow.

As Told to C. Zelin

By Pilot Major I. Tenekov

THERE has never been a case when a German fighter would use the particular form of attack so often resorted to by our Soviet pilots—that of ramming his adversary. These tactics require extraordinary will power and fearlessness.

Up to now (December 30, 1942), only the Russian pilots have made a practice of downing the enemy by hurling their own planes at him, from which maneuver they often escape themselves without a scratch. My experience shows that the Germans cannot grasp the psychology of Soviet airmen who, with courage and coolness, carry out such an operation. One thing, however, that the Germans did learn about ramming was that the Russian pilot usually came out victorious. Perhaps this explains why nearly always in a frontal encounter with the enemy it is the latter who first turns aside.

It fell to my lot to take part in many air fights in various sectors of the front, and not a single case is known to me where our pilot did not emerge victorious when engaged in a frontal attack. Not once have I heard that a German flier had pluck enough to face such a blow.

In a frontal attack it is necessary to catch the right moment to close with the enemy. His psychological reaction is very important, for he must be made to feel the whole weight of the enormous plane rushing down on him. For this reason—as opposed to the usual method of attack—in frontal attack it is necessary to fire some short bursts at the enemy in order to warn him of your presence.

If you are attempting the rescue of a comrade in battle, a frontal attack is a well tried and a sure method. While leading a group of three I-16's I once came up against six Messerschmidt-109's. While one Messerschmidt gained height, the other five were forced by the prompt veering of our planes to accept the battle. The enemy plane that had flown upwards then began to dive on one of our planes from an altitude of 1500 meters. Noticing the danger which threatened my comrade, I immediately veered and directed my plane towards the enemy, ready to deal him a frontal blow. At the distance of 500 meters the German stopped his dive, and by this time, being only 30 to 50 meters from the German, I was able to down his Messerschmidt.

From either a vertical or horizontal position a frontal attack usually brings victory at very close quarters. During the air battle near Stalingrad a Messerschmidt-109 was racing after one of our fighters. Noticing it, I directed my plane to face the Messerschmidt and prepared for a frontal attack. The enemy fell back to avoid my blow, but his plane lurched to the right and he involuntarily came closer. This enabled me to set fire to him at a distance of only a hundred meters.

The frontal attack as practiced by an experienced pilot is a good tactical method by means of which he can carry on the battle even without ammunition. Here is an episode confirming this. After patrol duty two of our fighters led by Captain Vasin were on their way home. Neither the Captain nor his companion had any ammunition left. Above the airdrome they were attacked by two Messerschmidts, and for twenty-five minutes before our very eyes Captain Vasin and his companion fought and charged the enemy. Neither veering nor using any special maneuvers, Vasin turned his plane, lifted it to face the enemy, and showed his readiness for a frontal attack. This German could not face the frontal attack and retreated to higher altitude to dive again, but Vasin repeated his maneuver. Without firing even one shot our airmen won the battle and the Germans retreated.

Experience has shown us the great strength of a frontal blow in an air battle. These tactics, however, require courage and resolution of the fighter to an extent that, as a rule, the German airmen have not displayed.

*By cable from Moscow. Courtesy The Soviet Embassy.

*By Major N. Denisov**

IN air combat the situation changes rapidly. It often happens that, through an enemy maneuver or the arrival of enemy reinforcements, a fighter plane runs out of ammunition in the presence of hostile planes. Under such conditions Soviet fliers never give up the battle. They have always at their disposal one tactic in which they are far superior to the enemy—ramming.

This new method of air combat has become common on the Soviet-German front. It is difficult to establish who was the first Soviet flier to use it in action. Several cases were recorded on the very first day of the war, June 22, 1941, when the German fascist army treacherously attacked the Soviet Union. Here is one illustration:

A large formation of German bombers appeared suddenly over a Soviet airfield. Although the attack was a surprise, several Soviet fighter planes managed to get into the air. One machine was piloted by Lieutenant Butelin, who by skilful flying shot down a German plane and set another on fire. The German planes were in retreat and Butelin was pursuing them when he ran out of machine gun cartridges and shells. The brave Soviet flier dived at the enemy bomber and hit it squarely. The German plane exploded.

Ramming does not necessarily imply wrecking an enemy plane by a direct blow delivered with the whole impetus of one's own machine. The modern air ramming maneuver is based less on the impact of the attacker's plane than on his flying skill and ability for subtle maneuvering in complicated situations. Soviet fliers distinguish three types of ramming. The first and simplest—but also most dangerous for the attacker—is the direct blow at the enemy plane with one's own machine.

Less dangerous but producing similar results is the second method—hitting the enemy plane with some part of one's own plane. Most often this means clipping the enemy's wing or tail with one's own wing.

The third method, requiring great skill, is not to ram directly, but merely to bring the planes into slight contact for a moment with the attacker's propeller cutting into a vital part of the enemy's fuselage. Many Soviet fliers have mastered this method and have used it to down a number of enemy planes.

It must be pointed out that in the overwhelming number of cases on record enemy planes have been rammed while being pursued from the rear. It is practically impossible to cut down an enemy plane with one's own propeller by a frontal or side attack. The phases of a ramming attack from the rear are as follows:

1. The attacking flier overtakes the enemy and adjusts his speed to equal that of his target. This phase is described by Captain Andreyev, commander of a Soviet fighter squadron on the Southern Front. It was his second successful ramming. "When I decided to ram the Junkers I brought my plane up beside and slightly behind it. I adjusted my speed to equal the bomber's speed and slowed down my propeller to reduce the number of revolutions. I did this to make sure the propeller would not jam as it struck."

2. The next phase is the act of cutting into the enemy plane with the propeller. The most important thing is to pick the spot on the enemy plane which the propeller is to strike. Soviet fliers most often aim for the tail assemblage, but are always prepared, if circumstances require it, to strike at some other part—wing rib, fuselage, etc. The crucial moment is too brief to enable the attacker invariably to strike the selected spot. A flier's own judgment and skill in maneuvering will suggest the best solution in each case.

Lieutenant Katrich, who rammed a German plane during a raid on Moscow, relates: "While gaining fast on the bomber, I sheered off to the left and then aimed my plane at the tail group so as barely to touch the stabilizer and rudder with the tip of my propeller. My calculation proved correct. As soon as I felt a slight shock I shut off my gas and dropped away to the side. The German bomber fell like a stone."

3. The instant of striking with the propeller is followed at once by the ramming's third phase, which is extremely important—dropping away to the side. If the attacking flier is too slow his plane may become entangled with that of the enemy and be dragged to the ground. If he drops away too soon, the attack may be unsuccessful. As in all his actions, the attacker must show a flying sense which tells him at exactly what moment to drop away.

The above mentioned Captain Andreyev continued his account as follows: "When my propeller, by a slight touch, cut the bomber's wing rib, I became aware of the hit by some inner sense. Immediately I dropped off to one side. It was none too soon, for the enemy machine went into a spin from which it never recovered. My plane was undamaged. Only one propeller blade was bent. Soon after I landed safely at my field."

A remarkable point is that in the overwhelming majority of rammings, Soviet fliers escaped unscratched while bringing down the enemy plane. Their planes usually suffer no serious damage. As a rule repairs are limited to replacing propellers or patching up surfaces, after which the planes are again ready for battle.

*Soviet Embassy Bulletin.

German troops learn to "bail out" from a tri-motored plane at the Stendal Parachute Jumping School. Lessons learned by parachute troops were first put to use as the Nazis began their invasion of Holland, Belgium and Luxembourg in 1940.

ON the Don and in the Northern Caucasus, during the summer of 1942, the Germans made repeated attempts to land parachutists and air-borne troops in the rear of the Red Army units.

The tactical objectives of such landings are always limited—attacks on river crossings, inhabited points, railroad stations, road junctions, etc. The parachutists are usually landed in the direction of the main blow, twelve to twenty miles from the front line—sometimes nearer.

No attempt was made to conduct large scale landing operations as in Belgium, Holland, and on Crete, although the flat, prairie-like country of the Don and Kuban regions would seem a favorable terrain for such operations. The explanation is that apparently the German parachute units and air-borne troops are still feeling the effect of extremely heavy casualties inflicted on them during the 1941 operations. The Soviet aviation was also very active and successful in bringing down German transport planes.

The tactics of German parachute troops are very flexible, and always well adapted to circumstances. Whenever possible, German parachutists attack the objective from several directions simultaneously and try to encircle it. If their numbers are insufficient for a determined attack, they usually try to secure a flat stretch of terrain near the objective, which can be used as a landing field, and then go on the defensive until a sufficient number of air-borne troops is landed by transport planes. Sometimes parachutists are landed in small groups of five or six men at different places. These groups stealthily assemble at a predetermined point, and then swing into action.

A tenacious and well organized defense as a rule succeeds in paralyzing even the most intensive effort of the parachute troops. Following are a few examples of such engagements which took place during the 1942 summer fighting in the Don and Kuban districts.

A Soviet rifle regiment successfully defended for four days an important boundary, repulsing constant enemy attacks. On the fifth day the Germans, launching a strong attack on the right flank of the defenders, unexpectedly landed a small group of parachutists with automatic rifles behind the left flank. From the rear, the group attacked the battalion defending this sector and thereby unexpectedly created a critical situation. Without a moment of delay, the regimental reserve was thrown into a counterattack. The parachutists suffered heavy casualties, the remainder were captured, and the boundary successfully held. Had the countermaneuver been less swift and determined, the outcome would have been entirely different.

On other occasions, landings were made in considerably greater strength, but never sufficient to develop into an important operation of more than local tactical significance.

*Translated from *Pravda*, Aug. 25, 1942, by N. Corotneff.

On one of the sectors of the southern front the Soviet units, slowly retreating before the considerably superior German forces, were attacked from the flank by German tanks, which forced a river crossing and cut the railroad line running to the rear. To create an impression of complete encirclement, the Germans landed several parachute groups twenty-five to thirty miles to the rear, each about one hundred men strong, with machine guns and light mortars. Some of these groups even succeeded in landing a few light tanks. The parachutists began to advance along the main roads and tried to create an impression that a complete encirclement by strong German ground forces was being effected.

A swift and thorough aerial and land reconnaissance established the fact that, in reality, the encirclement forces consisted of only a few parachute groups. Mobile reserves were immediately thrown into action, and the parachute units were gradually liquidated.

In dealing with parachute landings the most important requirement is speed. It is essential to localize the group immediately, before it has had time to acquire strength by additional landings and then to spread out. Therefore they must be attacked without any loss of time. If the parachute troops succeed in organizing an effective fire system of small automatic arms, machine guns, and mortars, then the regimental and divisional artillery and tank units are drawn into action. The fire system of attacking troops should preferably be semicircular, and the antitank guns should always be placed between the parachute troops and the front line, as there is always a likelihood that a German armored spearhead will try to break through the front and come to the assistance of their parachutists. The artillery must be able to shift the fire quickly in case more attempts to land are made in other places.

It is useful to have special divisional or army corps formations held in readiness to combat parachute troops. They usually consist of tank units—from a platoon to a company—and carry, in addition to their usual crews, groups of automatic riflemen. These formations, flexible and quick-moving, are used to reinforce the troops on whose sector parachute landings were made.

In several instances during the battles for the Don and Northern Caucasus, the Germans landed air-borne troops after parachute troops had secured a suitable boundary. Transport planes then landed automatic riflemen, light and heavy mortars, antitank guns, and motorcycles. Almost invariably the landings were effected at dusk. Under cover of darkness the Germans would immediately start to dig in and to organize a strong fire system. In such cases counteraction must be

German sources say that this picture shows Nazi parachute troops landing in snow-covered rock ledges to reinforce the German garrison in Narvik. This was during the Battle for Norway in 1940.

taken at once, as it is imperative that such a landing be liquidated overnight. Any procrastination is extremely hazardous because the group may be reinforced by new landings during the night, at dawn, or early the next day.

To minimize this danger, fighter planes must constantly patrol the sector, keep a lookout for new landing attempts, and cooperate with ground forces, as the German aviation usually attempts to support their air-borne forces after landing. To maintain a sufficient aerial strength in the critical area is therefore most important.

All in all, the experience of the summer of 1942 proved conclusively one thing: a tenacious, disciplined and well organized defense—alert, flexible, and quick-moving—will always get the best of the parachute troops and eventually liquidate them.

Tank Communications in Battle

By Colonel M. Khotimsky, Red Army

FIGHTING in the Southern Sector of the German-Soviet Front is characterized by exceptional ferocity. The large number of tanks used in this fighting are often in action for several hours at a time, and with artillery and aircraft working in close coöperation, very competent handling of these tanks is required. Recent fighting has shown that the Germans have considerably increased their antitank defenses, so that tanks must be employed skilfully and with a view to decreasing the losses.

Practice has frequently confirmed the advisability of putting heavy tanks in the first echelon, mediums in the second, and then the light tanks. This formation considerably reduces losses and brings better results.

Tanks give the best results when employed en masse. This decreases the losses and achieves success in battle. Success, however, can be achieved only with reliable help from the artillery, aircraft, and infantry. When employing massed tanks the commander must have at his disposal a strong control of the center, by means of which he can maintain constant contact with his tanks and maneuver them one unit at a time and thus make the greatest possible use of each minor unit.

Until now radio has been almost the only means of communicating with tanks and directing them in battle. Experience has taught us that radio stations frequently break and become useless. A recent example of this occurred when several dozen tanks were sent into action but towards the end of an encounter communication and control of the tanks had to be maintained through one single station. Since then the tank commander's control center has included two or three light tanks which the commander uses to carry orders and information to tanks in action. At the same time these light tanks form protection for the headquarters as well as for the commander in the event that his tank is knocked out or that the enemy makes a flank attack. In order not to disclose the whereabouts of the commander to the enemy, tank units advance in open order behind the machines which flank the commander's tank.

Another lesson learned from experience is that the control center must have at its disposal, in addition to radio, tank field communications of the type used by the battalion. For this purpose the motorcyclist with a telephonist is sent forward, behind the attacking tank units. He has two or three kilometers of cable with him and a telephone. Taking up his position near the scene of action, he then maintains communication between the observation post and the commander of tanks in the field. As the tank unit advances, this signalman advances with it.

In tank units, as in all other arms of service, the observation post must be in the vicinity of the scene of action. At the observation post there is usually a group of staff commanders who conduct the operations. At their disposal they have a tank. Following the course of action, this group notes where enemy resistance is stronger or weaker. Timely information is sent to the commander, and this forms the basis of his further decisions. This staff group, when necessary, calls for the assistance of artillery or aircraft. Such an observation post is reliable aid to the commander in the field.

It is very important that evacuation facilities should be well organized in the tank units. The commander's assistant in technical matters, or a representative of this commander is usually at the observation post. He organizes the evacuation of damaged tanks and such repairs as can be carried out in the vicinity of the battlefield. We have many instances of damaged tanks returning to fight the same day that they were disabled.

Vehicular Reconnaissance

*By Lieutenant Colonel Brainard S. Cook, Cavalry**

Men from the fighting fronts stress the value of thorough reconnaissance. It cannot be emphasized too strongly. A battle or a campaign may depend upon it.
Every officer with a reconnaissance unit—troop, squadron, company battalion, or regiment—will profit by a careful study of this article.

FOREWORD

THESE notes, prepared for the purpose of giving reconnaissance commanders some clear simple guides on which to base their action under various circumstances, are not to be taken as blind dogmatic rules without flexibility. These rules are set down here to increase the reasoning power of any individual who will have to conduct or train troops in reconnaissance missions.

RULE No. 1. ALL RECONNAISSANCE IS OBTAINED BY A CONTINUOUS OPERATION OF MOVEMENT AND OBSERVATION.

It is foolish to assume that thorough observation can be obtained while in motion. Movement must be fast, accurate, and based on a preconceived plan. In situations where contact is not immediately eminent, observation may be somewhat subordinated to movement. However, as contact becomes more and more eminent, observation becomes the ruling factor, and movement becomes subordinate to it. Movement is then undertaken only after thorough observation has been accomplished.

Observation must be systematic and follow a general rule: *i.e.*

1. Use field glasses whenever possible.
2. Observe from a covered position.
3. Dismount if vehicle is unsteady.
4. Search ground closest to your position first.
5. Start your search on the left at close range and search in a semicircle to the right; then move to the next higher range and search back to your starting point.
6. Whenever possible, use two men to observe. Let one watch the general terrain to detect any unnatural movement while the other conducts a systematic search with the use of field glasses.
7. Utilize every available terrain feature that might afford an opportunity for observation of the routes or ground that lies ahead or to your flanks.

Movement must be planned well in advance and executed with decision; *i.e.*, during the process of observation prior to the next move, that move must be uppermost in the mind of the commander. He should search the terrain in front with a view to finding possible traps, cover, side roads, methods of approach to cover, and possible avenues of withdrawal to cover and concealment if fired on. During the actual move he must be constantly on the alert for terrain features that will be favorable to his forward movement and yet keep in mind the terrain features that will afford him the maximum protection that he might need in a hasty withdrawal.

RULE No. 2. IT IS ESSENTIAL IN ALL RECONNAISSANCE THAT ALL ROUND OBSERVATION BE MAINTAINED AT ALL TIMES EVEN IN THE SMALLEST UNIT.

This can be accomplished only by prearranged assignment of observation sectors to crew members of a vehicle and in larger units to certain specified elements of the command. When these assignments are made the position of individuals in the vehicle or the position of the vehicle in one column must be considered. Obviously it would be incorrect to charge the leading vehicle with observation to a flank only, and to assign the number two vehicle in column with observation to the front. A good rule to follow is, after designation of the point and point-support, to assign even-numbered vehicles with observation and reconnaissance to the right, and odd-numbered vehicles with observation and reconnaissance to the left. This rule can be extended to the platoon by assigning sections according to numbers and using the support section for rear observation. In all cases the rearmost vehicle is responsible for observation to the rear.

These assignments must remain in effect at all times

*8th Reconnaissance Squadron

and must be especially effective when the unit is halted. They constitute the basis upon which outpost security is established.

In many cases the size of the unit will necessitate the assignment of dual observation missions to individuals or to vehicles. This should in no way decrease the quality of observation obtained but will in most cases decrease the speed with which the same area might be covered by a large force.

RULE No. 3. DO NOT REGARD ANY INFORMATION OF THE ENEMY AS TRIVIAL BUT SEND IN EVERYTHING YOU CAN FIND OUT ABOUT HIM.

The job of a reconnaissance element is collecting information, not evaluating it. In the process of this collection it will sometimes be necessary to evaluate information gained in order to establish priorities on the messages that you send back. The *what, when, where,* should have priority over everything you have learned. If the air is jammed and your message is highly involved with a lot of technical data the chances are nine to one that the what-when-where part of it will be lost in the shuffle.

A good rule to follow is to send the what-when-where part in one complete message, and follow with the remaining data in another separate message. The other data may be vitally important in completing the picture back at headquarters, so do not neglect to send it in.

RULE No. 4. RECONNAISSANCE VEHICLES WORK IN PAIRS. ONE COVERS THE ADVANCE OF THE OTHER AND RECONNOITERS, WHILE THE OTHER STANDS GUARD READY TO COVER THE WITHDRAWAL OR TO ASSIST IN THE ATTACK. ONE LIES IN WAIT AND WATCHES, WHILE THE OTHER FEELS OUT THE FLANKS.

Remember that a vehicle caught by surprise fire is more than apt to be slightly confused in the first few moments. It is here that the reassuring fire of the supporting vehicle is like a breath of cool air to a furnace stoker. It is like the shout, "We're on your side: stay in there and pitch and we'll get you out."

Remember, too, that an unsuspecting enemy who sees a perfect target will concentrate on it and will be considerably surprised if his first burst of fire immediately draws fire from another source. The resulting confusion will allow the advancing vehicle to collect its wits and scoot to cover.

Whenever possible the reconnoitering vehicle moves by a wigwag route to avoid the possibility of continuous tracking by enemy gunners. The covering vehicle or vehicles train their guns on the most likely spots from which to expect enemy fire. The crews of the covering vehicles observe the terrain from which fire is expected and *not* their own reconnoitering vehicles. This is a common fault and must be corrected early in training.

One member of the reconnoitering vehicle must be on the alert and keep close watch to the rear for signals from the supporting vehicle. The supporting vehicle is usually on commanding ground and will be more apt to see an approaching enemy.

The covering vehicle stays under cover and makes no move that might disclose its position.

These duties should be interchangeable, and vehicles and crews should be trained to operate as both point and point-support so that one vehicle does not carry the burden of reconnaissance at all times.

The greatest crime that a supporting vehicle can do is to let the reconnoitering vehicle down when the supporting fire is needed.

RULE No. 5. IN AN ADVANCE OVER OPEN TERRAIN WHERE NO COVER FOR THE RECONNOITERING VEHICLE IS AVAILABLE IT IS ADVISABLE TO USE TWO OR MORE VEHICLES ADVANCING OVER DIFFERENT ROUTES AND AT DIFFERENT SPEEDS COVERED BY TWO VEHICLES FROM THE REAR.

When the leading vehicle reaches terrain of this nature he must immediately notify the following vehicles and be prepared to direct them to places of vantage from which they may cover the reconnoitering vehicles. This should not call for an assembly of all vehicles nor a council of war, but should operate on a preconceived plan with the supporting vehicles moving into position with the full knowledge of their part in the operation and complete understanding as to the method used in the advance. After leading vehicles have gained cover on the forward side of the open terrain, the support vehicles should move forward, each covered by the remaining vehicle. A reassuring signal from the leading vehicles would call for a rapid advance from the supporting vehicles. No signal should be a sign for caution and the advance should proceed just as if the two leading vehicles had not already gone forward.

RULE No. 6. AN APPROACH TO A QUESTIONABLE VILLAGE OR TOWN SHOULD BE MADE OVER COVERED ROUTES FROM DIFFERENT DIRECTIONS AND UNDER THE SAME METHOD AS THAT USED IN MOVING OVER OPEN TERRAIN.

Frequently it will be necessary for the leading vehicle to advance to the closest cover near the town and then dismount its crew for further reconnaissance on foot. If the village is in enemy territory a reconnaissance by fire is sometimes advisable. In this event the firing vehicle should be covered by one or more supporting vehicles which will not disclose their positions but will be prepared to return any fire delivered in order to develop the resistance within the town. When a position is selected to cover the advance of a reconnaissance vehicle, care must be taken in the selection of the covering position. On many occasions a well placed smoke screen will nullify the fire of a strongly held village. Thus when the covering position is selected the wind, range, field of fire, cover, and nature of the village must be taken into account. Mortars and grenade shooters should be placed well forward in order that extreme ranges may be used for the initial

firing so that corrections may be made from covers to avoid the hazard of firing too close to the reconnoitering vehicles. Reconnoitering vehicles when fired on should withdraw to the flanks in order that the field of fire may not be masked for the supporting vehicles.

RULE No. 7. RECONNAISSANCE UNITS ENGAGED IN ANY TYPE OF MISSION SHOULD BE PREPARED AT ALL TIMES TO GIVE A COMPLETE RUNNING REPORT OF TERRAIN OVER WHICH THAT UNIT OPERATES OR OF ENEMY CONTACTS EITHER BETWEEN THE UNIT ITSELF AND ENEMY FORCES OR BETWEEN ADJACENT FRIENDLY FORCES AND THE ENEMY.

Terrain features cover the following:

1. Routes and bridges, their types and condition, and permissible loads.
2. Location of suitable landing fields.
3. Location and condition of communication systems, both military and commercial.
4. Location of contaminated areas.
5. Location and type of supplies, both civil and military. (Particularly gas, oil, and subsistence.)
6. Location of high points and the routes thereto.
7. Location of railroads, spurs, switches, crossings, turn-tables, repair shops, and rolling stock.
8. Location of streams, containing depth, width, and current, and possibilities of crossing same by means of available boats and rafts.
9. Location of shoreline, beaches, wharves, and docks with estimated capacity of warehouses and ships that might be in the harbor.

Enemy contacts should cover the following:

1. Location, time, and direction of movement of first hostile contact.
2. Movements, contacts, and observations, gathered from visits to friendly troops that might not be reported because of poor communications.
3. Movements of friendly troops that might be cut off from their own headquarters.
4. Movements, transports, troops, vehicles, etc., that might be gleaned by questioning natives.
5. Location, type, and direction of movement of hostile aircraft as they appear.
6. Each message regarding enemy troops should include:
   a. What it is.
   b. Where it is.
   c. What time it was noted.

RULE No. 8. UNITS AVOID COMBAT EXCEPT WHEN NECESSARY FOR THE SUCCESS OF THEIR MISSION. A RECONNAISSANCE UNIT SHOULD NOT ENGAGE IN COMBAT WITH AN ENEMY RECONNAISSANCE UNIT OF SIMILAR SIZE IF IT'S MOBILITY ENABLES IT TO SIDESTEP THE INTERVENING RESISTANCE.

It must be ever kept in mind that the location, disposition, size, and direction of movement of the enemy force most likely to interfere with the mission of the parent unit is the objective of the reconnaissance unit. Small reconnaissance forces of the enemy should be reported and left to the counterreconnaissance screen established by the larger units. The mission of any reconnaissance unit is to observe and report. Any time that is lost in small engagements with hostile reconnaissance elements is time lost in accomplishing any major reconnaissance mission. The mission is the main body behind these small reconnaissance elements.

Armored force units usually advance with air observation well to the front and are followed closely by reconnaissance in force, which are in turn immediately followed by motorized infantry. Normally, reconnaissance units are not capable of either stopping or delaying the advance of armored elements, but it must be remembered that the width of the advance of armored elements is comparatively narrow and subject to the conditions of the terrain. A prompt move to the flank will often afford complete observation of the armored unit as it passes and will leave the reconnaissance unit available for observation on the infantry column that follows. If the armored attack is sensed in time it will often be possible to fall back in front of it and not be cut off but still keep it under observation. By closing in on the flank of the enemy's reconnaissance in force, a reconnaissance unit will find that it will be possible to eliminate some of this screen and penetrate it for observation on the main force. An armored attack discovered in time is one that can be foiled. Remember, too, that reconnaissance screens usually cover the assembly of the armored units prior to an attack. Artillery fire can be brought on that assembly position if you can report it accurately. To get this information it will be necessary to penetrate this screen.

Counterattacks should be launched only to relieve an element of the reconnaissance who has stumbled into an ambush. A swift, deftly executed attack will in most cases demoralize the enemy to the extent that the involved element may break off and rejoin the reconnaissance party. These attacks should never be launched as frontal attacks, but every effort should be made to maneuver to the flank and bring flanking fire on the opposition.

On occasions it will sometimes be necessary to reduce a defended road barrier. In this instance it will be necessary to place the support section for frontal fire and maneuver to the flank with the remainder of the command in order to effect the flanking fire. The flank attack must move with speed and silence and must be launched in time to take advantage of the element of surprise.

RULE No. 9. IN THE VICINITY OF THE ENEMY RECONNAISSANCE ELEMENTS, MAINTAIN SUFFICIENT DEPTH TO MINIMIZE THE EFFECTS OF HOSTILE FIRE.

This rule is obvious if attention is paid to the fact

that each vehicle must advance under the cover of another. This entails movement by bounds while covering vehicles remain under cover until the point of reconnoitering vehicle has reached the next bound and signalled "all clear." A bound might be described as the distance between successive positions from which fire might be delivered to the front. This distance will vary greatly according to the nature of the terrain but should not exceed 700 yards. Once the point vehicle gets beyond 700 yards from the support vehicle, it is out of supporting distance of small arms fire. If bounds are greater than 700 yards apart they must be considered as a series of open terrain features and the advance governed accordingly. The covering vehicle must always maneuver into a position for support that will not be masked by the advancing vehicle. This necessarily calls for high ground for the covering position, or if high ground is not available the covering vehicle should be situated well to the flank.

In an advance across desert country where overhead cover is sparse the advance must be greatly dispersed and every terrain feature that tends to force the unit into a column formation should be avoided, or if unavoidable, should be negotiated by infiltration of vehicles.

Defiles are particularly dangerous for vehicles and should be avoided when possible. If not avoidable, covering vehicles should be placed on the top of the defile while the remainder of the unit advances through infiltration. All possible speed should be made while in the defile and under no circumstances should the enemy be allowed to catch the entire unit in the defile at the same time.

When the next bound has been reached and the all clear signal is received, it is not necessary for supporting vehicles to advance cross-country, but they should take the shortest direct route ahead and move up promptly so that no delay will be caused.

RULE No. 10. TO FACILITATE OPENING IMMEDIATE FIRE WHEN OPERATING IN CONTACT EMINENT FORMATIONS ALL CARS WILL KEEP THEIR GUNS TRAINED ON THE MOST LIKELY POSITIONS FOR POTENTIAL TARGETS.

This rule is self-explanatory. It calls for continuous alertness on the part of all crews and quick action on the part of all gunners. Machine guns are usually transported at half load. Rifles are loaded and locked and pistols are carried with safety on but ready for immediate action. Thirty-seven millimeter guns will be loaded and ready for instant fire. Mortar ammunition will be kept instantly available.

RULE No. 11. EVERY MEANS AVAILABLE FOR MAINTAINING CONTACT WITH EACH HIGHER HEADQUARTERS WILL BE USED. IN ADDITION TO RADIO AND MOTORCYCLE MESSENGER THESE WILL INCLUDE COMMERCIAL TELEPHONE, COMMERCIAL TELEGRAPH AND VISUAL SIGNALS. FRIENDLY MILITARY TELEPHONES WILL BE USED WHENEVER POSSIBLE FOR THE TRANSMISSION OF IMPORTANT INFORMATION.

It must be constantly borne in mind that the information obtained by a reconnaissance unit is of no value until it arrives at the headquarters and in the Intelligence Section that must use it. When communication with intermediate echelons of command is out, reconnaissance patrols should have no hesitancy in attempting to get vital information through direct to the headquarters that must use it. As soon as communications are established you should confirm your previous message. The methods used in sending information to the rear depend to a great extent on the importance of the message. If radio communication is out and motorcycles all gone, vital information in the hands of the reconnaissance party calls for cool farsighted judgment on the part of the commander. Is the information vital enough to warrant the sending of one of his organic vehicles? The decision is his and he must make it promptly without hesitation. On the one hand he will reduce his strength by one combat vehicle; on the other, the failure to get this information back to headquarters may result in complete failure of the plan of a division. *Get your information back in time to do some good.*

Remember, too, that positive information of the enemy is not the only thing that higher headquarters is interested in. Negative information is just as valuable.

If you have advanced to a certain point along a certain route and have encountered no enemy, that information is important and should be sent in. Your position is of vital concern to your immediate commander, and it is your duty to keep him informed.

RULE No. 12. CONTACT ONCE GAINED MUST BE MAINTAINED.

Subsequent movements of an enemy force of any size are of vital importance to the higher commander. Once the main body of an enemy force has been contacted, that force must be kept under constant surveillance until it is committed to its final action. This is especially true in the location of enemy reserves in battle reconnaissance.

A force that suddenly changes direction after it has proceeded along a well defined route for a considerable time, indicates some change in the enemy's plans, and if that change in direction is made while contact is lost this information may never get back to higher headquarters in time for the commander of your own forces to make a counter-move to meet the expected threat from a new direction.

In all delaying action or withdrawals in which you keep the enemy force under observation, pay particular attention to road formations that allow him the choice of direction and so arrange your forces that if he does make an unexpected change you will not be caught off guard. Remember he may keep pushing you back with just sufficient force to make you withdraw, while the remainder of his force turns off and proceeds in a new direction.

Constant liaison between adjacent patrols will often aid in keeping enemy forces under surveillance when he crosses from one sector to another.

At night when enemy forces go into bivouac constant contact may be maintained by the use of small dismounted patrols that remain in the vicinity of the bivouac. A bivouac area should be reported immediately, and any movement throughout the night of any importance should be reported.

The arrival and departure of convoys and supply trains should be reported. The exact time of departure and the direction of movement on the following morning is of vital importance.

Remember, the general rule is: Bivouac at dusk, rest and replenishment of supplies before midnight, movement immediately after, assembly before dawn, and attack at dawn. Armored forces usually move into assembly positions during the night and launch their attacks on the following morning. A prompt report on that assembly position will usually result in the attack being considerably broken before it is launched.

RULE No. 13. MAINTAIN CONSTANT LIAISON WITH THE UNITS ON YOUR RIGHT AND LEFT AND KNOW WHERE THEY ARE AND WHAT THEY ARE DOING.

Lateral liaison, although extremely important, is sometimes a matter of minor concern to reconnaissance commanders. This is the only method known to prevent gaps appearing in a reconnaissance screen. An open gap in a reconnaissance screen, like an open gap in a firing line, is a perfect invitation to the enemy's counterreconnaissance elements to push in. Flank your reconnaissance patrols and eliminate them one at a time.

This cross-liaison is greatly facilitated by the use of phase lines. Phase lines are lines drawn through well defined points on the map and on the ground at which point certain elements of a reconnaissance patrol may be contacted at a certain specified time. Only in exceptional circumstances should a phase line be construed as limiting the forward movement of reconnaissance patrols. Higher headquarters may sometimes assign a limit beyond which reconnaissance patrols may not move without further orders. In the event that this is done, the reconnaissance patrol, when it reaches this phase line, becomes a reconnaissance screen, and constant patrolling along this limiting phase line is indicated. The normal function of a phase line, however, is to provide a point for adjacent patrols to contact each other.

Let us take a typical example. Patrol "B" is moving towards a 9:30 phase line; Patrol "A" is on his left, and Patrol "C" is on his right. He has contacted Patrol "C" at the 8:30 phase line and now he wants to establish contact with Patrol "A." A glance at his map will show him where elements of Patrol "A" should be at 9:30. Prior to 9:30 he dispatches his contact patrol to give them time to arrive at Patrol "A"—9:30 phase point at 9:30 or just before. If Patrol "A" has reached his phase line and has not been delayed, some element of his command should be on that phase point at 9:30. If he has reached his phase line ahead of time he should not stop and wait with his entire patrol but should leave a contact patrol there to wait until 9:30. The normal assumption then is that if the contact patrol from Patrol "B" does not find anyone on "A's" phase point, he must assume that Patrol "A" is slow and has not reached his phase line. He immediately notifies his own patrol commander and starts searching back along "A's" route to see what has happened to that patrol. Upon receipt of this message the commander of Patrol "B" immediately reports the fact that Patrol "A" has not reached 9:30 phase line and asks for instructions.

A brash forward movement to the next phase line might throw his left flank open to attack. While holding his patrol in check, he must constantly patrol to the front and flanks to be sure that enemy forces are not pushing through on either side of him.

Lateral liaison may sometimes be accomplished by radio and save much wear and tear on the patrolling vehicles. In any event whenever a patrol reaches a phase line and passes over, that fact should be reported to the next higher command.

The fact that you are operating on the flank of another unit not a part of your organization does not relieve you of the burden of lateral liaison with that unit.

A reconnaissance patrol sent out on a flank of a larger unit should immediately contact the commander of that larger unit, state his mission, and make the necessary arrangements for future contacts.

The commander of a reconnaissance patrol sent out to relieve another patrol should immediately contact the relieved commander, secure information as to what patrols are on the right and left and send out contact patrols to them in order to maintain the continuity of the plan.

RULE No. 14. IN ANY FORWARD MOVEMENT OF THE PARENT UNIT DEMOLITIONS ARE ACCOMPLISHED ONLY ON ORDERS FROM HIGHER HEADQUARTERS. IN A RETROGRADE MOVEMENT EVERY AVAILABLE METHOD IS USED TO RETARD THE PURSUIT OF THE ENEMY.

In any advance of large forces, bridges, routes, and other avenues of approach are of vital importance to the advancing force. A reconnaissance detachment that destroys a good crossing for the sole purpose of preventing the crossing of a small enemy reconnaissance force is doing more to impede the progress of his own forces than he is to save them from attack. Road blocks may stop enemy tanks, but they will also stop our own. Mine fields may be laid but must be removed before the unit

moves forward on more reconnaissance. All large units have prepared, and ready for issue with orders for an advance, a schedule of demolitions to be accomplished. These are usually assigned to the engineer forces. Such demolitions and barricades as are to be accomplished by reconnaissance elements will be outlined in orders issued, and any deviation therefrom may result in a serious handicap to the following units.

Reconnaissance units are often called upon to effect delay on an advancing force until the units behind can move into position for an attack. In this instance every available demolition possible is accomplished. Telephone lines and telegraph cables are cut, roads blocked, train tracks pulled up and broken, cross-ties burned, fuel and gasoline destroyed, bridges burned or blown up, defiles mined, and all abandoned transportation destroyed.

Bridges, if of wood, are burned to save demolitions. If steel or concrete, part of the flooring and the supports under the center span should be destroyed. If demolitions are available a crater blown into the approach is advisable. If demolitions are not available, concrete bridges may sometimes be effectively blocked by fallen trees thrust through the railings. A washout may be dug across the approach if the stream is swift. Abandoned vehicles may be towed on the bridge, overturned, and set on fire.

In all cases of demolition remember that fire is the most destructive agent because it will continue to work long after the demolition party has been forced to leave the scene. If it can be left so as to burn with sufficient intensity and long enough, it will explode all abandoned ammunition in a tank or car. Gasoline can be ignited by a filled gas bottle capped and equipped with a short piece of long delay blasting fuse, thrown inside the car so as to break.

RULE No. 15. BEFORE STARTING OUT ON ANY RECONNAISSANCE MISSION BE SURE THAT YOU KNOW:

1. The situation of your own forces.
2. The situation of the enemy as it is known.
3. Your mission and mission of parent unit.
4. The zone in which you are to operate.
5. Friendly forces that will be adjacent to you and their axis of movement.
6. Contacts that you are expected to make with your own forces.
7. Your own axis of movement.
8. How long you will be away from your base of supplies.
9. The initial command post and axis of movement of your highest organic commander and the intervening command posts.

The bulk of this information will be given you in your initial and warning orders; however, you must keep this check list in mind and if all questions are not answered, ask for more information.

The enemy situation and your own situation are contained in paragraph 1, a and b, of all Field Orders.

You should know and constantly keep in mind the main mission of the parent unit. By this is meant the mission of the largest force of which you are an organic part. Your own mission will come in the Intelligence Annex and should include: the size and nature of the forces for which you are to look and report on, the times you are to report, and when the information you are sent for is desired. This should also tell you the zone or routes over which you are expected to operate.

Vehicles, if armed, should have all armament and ammunition removed or destroyed. Where time is available a block of TNT set next to the cylinder block is advisable. Gears may be stripped and axles broken by a sudden shift to reverse while the vehicle is moving forward. Fan belts may be cut and fans demolished with an ax. Spark plugs may be cracked, distributor heads broken, and wiring torn loose. Gas lines should be cut and holes punched in the gas tank; the spilled gasoline should then be ignited under the vehicle. Sand thrown into the air filter will soon be drawn into the cylinders if the vehicle is running. The vehicle may be run off high places by throwing it into low gear and letting it roll forward alone. Stripping gears by reversing them quickly seems to be the quickest method of disabling any vehicle. All military vehicles will be disabled before being abandoned. Tires will burn if a small amount of gasoline is poured over them and ignited.

Machine guns are quickly disabled by removing the block and barrel extension, carrying both for some distance, and disposing of them in different localities. Extra barrels should be inserted into the receiver and their prying leverage utilized to spring the frame. The barrel should then be struck sharply across the edge of the armor plate on the car.

Rifle and sub-machine gun barrels may be bent and rendered useless by striking them across a sharp corner. Remove the bolts and dispose of them later.

37mm guns may be disabled by placing a block of TNT in the breech and igniting the fuse. If fuses and caps are not readily available, the sliding block may be removed and charges placed for detonation by a well thrown hand-grenade after all personnel have left the vehicle. The sight should be removed or destroyed. Abandoned 37mm ammunition can be detonated by TNT or hand grenades.

Mortars, both 60mm and 81mm, may be destroyed by placing TNT charges in the barrel or smashing the barrel with an ax. The sight should be either removed or destroyed.

The reason for knowing the units on your right and left should be obvious. If no arrangement is made for physical or radio contact between you and these elements, try to arrive at some mutual agreement before your departure. In most cases your immediate commander will have taken care of this. If the unit on your right or left is not directly under the control of your immediate commander, some provision should be made between those commanders for contact.

Before departure you should know the initial command post and general axis of movement of all units through which your messages must pass in order to reach their final destination. As an example, the section commander of a reconnaissance section should know:

Axis of Movement and Initial Command Post of:

1. His platoon commander.
2. His troop or company commander.
3. His battalion commander, if the unit is a part of a reconnaissance battalion.
4. The division commander.

This information is necessary in order that the reconnaissance party may know the headquarters that will ultimately receive and act on the information that he sends in. Command posts are most frequently the objectives of bombing attacks, raiding parties, and armored attacks, and it is more than likely that some or all of your command posts may be inoperative at certain times. Your mission of reconnaissance is not complete until you have delivered your information in the hands of some headquarters that will be able to act on it.

Seldom if ever, will you know exactly how long you will be away from your base of supplies. However, it is your duty to see that your command is as completely equipped for the approximate time as you can possibly make it. *Food, fuel* and *ammunition* are your greatest worries. Be sure you start out completely filled and husband your resources to the utmost.

In other words, you want all of this information so that you may have your command ready to meet the situation that you feel sure will arise and still have enough to spare to meet the unexpected.

RULE No. 16. UNITS THE SIZE OF A PLATOON OR LARGER SHOULD MAKE PROVISION TO HOLD A MOBILE RESERVE FOR SPECIAL AND UNFORESEEN MISSIONS.

This is a rule that is most difficult to follow because of the fact that in the early stages of development for battle the need for information is so great that every available agency is assigned a mission and in most cases the mission assigned is unduly large.

A wise commander, however, can arrange his sectors and zones so that he may save out a few vehicles of his command to accompany him and thus have them available for special missions. In the platoon this duty will normally fall to the support section. In the troop headquarters, it is seldom that all personnel are needed at all times, and the troop headquarters itself carries sufficient fire power to conduct some reconnaissance on its own. On many occasions it will be found that the requirements of the road net can be met only by assigning a part or all of the troop headquarters an axis of movement that is not covered by one of the platoons.

The normal result of the above should indicate to organization commanders that the troop headquarters should be as well trained in reconnaissance functions as any other unit of the organization. This training is difficult to accomplish because the duties of troop headquarters must be carried on concurrently. The selection of men for duty with troop headquarters should be given much consideration and thought. Their training may be accomplished by staggering their attendance at drill. This calls for a man of special aptitude, for he must absorb his training sketchily and in about half the time normally assigned to the remaining men of the organization.

RULE No. 17. PRIOR TO DEPARTURE ON ANY MISSION, RECONNAISSANCE PARTIES SHOULD DESTROY ALL NOTES, MEMORANDUMS, MARKED MAPS, AND ORDERS.

This is a counterreconnaissance measure that must not be ignored. Any reference to the movement of units in the hands of a reconnaissance patrol is inviting disclosure of the entire plan.

The reconnaissance man should be able to memorize plans, notes, and movements and should not again have to use notes once he has had sufficient time to look them over. Subsequent notes and messages should be made and kept in abbreviated form with references made only to code names of units and code names of towns.

A revolving template for map reference that can be easily removed and destroyed offers a solution to the coding of names of towns. Telephone code names of units can be memorized and used in subsequent notes and messages.

It is unwise for the reconnaissance unit to carry division codes of any sort. It follows that reconnaissance messages must be sent in the clear. In messages concerning friendly troops some use of code names and template or code grid designations of towns and villages renders a message in the clear unintelligent to the average interceptor. In most cases action mentioned by any reconnaissance unit is current action and will have been completed by the time that the enemy intelligence recognizes and breaks down code designations. Headquarters of larger reconnaissance units may sometimes use code in reference when they communicate with the parent unit, but this is the exception rather than the rule.

Reconnaissance units should not keep an operation map, and the situation map should only show temporary positions. No full detailed maps should be kept. Situation maps should be kept on thin overlay paper than can be easily destroyed or smudged. A handy file for messages and easy access to the template will allow the commander to outline both situation and operation maps promptly if memory fails.

RULE No. 18. A RECONNAISSANCE UNIT SHOULD BE SO TRAINED THAT IT WILL BE READY FOR ANY RECONNAISSANCE MISSION AT ANY TIME.

To meet the requirements of this statement every in-

dividual in a reconnaissance unit must be assigned detailed duties, instructed thoroughly in their performance, and be capable of performing those duties at any time. Each vehicle has certain equipment that must be loaded before that vehicle is ready for any mission. Each item of this equipment must be catalogued and assigned to some individual in the car crew for loading and replenishing.

When a unit returns from a mission, every man in that unit is to be held responsible that, before he leaves his vehicle, the machine has been serviced; ammunition, rations, fuel replaced; and any worn or broken pieces of equipment immediately turned in and *replaced*. The fact that the article has been turned in does not relieve him of the responsibility incident to his platoon. He must be certain that it is replaced. When a car commander or section leader reports that his car or section is ready to move, that report signifies that he has every article of equipment, all rations, all ammunition, and all extra fuel that is authorized. He also signifies that his vehicle or the vehicles in his section are in good running order and functioning properly.

In addition to the above, provision must be made for expected casualties in the crews and all members must be thoroughly familiar with the duties of other members so that duties may be interchanged.

In moving into bivouac at nightfall each noncommissioned officer must assign places for his men to sleep. He must know at all times where these men are and must be able to alert the entire crew in a matter of minutes. Each platoon leader should assign areas for his sections and should know where he can find each NCO. Each troop commander must be able to locate his platoon leaders. As a general rule outpost duties are assigned to entire vehicles, and the vehicle itself is dispatched to the outpost so that no dismounted men are left in case of a sudden move.

In an alert each NCO prepares his command, then reports to the next senior that he is ready to move.

Each individual upon settling down for the night must learn to place his equipment in certain designated localities around his body so that when he is awakened he can reach out in the dark and place his hands on the equipment as it is needed.

RULE No. 19. ASSEMBLY POSITIONS ARE THE RESPONSIBILITY OF THE RECONNAISSANCE UNIT COMMANDER AND MUST BE DESIGNATED PRIOR TO ACTUAL ENCOUNTERS.

Reconnaissance units are sometimes ambushed and scattered and unless a designated assembly point is set the commander immediately loses control.

A fairly simple rule to follow and one that can be remembered by all concerned is to designate the cross-roads that was last passed over by the unit before the encounter, as the assembly point. This does not mean that every vehicle makes it their business to head directly for the cross-roads and move over to the shortest routes. Neither does it mean that all vehicles drive up to the cross-roads and assemble in one compact group. The first vehicle that arrives should reconnoiter to determine whether the assembly position is held by the enemy. If not, that vehicle should be placed under cover nearby, and one member of the crew should take up position near the cross-roads to direct the remaining vehicles as they arrive. Subsequent vehicles will halt under cover and send dismounted patrols forward to reconnoiter and meet the outpost from the first vehicle. Constant radio communication will aid greatly in the assembly of the unit. If the cross-roads is held by the enemy an effort should be made to determine how strongly it is held, and then all vehicles should proceed to the next cross-roads on the axis of movement of the unit.

RULE No. 20. THE RECONNAISSANCE UNIT ASSIGNED TO AN ENVELOPING FORCE MUST BE STRONG, POWERFUL IN FIRE SUPPORT, AND FAST. IT MUST MOVE WITH SUCH SPEED AND FORCE THAT IT WILL SECURE THE UNINTERRUPTED ADVANCE OF THE ENVELOPING FORCE BEFORE THE MAIN ENEMY RESERVE CAN BE SHIFTED TO MEET IT.

A reconnaissance unit, assigned the task of covering an enveloping force, immediately assumes three missions:

1. Advance guard.
2. Forward and flank reconnaissance.
3. Mobile counterreconnaissance screen.

An enveloping attack is launched with the hope of catching enemy reserves out of position and pushing through to the objective before the reserves can be shifted to meet the attack. It follows then, that an enveloping attack, once launched, must be driven through with all possible speed in order to gain the element of surprise.

The reconnaissance force assigned to such an attack must be strong enough to fight delaying actions on either or both flanks and still be able to launch an effective attack against small enemy patrols that might be encountered in the path of the enveloping force. These patrols cannot be by-passed nor allowed to escape. They must be attacked, their retreat cut off, and the entire personnel either captured or annihilated. This entire action must take place in less time than it takes to complete a telephone warning or send a radio message. The force sent around to cut off retreat must be especially careful to spot and cut telephone wires and watch for motorcycle messengers. Under no circumstances will messengers be allowed to escape. If the approach is found to the enemy position, two cables stretched across the road just around a curve will usually take care of motorcycles and small messenger cars. These cables must be covered by fire.

Antitank mines quickly laid in the road will destroy larger vehicles. They may be tied to a small rope and pulled across the path of an oncoming vehicle. Heavy

concentrated fire must be avoided but accurate fire is imperative. Smoke screens will be used only on the orders of the enveloping force commander.

The flank reconnaissance units must push out far enough so that enemy patrols may be effectively delayed until the enveloping force has passed the point at which they might be delayed or harassed.

This is one mission on which a reconnaissance unit is forced to fight and in most cases where this mission is assigned the reconnaissance unit commander will have sufficient combat personnel attached to his unit to successfully perform his mission. In the event that additional troops are attached, the reconnaissance commander should insist that they be furnished transportation that will negotiate the same terrain with the same speed as the reconnaissance vehicles.

RULE No. 21. MOVEMENT IN ANY DELAYING ACTION IS ACCOMPLISHED BY APPLYING THE PRINCIPLES OF AN ADVANCE IN REVERSE.

Platoons, sections, and vehicles, use the method of covering the withdrawal of the foremost vehicle as it withdraws. In this instance covering vehicles move to the flank and leave the best avenue of withdrawal open to the withdrawing vehicle.

The requisites of any good delaying position are:

1. Field of fire.
2. Cover.
3. Covered route of withdrawal.

While not every delaying position encountered has all three in a perfect arrangement, each position must contain something of each. Field of fire is most important as delay must be effected at long range. Cover is important in order to conceal your delaying position from aerial observation. A delaying position disclosed from the air is a delaying position lost. The enemy will flank it before a shot is fired. A covered route of withdrawal is necessary for the safety of the withdrawing force.

The secret of delaying action is to be able to so dispose your forces that their strength, disposition, and composition is never known to the opposing forces. Fire must be begun at long ranges and maintained until the enemy has been forced to deploy for attack. The withdrawal must be so timed and so perfectly executed that the enemy flanking attack has not penetrated to the point of bringing flanking fire on the withdrawing forces, nor is the enemy aware of the exact time of withdrawal.

Vehicles, individuals, and sections are withdrawn successively. The least engaged have priority on withdrawal, while the remaining vehicles increase their fire to prevent the enemy from knowing of the withdrawal.

RULE No. 22. "THE GENERAL RULE IN MEETING RESISTANCE IS: (1) TAKE COVER, (2) RECONNOITER, (3) ACT."

The first thought of any individual upon being fired on is to get under cover. The natural law of self preservation still exists and is strong in human nature. There is, however, a marked difference between an individual, armed with only his rifle and bayonet, diving for the nearest swale, and the driver of a scout car or a quarter-ton jeep trying to conceal that entire vehicle and crew from observation and fire. The driver must be on the alert for every possible cover that might afford him protection. He must be ready to move towards the most likely cover without command and do it quickly and efficiently. Scout car drivers must be able to sense the ground and know from a casual observation whether or not the surface will support the weight of the vehicle.

As soon as vehicle and crew have gained the comparative safety of cover they should immediately start reconnaissance to determine the size, strength, and disposition of the enemy who delivered the fire. Every effort will be made to determine the flanks of the opposing force and fix his location. What type of fire is he using? Automatic? Rifle? Machine Gun? 37mm? Mortar? If machine gun, what caliber? Does he seem to have artillery support? Is he intrenched? If so, to what extent? What organization does he belong to? Is he cavalry, infantry, or artillery? What regiment, division, or company?

The entire reconnaissance unit should immediately start reconnaissance in an attempt to gather this information. Remember that the position of an enemy's flanks and his line determine his exact position and will in most cases give some indication of his strength. These facts, coupled with the amount and type of fire he delivers, will often determine exactly the size of his force. One prisoner captured or a good description of a casualty will often indicate to what organization the group belongs. The quality and state of clothing, food, equipment, and the physical condition of the men in the patrol are all useful information. As much of this information as possible should be sent back.

The action of the enemy patrol after he meets opposition is of extreme importance. Do they show fight or fall back? Are they pushing forward or holding on? Movements of small detachments indicate the expected action from the main body and should be reported as soon as they are learned. Prisoners should be taken if it can be done without undue involvement of the reconnaissance party. The first prisoners taken in any engagement are always important. The most likely should be selected and sent to the rear. The remainder should be disarmed and if possible turned over to the nearest large unit. If this is impracticable, disarm them, destroy their weapons and indicate that they are to march to the rear in column of two's and not look back. Have one sentry follow for a short distance but rejoin his unit after the prisoners have started well to the rear. It is better to disarm them and release them than to let them slow you down by taking care of them. In an advance they may be securely tied to trees and their presence reported.

HITLER'S SECRET WEAPON*

Are you helping to make it? Are you certain? Do you know his source of material? Check your answers by this article.

ON the day that we donned the uniform of the United States Army we began to learn things about the Army, things that Hitler and Hirohito would like to know to aid them in attacking our country, our families, our cities, our homes, our farms, and ourselves. Every day since then we have been entrusted with information, and we will continue to be entrusted with more and more information so long as we are privileged to wear the uniform. And the more we learn, the more the agents of Hitler and Hirohito can get out of us: that is, only if they are smarter than we are. Every bit of military information is of value to the enemy, no matter how small.

These truths appear to be self-evident. Even so, every day on buses, on trains, in bars, and in the living rooms of our finest homes, seemingly unimportant bits of information reach enemy agents by some of us who don't mean to tell.

What then are the causes of indiscretion? Why is it that so much information is being given away all over the country at this very minute? There are four causes. They are:

Conceit.
Faith.
Enthusiasm.
Ignorance.

You will notice that treachery has been left out. That is because the number of traitors is fortunately very small. This is not intended for those who are betraying their country willfully; it is for those who are betraying it unwittingly, but are betraying it just the same. If enemy agents had to depend solely on traitors for their information, they would probably have a lean time, for it is a tragic fact that the majority of what they learn is given to them by those people whose patriotism is beyond question.

Conceit

Conceit is the most common cause of leakage. Ninety per cent of indiscretions are the result of it, and 99 per cent of us are vulnerable to it.

Why do we boast? Most of us to impress a woman. That is understandable enough. Everyone tends to "hand out a line" when out with a girl. There is little harm in it, and providing you leave the service out of it, you can go ahead. The Army really isn't too much concerned about the fact that a corporal is able to persuade his girl that he gave up $50,000 a year when he joined the Army or that he would have been a senator if it hadn't been for the war, as long as his "line" doesn't include service matters.

We may be on secret duties. If that is so, we must remember that these are the Army's secrets, and that we have no right to share them with anyone.

There will always be a temptation to boast when you know a lot more than the other people you are with. It is admittedly very hard to pretend you know nothing when in point of fact you know everything; and in order to try to satisfy your conceit without giving much away, you may find yourself just hinting at all you know. That is fatal. If a thing is secret, you must not even hint at its existence.

The trouble about this boasting is that it is so contagious. A man boasts to his girl friend of what he is doing just to impress her, and she in her turn boasts to all of her friends about the importance of her boy friend just to impress them. It becomes a vicious circle with everybody trying to outdo everybody else in the magnitude of the secret information which they can impart.

Faith

As a nation we are too ready to trust our fellowmen, and to believe too implicitly in the safety of such national institutions as the United States mail and the telephone and telegraph services, all of which can be utilized to advantage by enemy agents.

Most of us consider that we are pretty good judges of character and not easily fooled. We forget that an enemy agent, if he is to be successful and avoid a firing squad, must be such a plausible and convincing person that no one suspects him, least of all those who pride themselves in being good judges of character. In other words, he will look exactly like what he isn't: a typical American with an honest face, who knows as much about the Yankees and the Brooklyn Dodgers as we do.

We should always put ourselves in the place of an enemy agent. Consider how one of the Axis agents would do his job. First, we should ask ourselves what we could learn from the conversation that is going on in the bar, club, or railroad station, or the information that is given in a letter. When we learn to adopt this outlook, we will not only be careful to keep our mouths shut, we will also want to make other people shut theirs.

But what about the faith you have in your friends and relatives; in your mother and father, and the girl you are going to marry?

Of all security lessons, this is the hardest to learn: That military information must be shared with no one, not even with those you love.

That is not to say that you must no longer put your trust in these people in whom you have confided all your life. But you must not share with them secrets that are not yours to share, secrets that belong to the Army.

Remember that the first person an enemy agent contacts when he wants to know anything secret is the wife or girl friend of the man who knows that secret.

You may feel that your wife or mother has a right to know when you are in danger, a right to be told if you know that on a certain date you are sailing in convoy, or are going on a raid from which you may never return. You may also feel that they have a right to know if this raid is canceled, so that their minds may be at rest. But this must not happen. The more people who know a secret, the less chance there is of its being kept.

Mothers and sisters and wives, with the best intentions in the world, can give away information without even knowing that they have done so. If they are worried about your safety, they will tend to confide in those who are sympathetic. In wartime we do not always choose our friends wisely, but turn instinctively to anyone who shows kindness and understanding, especially if they seem to be suffering like ourselves. An enemy agent will not only be a good listener, he will also be a sympathetic one.

If the people who love you are wise, they will not try to learn your secrets. It is your duty to keep them to yourself.

Enthusiasm

Enthusiasm is a common cause of indiscretion. Anyone who is really interested in his job finds it hard not to talk and write about it. Your first impulse when your outfit has done particularly well will be to talk about its achievements. As the time approaches nearer and nearer to when your buddies and you will be going overseas, excitement increases and it gets increasingly harder to keep the news of events important to you under your hat.

But note how easy it would be for a clever person to get this information out of you. Maybe he would flatly refuse to believe you, until you got so angry with him that you blurted out facts and figures which would prove your story conclusively. Or he would be so impressed by everything you told him that you would tell more and more; or perhaps he would adopt the line of being a technical expert himself, pretending to know all about it already, and enticing you into a highly technical discussion in which you would be anxious to show off your knowledge.

Remember, never add to a newspaper account, no matter how proud you may be of the fact that you know the whole story.

Ignorance

A vast number of people are going about the country today giving away vital information simply because they have no knowledge whatsoever of the way enemy intelligence service works. They just cannot understand that it is all a matter of putting two and two together, of going around and collecting bits and pieces of information from a thousand different sources, and then cleverly evaluating them into a dangerous report.

Get it firmly fixed in your head that the enemy agents

*War Department, Bureau of Public Relations

are not all parading about in Washington and our military establishments, preparing to waylay a general and steal the plans of a forthcoming attack. They are quiet, hardworking investigators who go about using their eyes and ears, and picking up a little item here and another one there by encouraging people to say more than they should oddments of news which tell of troop movements and concentrations of supplies, of strengths and weaknesses at certain points; of the destination of convoys and the position of battleships, aircrafts, tanks, and guns. A scrap of conversation picked up by an agent may at first seem to be of little value until another report from some other source continues the story and links it up with something else. The intelligence officer's job is to look for clues no matter how small, and to see what he can deduce from them.

Goal of Security

The goal of security education is the instinctive security-mindedness of all in the military service. When discretion on all military matters becomes second nature to everyone so that we automatically shut up like an oyster whenever strangers try to get us to discuss our work, then the battle of security will have been won. It should not require an effort to be discreet. On the contrary, you should feel an acute sense of guilt whenever you find yourself referring to anything that is secret.

Remember that it is not only a crime to commit a breach of security, but also to conceal one. Surprise is a vital factor in war. If the enemy finds out our plans, it is essential that we should know that he has done so. Therefore if a leakage exists those in authority must be notified at once.

You must see security as an additional weapon in your hands, a weapon which, if developed and perfected, can become as valuable to the United States Army as the tank, the airplane, or the antiaircraft gun. That may sound like an exaggeration, but it is not. Our technical experts are working night and day to reduce our losses by faster aircraft, by greater hitting power, and through the development of better equipment, but those losses would be reduced in a far more sensational way if all leakage of information to the enemy could suddenly be stopped.

It is your duty not only to keep your mouth shut, but also to see that others do the same. If you know any secret information, keep it to yourself; and if a friend of yours knows something secret, do not try to find out what it is.

In wartime no one is ever fully off duty, and no one must ever be momentarily off guard.

Don't Talk

1. ABOUT TROOPS:
   - Location, except for troops in training and on police duty.
   - Where, when, or how troop movements will be made.
   - Characteristics and limitations of equipment or weapons.
   - Concentration or special training of units.
2. ABOUT HARBORS, SHIPS, AND CARGOES:
   - Location, destination or cargo of United States, Allied, or neutral vessels.
   - Any information about a transport, convoy, harbor defense, or minefield.
   - Construction or proposed launchings.
   - Condition and setup shipyards.
   - Sinking or damage until officially announced.
3. ABOUT DAMAGE:
   - Generally speaking, do not disclose any information in your possession as to damage done to our side by any action of the enemy.
4. ABOUT AIRPLANES:
   - Production of any plant or number in any military unit.
   - Location, destination, or time of departure of air units.
   - Troop movements or war material shipment by air.
   - Characteristics and limitations.
   - Development or experiment.
   - Name, plans, or orders of members of Air Transport Command.
5. ABOUT FORTIFICATIONS AND ANTIAIRCRAFT INSTALLATIONS:
   - Location and description.
   - Location of bomb shelters or camouflaged objects or other defense precautions.
   - Any information of United States installations outside the United States.
6. ABOUT PRODUCTION:
   - Don't give out any information on production known to you. Let the other fellow get what he's supposed to know out of the newspapers.
7. ABOUT WEATHER:
   - Don't pass on information of weather conditions other than that which appears in your local newspapers.
8. ABOUT RUMORS AND HARMFUL STORIES:
   - Don't repeat stories—
     - Which stir up racial discussion.
     - Inimical to our friendship with or in criticism of our allies.
     - Of the enemy's prowess.
     - Of our inefficiencies or shortcomings.
     - About a shortage of or poor quality of our equipment.
   - Challenge all rumors.

The Soldier and the M1 Rifle*

Care and Maintenance of the Garand Semiautomatic in the Field

Lieutenant Howard L. Bagley, Ordnance

THE U. S. rifle, caliber .30, M1 is the present standard service rifle of our Army. The rifle is referred to by most men in the service as the "M1" or the "Garand," after John C. Garand, inventor, to whom credit for the development of the rifle is given. The need for a semiautomatic or automatic shoulder arm was foreseen as far back as the year 1902. Various types of actions were tried, but none were equal to the standards set up for that type of weapon. Commercial manufacturers and gunsmiths were induced to develop and submit weapons for test, and a large number were submitted, but none were satisfactory.

Springfield Armory introduced a number of weapons with varied types of actions, of which the gas-operated type showed the greatest possibility. A trend to change the type of ammunition was introduced, and the experiments continued. At this stage, Mr. Garand presented a gas-operated weapon with a bore diameter of .276-inch which stood the tests very well. It was suggested that he try the same design in a caliber .30 rifle. This was done, and the new rifle easily passed the preliminary tests. As a result, in the latter part of 1932 eighty of these rifles were ordered made for further test. These eighty rifles, handmade for the most part, were completed by the middle of 1933 and were turned over to the various service schools for prolonged tests and trials. The Garand stood up under these grueling tests in fine shape and was accepted by the various combat branches as suitable for the service weapon. It was adopted on January 23, 1936, as the new standard United States service rifle for manufacture and issue. Some of the first eighty rifles manufactured are still in service at the Ordnance School.

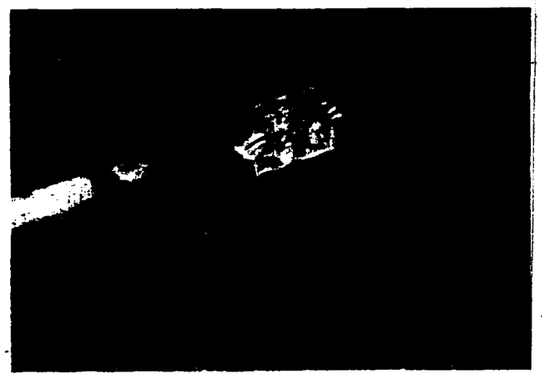
The rifle has advanced through various stages since the original model was adopted; changes were made in the barrel, gas cylinder, and a number of smaller parts as the years passed. The causes for these changes were generally due to the need for a more efficient means of manufacture. The change in the barrel eliminated a part that was causing some trouble both in cleaning and in accuracy. Such changes are commonplace in the development of any item of ordnance matériel. The first model is very seldom entirely satisfactory and has to be altered or parts must be redesigned to aid in the process of manufacture or to improve the operation of the weapon. A very good example of this is the U. S. Springfield rifle, caliber .30, M1903, which was considered the best of the military rifles of the world, but after twenty years of use it was decided to make a change in the design of the stock. Like circumstances will no doubt prevail with the M1 rifle as time passes. The soldier should expect these changes as the means by which the Ordnance Department improves his fighting equipment both in workmanship and performance.

Let us now consider the rifle as it is issued to the soldier and weigh the problems of care, cleaning, and adjustment with which he is faced in the field. The rifle is the soldier's best friend in battle, and he therefore should be given all available information that will help him to understand and care for this important mechanism.

The M1 rifle is issued to the soldier usually in the condition that it is received from the point of supply. He then is expected to clean and prepare his weapon for service—a very disheartening task for an inexperienced man. He has a rifle completely filled and covered with a rust-preventive compound, and he probably is very uncertain as to where or how he should start to clean it. His first step should be to remove the excess grease from the outside of the rifle by using a coarse cloth. The trigger group is then removed and washed in cleaning solvent to remove the excess grease from the parts. The group may then be completely disassembled and further cleaned with solvent, but care should be taken not to lose small pins or parts. These parts may be further washed in boiling water if it is deemed necessary and then dried. They should be given a light coat of oil by using an oily cloth free from lint and dirt. The group may then be reassembled and wiped off with an oily cloth to remove all traces of moisture.

The stock group is then removed and cleaned by wiping down with a cloth saturated with solvent. The stock should not be placed in a container of solvent as it is detrimental to the wood. The stock should then be wiped dry and a very light coat of linseed oil applied to the wood. The barrel and receiver group may be taken down next and the parts cleaned in the solvent. The wood hand guards should not be washed in the solvent but wiped clean with a cloth saturated with it and then dried and oiled the same as the stock. The remainder of the parts may be submerged in the solvent and cleaned, dried, and oiled. Hot water may be used as for the trigger group if the parts are completely dried and oiled afterward. The barrel, chamber, and gas port at the muzzle should be cleaned and checked for the presence of heavy grease. The bolt group should be checked for the presence of heavy grease around the firing pin and ejector. This grease should all be removed and a light coat of oil applied.

*Courtesy, *Army Ordnance*.



Came the dawn—and a rifle still uncleaned

After the rifle has been cleaned, oiled, and assembled, it should be checked by an experienced man for completeness and proper assembly.

The soldier should familiarize himself with the rifle so that he knows the entire mechanism and the function of all parts. He should be able to name a majority of the parts by feel and to disassemble and assemble the weapon in the dark. His rifle is just as important to him as his mess kit, and he should know the rifle equally well. Since the soldier has to perform first-echelon maintenance on the rifle, he should know all the ways and means of doing this work. He will not be able to depend on some one else for repairs in battle.

Proper lubrication is the first step in preventing malfunction and breakage. All parts should be lubricated with light oil; overlubrication does not help the function of the weapon and causes dust and foreign matter to adhere to the parts.

Proper cleaning after firing is not always within the power of the soldier. He may not have the time or facilities to do a good job, but he should do the best he can with the time and equipment on hand, as any cleaning possible is better than none. Water alone poured through the rifle barrel and dried out by any means is better than no cleaning at all. For example, wiping out a dirty mess kit with dry grass or leaves is better than leaving it dirty and finding it totally unusable at the next meal. It is the same with the rifle.

That day on maneuvers—Jammed!

Replacement and minor adjustment of certain parts is within the province of the soldier. This includes replacement of the extractor, firing pin, and such parts as he might replace without special tools or gages. Adjustment of the rear sight and tension of the spring in the sight come under this classification. The soldier should be cautioned about interchanging parts that would impair the safety of his weapon. He may find it necessary to use parts from the rifles found on the field in order to keep his own weapon in action, but he should be cautioned not to change the bolt as he thus may set up a condition very dangerous to himself.

The soldier also should know how to render his rifle unserviceable should it be in danger of falling into the hands of the enemy. The soldier can make his weapon unusable in many ways. The barrel may be bent or the gas cylinder may be damaged, but this may not prevent firing the weapon. Removal of the extractor will prevent the use of the weapon without considerable difficulty. About the easiest way to damage the rifle to prevent its further use is to separate the three groups and break the stock, raise the extractor, and drop the firing pin. This will cause the enemy considerable delay in placing the rifle back in service.

That evening—Seeking professional advice

Since the rifle is the soldier's best friend in combat, he should treat it with the care due it. In return, the rifle will not fail in its performance. A great majority of the failures of the M1 rifle are due to neglect or improper care, just as any other mechanism will break down if not properly cleaned and lubricated at regular intervals. Where the climate is wet and the humidity is high it will be found that the rifle will require more lubrication and the bore will require considerably more care to keep it in condition. The chamber will have to be watched for rust and roughness that would cause difficult extraction. Rust will appear on exposed parts that have been oiled, due to sweat from the hands. To prevent this, the rifle should be wiped clean with an oily cloth after use. In a dry, hot climate it will be found that less oil is much better for operation due to the tendency of dust and grit to adhere to the oil thus causing excessive wear and hard operation. Under these conditions, lubrication should be applied only to those parts that act as cams and bearings. Although very little oil should be used it should be applied more frequently.

The soldier may find that his new rifle is very stiff and rough in its operation. This is true of all new weapons, as the camming surfaces are not perfectly smooth and the piece needs breaking in or wearing down until the parts become worn smooth and free. This may be done by hand operation of the piece as well as firing during what might be called the break-in period. The care and patience through this period will greatly determine the life of the rifle and its efficiency.

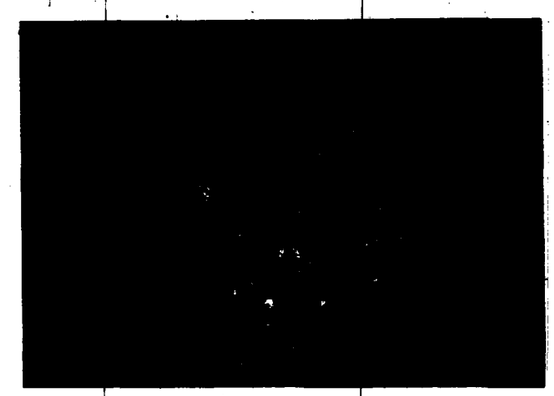
Cleaning the bore is an important factor and an art in itself if properly done. The new bore as it is received from the manufacturer is bright and shining and looks very clean. The tops of the lands have a finer finish than the grooves due to the process of manufacture: the lands are a hone finish, the grooves a scrape finish and are much rougher. If the surfaces of the grooves were magnified it would be found that they were covered with minute scratches. This condition causes the rifle to be much harder to clean in the first stages of its life. The cleaning of the bore during this time should be watched very closely, care being taken that all powder residue is removed. The minute scratches spoken of will in time wear down to a smooth finish, but in so doing they change from scratches to very small cracks. These fine cracks will open up from the heat of firing, and powder fouling will be forced into these minute apertures from the high gas pressure in the bore and from the friction of succeeding rounds. As the rifle cools, the cracks will close down on the powder residue.

Next day—A drop in time!

This residue is the substance that causes the trouble in the bore, for the bore can be cleaned until the surface is bright and the cleaning patches come out unsoiled, but this residue in the cracks still remains to do damage and must be either removed or neutralized. This can be accomplished very easily in the field if hot water is available which will heat the barrel and open the minute cracks so the residue may be washed out. Cold water is far better than oil, as water of any temperature will dissolve and wash out the salt found in powder residue while oil will not dissolve salt but will only retard its action for a short time. Later, the bore will start to turn dark but will not show signs of powder fouling, and if a patch is passed through the bore, it will come out clean. These conditions indicate the presence of active salts in the bore that have not been removed in cleaning or have lain dormant in the bore due to the coating of oil. The presence of oil in the bore does not mean that rust will not appear unless the bore has been properly cleaned before oiling. The soldier should remember that a neglected rifle will be a poor friend in combat.

Later—Learning how to clean the M1

EDITOR'S NOTE.—The M1 rifle is a gas-operated, clip-fed, self-loading, shoulder weapon, slightly over nine pounds in weight. It fires the same ammunition as the U. S. rifle, caliber .30, M1903 (Springfield), and all



Much later—Oiling the rifle prior to assembly

standard U. S. caliber .30 machine guns. The ammunition is supplied in 8-round, reversible, *en bloc* clips which are fed by hand into the magazine of the rifle. Upon being inserted, the clip depresses the follower, which, in turn, releases a catch, allowing the bolt to go forward under the action of a compressed spring, stripping the top cartridge from the clip and chambering it. When the last round in the clip is fired, the empty case is ejected; the clip also is thrown out, and the bolt is retained in the open position.

The semiautomatic or auto-loading action of the rifle is accomplished by a mechanical arm or "robot" called the operating rod. This component takes the place of the human arm in operating the bolt, the power being obtained from the propellent powder gases. In the conventional bolt-action rifle, such as the Springfield, the bolt remains closed and locked to the receiver after the round is fired. To reload, it is necessary to grasp the bolt handle manually, raise it until the locking lugs of the bolt are disengaged from their locking recesses in the receiver, and then draw the bolt to the rear. The bolt next is returned to its locked position by hand.

In the M1 rifle, this manual operation is performed automatically by the operating rod. Briefly, the cycle of operation is as follows: When the cartridge is fired, the bullet is propelled down the bore. As the rear end of the bullet reaches a position near the muzzle, the powder gases enter a chamber and impinge against a piston, driving it to the rear. This piston is at one end of and also an integral part of the operating rod. The other end of the rod contains a slotted cam, into which projects a cam-shaped extension of one of the bolt-locking lugs. In traveling to the rear, this slot cams the bolt-locking lug extension upward, rotating the bolt until the bolt-locking lugs are disengaged from their locking recesses in the receiver. The operating rod continues to the rear with the bolt which in turn extracts and ejects the empty case, cocks the hammer, and is then returned.

German Small Arms

The equipment shown in this picture was captured by Red Army men and probably all came from one infantry company. In the background are a pair of binoculars, a radio set of the type used by an infantry company, a field telephone set with batteries, an emblem denoting a low echelon command post, and ammunition for the antitank rifle. Second from left in the foreground is a carbine; to the right of it lies a 7.9mm antitank rifle, three of which are assigned to each company; next is a light machine gun (MG 34) which fires at the rate of 900 rounds per minute. Rifles lie to right.

LEADERSHIP*

THERE are two general views on the subject of leadership. The first is that leaders are born and cannot be made; the quality exists or does not exist. If it does not exist, nothing can be done about. The second is that each of us possesses leadership to a greater or a lesser degree, and that leadership can be developed. I hold the first view, with the one qualification that individuals frequently possess inborn qualities of leadership which lie dormant through lack of opportunity for development. If the individual is placed in a position of leadership, those inborn qualities can be developed. Those who possess qualities of leadership which they have had no opportunity to develop may be encouraged to do so. Those who do not possess qualities of leadership may recognize that fact and exercise control over their personal characteristics, minimize the seriousness of their deficiency, and, in accomplishing their military duties, make maximum use of other admirable qualities which they may possess. Moreover, because many opportunities exist in the Army for individuals who work better alone than as leaders of men, no disgrace attaches to the officer who is not a leader.

What is leadership? No one has yet succeeded in defining it. In the Army we are prone to consider only the leadership of the man on horseback—leadership on the battlefield. This is too limited an approach. Leadership in the Army cannot be restricted to the battlefield. General Marshall himself must exercise leadership in the administrative as well as in the strictly military field. Leadership is required of an officer sitting behind a desk, just as much as of one leading a bayonet charge. Leadership must be exercised in the religious, social, and political fields, and in industry. The primary difference between leadership on the battlefield and leadership in other fields is that the military commander must be able to exact the supreme sacrifice of life itself from those who are led. Even this difference is more apparent than real. The willingness of a soldier—or of a civilian, for that matter—to die for our country results as much from the leadership of the President as from that of the platoon commander.

Ordway Tead in "The Art of Leadership" defines it as follows: "Leadership is the *activity* of *influencing* people to coöperate towards some goal which they come to *find desirable*." Immediately the question arises as to what is meant by *activity* and whether all goals toward which men have been led were necessarily found desirable by those who were led.

In its pamphlet, "A Discussion of Leadership," Culver Military Academy defines leadership as "The *process* of securing the wholehearted coöperation of an individual or group of individuals in working towards a desired goal." Again, what is meant by process?

Colonel Frank M. Smith, in a conference on this subject, defined leadership as the "*art* of imposing one's will upon others in such a manner as to command their obedience, their confidence, their respect, and their wholehearted coöperation."

The primary flaw in these attempts to define leadership is in trying to define one unknown quality by another. We face the same predicament in defining leadership that we face in attempting to define electricity. We define electricity in terms of electric light bulbs; that is, in terms of how it manifests itself. We can define leadership only in terms of how *it* is manifested.

What are the requirements of a leader? Again, there is no agreement. We must keep four factors in mind: first, the leader; second, the cause in which he leads; third, those whom he leads; and finally, the opportunity to exercise leadership. Various writers list qualities which they consider desirable in a leader. For purposes of argument, let me offer my own views on the qualities necessary in a leader. First of all, he must have a *cause* to lead. Next, he must possess an inner urge—the spirit of a crusader—in furthering that cause. Third, he must have a determination and even a ruthlessness in carrying that cause to success in the face of every obstacle. Fourth, he must be able to engender in those whom he leads a *willing* and even *eager* coöperation in that cause. This listing of qualities also raises as many questions as it answers.

Others give entirely different definitions of the qualities of leadership. Tead lists the following qualities which are *desirable* in a leader. I suggest that each be subjected to critical analysis:

(a) Physical and nervous energy.
(b) A sense of purpose and direction.
(c) Enthusiasm.
(d) Friendliness and affection.
(e) Integrity.
(f) Technical mastery.
(g) Decisiveness.
(h) Intelligence.
(i) Teaching skill.
(j) Faith.

The Culver pamphlet furnishes a number of groupings of traits of leadership, one of which, a tabulation by Colonel Paul S. Bond, U.S.A., Retired, contains 83 attributes of leadership.

These differences of opinion merely emphasize the lack of agreement as to what constitutes leadership. A listing of the qualities of leadership becomes merely a set of ground rules, evolved in the mind of the particu-

*Adjutant General's School. Copies in booklet form can be secured for 10c each from The Book Service, Adjutant General's School, Ft. Washington, Md.

lar exponent of a particular grouping of qualities, as to which are considered socially desirable. These rules may, or may not, be valid under a particular set of circumstances.

If we accept the point of view that leaders are born and not made, we must answer the question, "What is man?" before we can answer the question, "What is a leader?" The Chief of Staff has expressed a vital interest in the problem of finding a means to determine who are our army leaders. That problem was submitted to the psychologists of the Personnel Procedures Section, The Adjutant General's Office. They admitted that no conclusive answers could be found. This is illustrated by the fact that, although they were able to prepare objective tests to determine various aptitudes, no such conclusive tests as to leadership could be prepared at the present state of scientific, psychological thought.

Perhaps it would be more accurate to say that we deal with *leaderships* and not *leadership*. The question arises, for example, as to whether the leadership of Lee was the leadership of Huey Long. So far as cause is concerned, the two were poles apart. Yet each was impelled by a force within himself. Long did not imitate Lee; for leadership is never imitative—it is a magnetic force, basic in the structure of the individual. To some extent it is a question of human chemistry. All great leaders have possessed this force: President Roosevelt, Lee, Grant, Napoleon, Hitler, Mussolini, Alexander the Great, Huey Long, and even Casanova. Although we are unable to explain this magnetic force, we can recognize its presence in the lives of all of our great leaders.

We may illustrate the magnetic influence of the leader upon those whom he must lead by comparing him to the influence of a magnetic coil upon a bar of iron. Normally, the bar of iron is inert, lifeless, its molecules lying crosswise and working at cross purposes. When placed in the magnetic coil, the iron becomes magnetized; all the molecules lie with their poles in the same direction; it becomes a force—a power—in itself, and is able to exert its own strength upon other inert metals. In the same way, the leader acts as a magnetic coil to magnetize his followers, to convert their inertia into power and thus animate them in turn to exert their power in a common direction.

Consider next the causes which have been led by our great leaders. Again we may quote Tead: "A fact not to be ignored is that people are influenced by a leader because he becomes the personal embodiment or symbol of the cause he is serving. Of outstanding value as helping to create a strong and deep attraction to many objectives is the loyalty which fastens upon the leader himself as an appealing and popular figure. People crave the flesh and blood reality of one who will say: 'Come and follow me,' or 'Go thou and do likewise.'

"The potency of this appeal of the person is obvious in the great religions of the world, not only in relation to their founders but in the influence exerted by lesser leaders—saints, popes, bishops, priests, and preachers. The person has become the symbol of the cause and has given prestige to it and human warmth. Indeed, it is in religious groups that this loyalty has on occasion risen to its sublimest heights and to the most self-effacing, sacrificial devotion on the part of the followers. And always, be it observed, this loyalty at its best has been based on the profound claim that he who would thus lose life in devotion shall find it in self-discovery. The seeming complete renunciation demanded was always in favor of a larger self-realization to be made in part through identification with the person of the leader. The idea voiced in the sentence, 'I, if I be lifted up, will draw all men to me,' is a penetrating recognition of the truth of complete self-realization through complete loyalty."

A similar truth is to be observed in military affairs. Great generals—supported by colonels, majors, captains, lieutenants, sergeants—have symbolized a purpose and often won a devotion which readily led to death itself.

The degree to which the individual, through dramatizing the cause he leads, becomes a symbol of the cause is exemplified in Alexander the Great, who became deified in the minds of his followers; or Augustus Caesar, who was similarly deified; or General Lee, who in the minds of the people of the South is idolized to the extent that his human traits fall in the background and he partakes of the supernatural. The same might well be said of Hitler as exalted in the minds of the German people, since Nazism, the cause of his leadership, has became a cult. An extreme case of course is Japan, whose Emperor *is* deity.

The comparison of Lee and Hitler illustrates an essential point concerning causes for which men struggle. In our minds the leadership of Lee was entirely noble; whereas the cause of Hitlerism is entirely ignoble. Great leaders heading great causes epitomize and dramatize causes, but they cannot disassociate themselves completely from the spirit of their followers. They are part of their times—the physical embodiment of the causes which lie inert in the hearts of their followers. In order to lead, they must be out in front; they must sense the objectives toward which people are striving; they must make that cause their own; and then, through exceptional internal force, they must drive on towards the common goal.

This brings us to our final topic—those who are led. Distinctions can readily be drawn between the people of the Confederacy—followers of Lee—and the people of Louisiana—followers of Huey Long; or the people of Germany—followers of Hitler—and the people of colonial days—followers of George Washington. This is merely to repeat once more the fact that the leader cannot disassociate himself from his source, that he seldom can force any substantial change in the character of his followers, and that the most he can do is to anticipate the inner urges of his people, clarify their objectives in their own minds, and carry them in the direction they have wished to go. To illustrate—it is a fallacy to assume that the people of Germany are better than Hitler, that he has led them astray. Rather, he has merely crystallized their inner urgings and has held them in the direction they have wished to go.

So much for the broader phases of the problems of leadership. Let us now apply the problem to our own specific situations as part of the military service.

First of all, our *position* of leadership has been imposed upon us. Leaders, or gentlemen, cannot be made by an act of Congress. Nevertheless, just as we must recognize our responsibility to *act* as gentlemen, so must we recognize our responsibilities to *act* as though we are leaders, even though, in fact, we may not be.

The second point to consider is the cause for which we are striving. It is not given to us as Army officers to be leaders in the grand sense and for great causes. To make our problem more difficult, there has been a basic failure on the part of the American people to recognize their broad national objectives. We are in the midst of a revolution in our thinking on economic and social problems, as well as military ones, and our thinking has not yet crystallized. Our military objectives are awaiting the crystallization of public opinion along economic and social as well as military lines. Until our national objectives are determined by the people themselves or through stimulation by national leadership or by other causes, we must limit our immediate objectives to our own military situation. Although we cannot hope to regenerate the human race, we still have a broad field of activity for leadership in doing our particular jobs better than anyone else does, in order that the final objectives may not be jeopardized. The West Point motto: "Duty—Honor—Country" should summarize our cause adequately for our purposes.

The next point is the need for a crusading spirit. Although the country as a whole may not yet have found its broad objectives, we should find sufficient inspiration in attempting to do out share to perpetuate democracy. Democracy is itself a thing of the spirit, which we can feel but cannot define. We may contrast it with totalitarianism. The people of totalitarian countries pride themselves on their strength, toughness, and general superiority to peoples of democratic countries. As a matter of fact, they are weak, for they have abdicated the freedom which the individual has wrested from nature during a million years of slow development, and they have given it to the control of a handful of ruthless men. This small group of willful leaders consititute a thin outer shell surrounding an unsound core of a people who have abandoned themselves completely to being led. Once that outer shell of leadership is punctured, the country itself must fall.

In a democracy, on the other hand, power emanates from a sound inner core and spreads outward as a living force. So long as the interior is sound, it makes little difference what particular group of individuals occupy positions of authority at the outer surface. If the surface be penetrated at one place, the safety of the country need not be impaired. In the one case the people are worked upon, are being guided. In the other *they* are working, and guiding themselves. The perpetuation of democracy, to which we in the Army are committed, certainly should serve as justification for our full efforts.

The Army of the United States is a democratic army and must apply democratic principles in its leadership. Although we may be unable to define leadership, we may still list a number of qualities which the Army has come to regard as essential to leadership.

Some of the basic characteristics of leadership are summarized by Mr. H. Gordon Selfridge of London, who differentiates between the boss—one who commands—and the leader, as follows:

"The boss drives his men; the leader coaches them.

"The boss depends on authority; the leader on good will.

"The boss says 'I'; the leader says 'We.'

"The boss says, 'Get there on time'; the leader gets there ahead of time.

"The boss fixes the blame for the breakdown; the leader fixes the breakdown.

"The boss knows how it is done; the leader shows how.

"The boss makes work a drudgery; the leader makes work a game.

"The boss says, 'Go'; the leader says, 'Let's Go!' "

Let me suggest the following qualities of the military leader to supplement the summary of Mr. Selfridge:

Vision: The leader must have vision, insight, intuition—call it what you will—to enable him to grasp the significance of the cause for which he is striving, and to appreciate and anticipate the many factors which bear on the success of the cause. The leader must always have the answer to the fundamental question in an estimate of the situation, "What is my mission?" and must have his plans completed in advance, to the last detail, to accomplish that mission.

Knowledge: The leader must have a thorough understanding of his job. He cannot afford to be in error. Unless he knows what he is talking about, his prestige is soon destroyed in the eyes of his followers.

Force: He must have tenacity of purpose, an inner drive, a personal magnetism. He must be a self-starter who can set his followers in motion. He must be the magnetic coil to magnetize his followers. He must stand alone and not, himself, expect to be magnetized from without.

Courage: He must have physical and moral courage. Many a leader outside the Army has been a physical or moral coward. The Army leader cannot afford to be either. Above all, he must have moral courage. Many a man who would scorn to desert in the face of the enemy, deserts in the face of moral opposition. Physical desertion can be observed and thus brought under control by public opinion. Moral desertion is hidden. Moral cowards are like termites hidden in the woodwork, who

undermine the entire structure. *Failure of moral courage shows lack of faith in the importance of the cause.*

Decision: The leader dares not vacillate. Courage, knowledge, and self-confidence are necessary in saying "yes" or "no."

Tact: This quality is offered with hesitation. In the Army, *tact* too frequently has come to mean subservience; tact is expected only from the junior to the senior. A man of force is seldom considered a man of tact. Ordinarily, tactlessness is nothing but rudeness. In a broader sense tact towards *both* seniors and juniors is important in a leader. Tact cushions the impact of the force of his leadership upon reluctant minds. The leader must determine whether in the long run success can best be obtained by cushioning the force of his leadership, or whether it can best be obtained by striking with all his power.

Judgment: The leader must have judgment to determine the best means of accomplishing his mission. Since most of us cannot be leaders in the grand sense and can lead only within circumscribed limits, and then chiefly with subordinates, we must be able to recognize the fact that a point may be reached beyond which, with all of our force, we cannot go without sacrificing the mission itself.

Knowledge of psychology: The leader must have an insight into human nature. He must be a practical psychologist and must know men. He cannot influence people if he does not have a deep understanding of what they are and how they are motivated.

Delegation of authority: In delegating authority the leader demonstrates his knowledge of psychology. He cannot do every man's job. He cannot expect to be the horseshoer in every troop or the clerk in every office. In delegating authority he stimulates the self-confidence of his subordinates. Delegation of authority implies the ability to organize the efforts of subordinates. From the standpoint of accomplishment of the cause, the value of delegation of authority cannot be overestimated. The unaided efforts of the leader can accomplish little. He must look to others for power. Delegation of authority increases the total power behind the cause in geometric ratio.

Loyalty: The leader's first loyalty is to the *cause*. Loyalty to a superior in his official status is implicit in loyalty to the cause itself. One cannot advance the cause unless he extends loyalty to those above him, or to his subordinates as well, upon whom he must rely to further the cause. He should not assign to his subordinates tasks beyond their abilities, which end in discouragement. Once having assigned a task, he must give his subordinates moral support and back up the decisions which they may make in his name. He should never require his men to do any task which he is unwilling to do himself.

Interest in Subordinates: The leader must have a generous and sympathetic interest in his subordinates. He must look after their welfare, stand between them and the outside world, and defend them against raids upon their welfare from outside sources. The leader is the chief of the tribe. To him the subordinates look for guidance and protection. Instead of criticising them eternally, he must show appreciation of their efforts. He does not whittle them down to a smaller size nor make them appear less in their own eyes. Only a small man indulges in whittling. If you whittle a man down, you are whittling him down to *your own* size. Build him up! Tap the unreleased resources of the individual, and he will grow to a stature which will add to your strength.

Justice: The leader must be just. He must give equal treatment to all. He cannot show favoritism to his golf or poker partner. He must act only on the basis of facts, and with logic. No problem can be solved with the emotions. Anger in the leader is a sign of weakness. Injustice rankles forever.

Personal Dignity: The leader must possess innate dignity. He should not be unduly familiar with his subordinates, since familiarity breeds contempt. He need be neither sticky nor snobbish. He can be a friend to all, but to a degree he must keep himself to himself.

Selflessness: Leadership cannot be exploited for personal aggrandizement. One may symbolize a cause, but the cause must be greater than himself. Only by advancing the cause can stature be acquired by an individual. One of the most detestable individuals in the Army is the petty politician who considers that the entire system functions for his personal benefit. Placing self before the cause destroys the cause.

Personal Integrity: The Army leader must have personal integrity. Al Capone was a leader without accepted standards of personal integrity. Such leadership the Army cannot tolerate. We still expect truthfulness, honesty, character.

Discipline: Men like the commander who is severe but just. But discipline is obtained by leading, not by driving. Too many courts martial, too many "explain-by-indorsements" are signs of the inefficient officer. In fine, the leader must lead, must command, must exact the last effort from his subordinates, but must be just.

These are but a few of the many qualities which might be desirable in a leader. The line of differentiation between those qualities which go to make up the leader and those qualities which go to make up character is thin. Any one possessing all of the eighty-three qualities listed by Colonel Bond would indeed be a superman. The only leader who might be considered as possessing them all is General Lee.

In conclusion, let me emphasize the point that since it devolves upon you to be a leader, *be one*. If you are indeed a leader, within you lies the force which must animate others. *But you must turn on that force.* Of what use is electricity if you do not turn on the switch? Never hesitate to assume leadership. If you are a real leader, men will instinctively follow, given the opportunity.

Communications Notes

*By Captain John W. Hopkins**

COMMUNICATIONS may be defined as the impartation of intelligence from one person or agency to another. Military communication systems strive to accomplish this action speedily and without divulging information of value to the enemy.

The accomplishment of speedy communications may be said to depend on four factors:

1. Trained technical personnel.
2. Properly maintained equipment.
3. Careful selection of the agency which is to be used in the transmission of messages.
4. Care on the part of commanders in preparing the message which is to be sent.

Operating personnel can be considered trained only when their every action during the operation of their equipment is designed to speed traffic through their hands. Unnecessary radio traffic, the exchanging of conversation or superfluous procedure signals indicate untrained, and even worse, unthinking, operators. Radio personnel are too often observed cluttering the air with the bromidal ZSG—"What's my readability"—call simply because no one has communicated with their stations for 30 minutes. This obviously is intolerable.

The radio operator who knows his equipment and his job can often do the impossible. A piece of wire, weighted and thrown over a tree makes a far more efficient antenna than the standard "fishpole" type used on vehicles. Range of communication is thereby increased. One hundred fifty feet of wire stretched in the form of a V and suspended from the ground by a tent pole at each end and the mast base of the vehicle at the apex will form an antenna which will concentrate a signal in the direction in which the V points. Good operators know and achieve much from small things such as these.

Messengers, too, should be soundly trained, intelligent individuals. The dependence which is to be placed on them will be great. Only the more intelligent men are suited to finding their way by map and to thinking as quickly as will often be required of the messenger.

Proper maintenance of signal equipment is contingent upon frequent inspection and the proper performance of "first echelon" maintenance. Minor abuse of radio equipment, such as improper handling of key, microphone and headset cords, and failure of operators to understand such minor operations as changing tubes, account for a high percentage of equipment failure. Lack of realization of the fact that the light SCR 510 and SCR 536 sets are fragile equipment accounts for much of their breakage and failure.

Selection of the agency which is to transport a message serves the purpose of conserving the more rapid agencies for messages demanding quickest dispatch. Administrative messages should as a rule go by means other than radio. Where distances are short, a dismounted man or a mounted messenger can accomplish delivery as rapidly as can any other means. Advantage should be taken of scheduled messengers, covering stated routes at stated time intervals and handling messages of secondary importance.

Commanders should exercise care in the classifying of messages and an urgent (O type) message must be urgent *with relation to other traffic sent.* Unnecessary words should be deleted from messages. A good tactical radio net can handle only twelve short messages per hour under most favorable conditions. The operators are often slowed by poorly printed or unprinted messages.

Irrespective of how sent, all messages are subject to hostile interception. From realization of this fact the originator of a message should, as the person responsible, see to its safeguarding by codification if it contains any element of information of value to the enemy. Conversely, however, a message of no value to the enemy should be sent in clear to spare the time involved in its transmission. Generally speaking, messages of the following types may be considered of no value to opposing forces:

1. Messages that report enemy information.
2. Routine messages that give no information of location, disposition or size of own force. Example: "At scheduled location, negative report, continuing mission."

Under no circumstance should clear text and code be used in the same message. This practice clearly gives a clue to the code or cipher used.

Wire communications are of course subject to tapping, but their use, *per se*, does not give away the presence and locations of troops as does the use of radio. Only a small amount of equipment and skill is required to place the rough location of a set of any appreciable power. The Germans, in realization of this fact, maintain complete radio silence within their armored units until contact is made. At this time radios go into action on voice and without attempt at cryptographic precautions. The theory of this operation is that information gained from interception at this time is inopportune.

*7th Cavalry.

WHAT'S WRONG HERE?*

This scene shows an all too familiar figure (in recent maneuvers)—the bridge guard who had been hastily posted and given certain orders that no one was to pass without proper recognition. Is he faithful? Foolish? How long would he survive with Japs or Germans in the vicinity?

☆ ☆ ☆

Maybe the enemy would think erosion caused these tracks leading into a unit's bivouac—maybe he wouldn't. This is what happens when trucks are allowed to move into a bivouac area at random. An enemy reconnaissance plane could spot these and his follow-up pals certainly would destroy whatever unit and vehicles are hidden in the wooded area.

THE pictures accompanying this article were actually shot during the 1942 Louisiana and Tennessee maneuvers—not during the 1941, nor 1940, nor 1939 maneuvers, but during the 1942 maneuvers—more than six months after Pearl Harbor. They show failures in fundamental training that must be corrected. The pictures should strike home and make us wonder why the mistakes occur and reoccur. What is wrong? The failures are many, as you can readily see; but where does the responsibility lie? What are the "why's" behind these pictures.

The officers and men who commit these flagrant mistakes are not conscious of real bullets overhead, or of real bombs from planes, or of real shells from enemy artillery.

The reports of our own units in action in the Southwest Pacific, of our Allies on the Russian Front, of our own units and Allies on the North African Front, continuously emphasize the necessity for rigid, realistic training. Maneuvers are to war as football scrimmages are to the "big game." If fundamentals are not constantly insisted upon, checked, and rechecked, the plays will fail at the critical moment and the game—battle—will be lost.

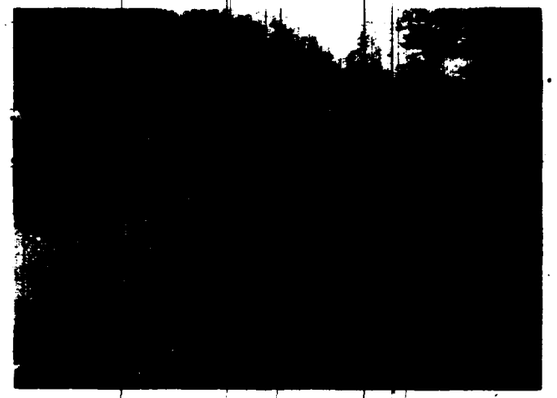
Realism was lacking in former maneuvers because we lacked fighting incentives. That lack no longer exists. We are at war, confronted by ruthless, capable enemy fighting machines. Our troops are now equipped with modern, efficient equipment, an adequate air force, and armored vehicles, the equal or better means than those possessed by our enemies. There is no longer reason for the lack of realism in the 1942 maneuvers that caused men to be haphazard about simple fundamentals of soldiering.

Are these mistakes made because of a lack of explanation, or is it plain indifference to the situation? Is it due to improper training, or poor discipline that causes men to "fumble the ball"?

The game of football, whether it is played on a sand lot, on a high school field, or in one of our great stadiums, teaches everyone—the spectators as well as the players—the fundamentals of protection, of offense, of defense, and of well coördinated team play. This war is a far greater game. It is the real "big game"—the game that all soldiers look forward to. And we must be certain that the bad habits that to date have characterized our practice sessions—maneuvers—are corrected immediately. Because carelessness, indifference, a moment of forgetfulness, a lapse of one second, will mean only one thing—useless, unnecessary casualties.

This is 1943 and another December 7 has passed. We must check and recheck to insure that in every field exercise every individual, group, and unit is realistic in all phases of their training. The bad habits that show in training, in maneuvers, will not kill Japs or Germans—they will bring about the useless sacrifice of American soldiers!

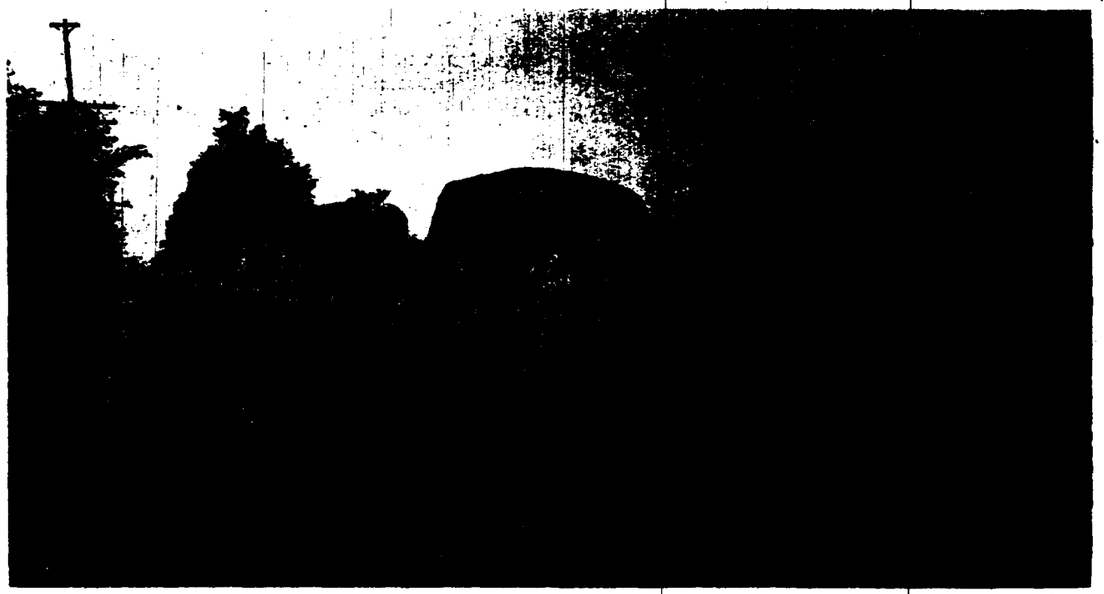
*The Cavalry School.



Examine the photographic record depicted here. Did the men realize that an enemy tank coming up the road could also shoot? Why weren't they protecting their weapon and themselves by using proper cover and concealment? Why didn't they move their prime mover far enough away from their weapon so that one enemy artillery shell could not blast the entire team out of the picture?

☆ ☆ ☆

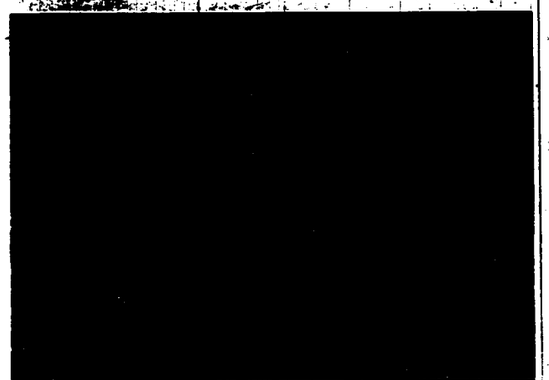
What about the job of jamming up? This picture was taken 500 yards from the front line. What would one lone strafing plane do to this entire column? We have read and reread about enemy and allied convoys and trains being wiped out because of close columns, but here is an invitation to just such disaster.



— And What's Wrong Here?

What caused the commander of this scout car to park his vehicle near a conspicuous landmark—an oil well? Units detrucking, bivouacking, and assembling around conspicuous terrain features would make an easy mark for hostile artillery.

☆ ☆ ☆



Here was a common occurrence during maneuvers when the action was a short distance away. An observer noted that this disposition was maintained, unchanged, for four days. Why did this happen? Was the junior officer or noncommissioned officer in charge unconcerned with this unimportant bridgehead protection for four days?

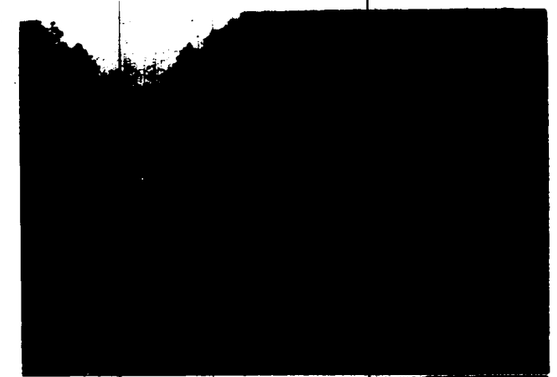
☆ ☆ ☆

This group of uncamouflaged vehicles closely grouped is the fault of someone. Are these men afraid of the chiggers and ticks that are waiting in the woods behind? Are chiggers and ticks more difficult to face than the real bullets, bombs, and shells that certainly would fall on this C.P.?

☆ ☆ ☆

What about this artistic job of camouflage? The men have concealed the truck but certainly have failed to camouflage the trailer. A job partly or carelessly done is an invitation to disaster!

☆ ☆ ☆



The three rifles leaning against this bridge may be booby traps. Doubt it? Maybe the men are just plain boobs and preferred a swim in the water beneath rather than carry out their orders. Three Jap snipers or three German snipers could learn to handle our Garand M1 Rifle soon after they found these gifts.

☆ ☆ ☆

Did this machine gunner want to make it easy for the enemy? What useful purpose did he serve, other than an easy target either to a hostile plane or sniper? A sleeper—hardly an alert American soldier.

☆ ☆ ☆

Why has this man been allowed to keep the cover on his .50 caliber machine gun while his unit was engaged in combat up the road a few hundred yards? Did he think that he could uncover the machine gun, load it, and mow down the enemy if he had to go into action in a short time?

☆ ☆ ☆

Has this antitank gun crew been properly instructed as to where to place their vehicle after unlimbering the gun? Have they been instructed to keep down—to keep busy—to remain everlastingly alert? In combat one moment of carelessness will mean useless prisoners or casualties and a captured or destroyed gun.

☆ ☆ ☆

Identification of Armored Vehicles

*By Captain Stanley Armstrong, F.A.**

AMONG the subjects that the Automotive Department of the Tank Destroyer School has to teach is a fifteen hour course in tank and armored vehicle identification. Every student who passes through the school has to take this course.

The purpose, as the Tank Destroyer motto reads, is to "Seek, Strike, and Destroy" the enemy's tanks and armored vehicles. The hours spent on gun drill are of little avail if the gunner is unable to tell an enemy from a friendly vehicle. The moment spent in hesitation may give the enemy the first shot.

There are three field manuals of value as a beginning in armored vehicle identification—F.M. 30-40, which deals with U.S. Armored Vehicles; F.M. 30-41 on British Armored Vehicles and F.M. 30-42 on Armored Vehicles of Germany, Japan, Russia, Italy and France. These manuals are not quite up to date, since new models have been produced by all countries since their publication. The manual on U. S. vehicles lacks, for obvious reasons, the specifications and characteristics of the pictured vehicles. These manuals present a start, but they do not contain anything definite on the identification of armored vehicles as a subject.

There are two training films on armored vehicles—TF 11-382 (Know Your Enemy—45 minutes running time) which deals with German vehicles, and TF 11-383 (Friend or Foe—60 minutes running time) which covers the British vehicles.

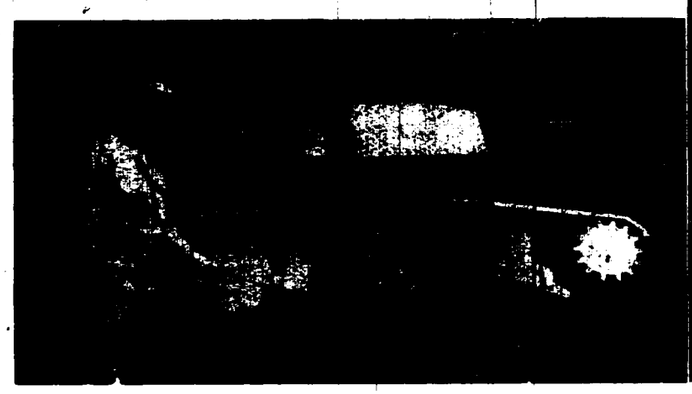
The film pertaining to the German vehicles does not stick to vehicle identification but includes, also, information on the guns and other equipment of the German army. TF 11-383 covers the British armored vehicles very well, although some of the types shown are now obsolete or outmoded.

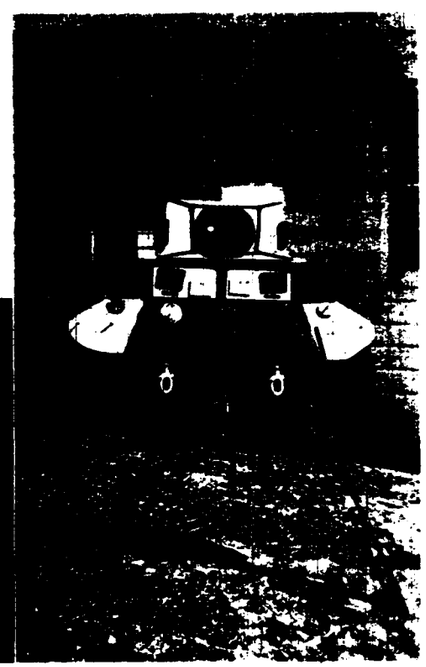
Following is a tentative outline and break-down of the course:

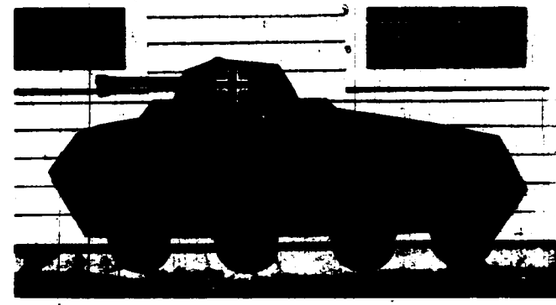
1. Brief history of armored vehicle development, and nomenclature of the main parts of an armored vehicle—especially tanks. 1 hour.
2. Discussion of the general characteristics, visible features, operation and maneuver characteristics, and characteristic sounds of armored vehicles.
3. Discussion of the U. S. armored vehicles in which differences and characteristics are presented with the aid of a balopticon projector and pictures from F.M. 30-40 and clippings from magazines and newspapers. 2 hours.
4. Discussion of the British armored vehicles presented in the same manner as in number 3 above. 1 hour.

*Automotive Department, Tank Destroyer School.

Effective Tank cut-outs are made from plywood, cardboard and linoleum.







Tank silhouettes are made half the size of the real vehicle.

The 45-yard track is curved so that the student gets a side, front and rear view of the model as it passes by.

5. Showing of TF 11-383 on British vehicles. 1 hour.
6. Discussion of the Russian and French armored vehicles. 1 hour.
7. Discussion of the Italian and Japanese armored vehicles. 1 hour.
8. Discussion of the German armored vehicles. 1 hour.
9. Showing of TF 11-382 on German vehicles. 1 hour.
10. A four hour period—two hours of which are spent viewing small scale models and filling out a mimeographed characteristic key chart on each vehicle; the remaining two hours are spent outdoors viewing the models and silhouettes as they move along a track. 4 hours.
11. Graded Test. 1 hour.

For the course on the history of armored vehicle development, first the encyclopedias of the local library were scoured and this information consolidated with that obtained from "The Fighting Tanks Since 1916" —Jones, Rarey, Icks (a good book which will give background to any tank "identificationist"). Balopticon slides of selected prints are used in conjunction with the lecture.

It is important that the student have a knowledge of the nomenclature of the more common parts found on armored vehicles—especially tanks. So a side and front view of our M3 light tank were cut out of plywood. With these as the foundations, the tank progressively takes shape before the eyes of the students as the colored, cut-out parts are placed in their proper location. The parts are named, as the lecture progresses, either by the instructor or by a member of the class. Bolts in the foundation and holes in the parts make the latter "stay put."

The basis for the hour on general characteristics was found in Section I, paragraph 5, FM 30-40. This lists the characteristic visible features, and mentions the operation and maneuver characteristics and the characteristic sounds. Using this list and adding others to it, we used the balopticon projector again to point out the general visible characteristics.

During this same period it was decided to show briefly the training aids or sources the student has available to put on a like course when he returns to his unit.

The training aids that we show are listed below:

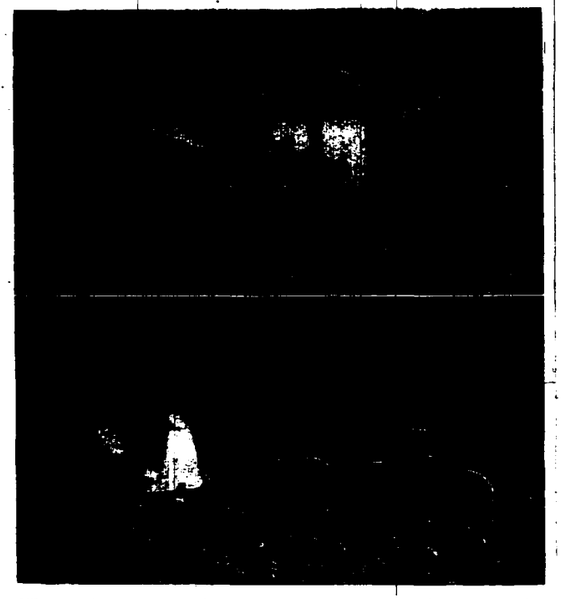
1. Linoleum or wood cuts.
2. Paper silhouettes and stencils.
3. Newspaper and magazine clippings.
4. Drawings and paintings.
5. Government charts.
6. Lithographs.
7. Reports of foreign observers.
8. Wooden silhouettes.
9. Mock-ups.
10. Small scale models.

Linoleum or wood cuts are very easy to make. Scrap pieces of linoleum can be had for the asking at any furniture or linoleum store. A silhouette of a vehicle is drawn on the linoleum, the portions not wanted are cut and gouged out, and when completed the linoleum is left with only the silhouette. It is then an easy matter to cover the surface with regular stamp pad ink and to make copies by stamping the cut on paper. The silhouette for a desired vehicle can be obtained from the listed field manuals or from pictures and can be "boosted" to the size desired.

Paper silhouettes cut out of colored paper and placed on contrasting colored paper prove a cheap but effective means of putting across a course.

A somewhat different silhouette can be made by using the above type silhouette as a stencil and spraying it with ink or paint. We made a very neat little "spray-gun" by filling a perfume atomizer with ink. When the ink is dry, the cut-out silhouette is removed, and its pattern is left on the object sprayed.

Newspaper and magazine clippings of vehicles can be collected and used in giving the course or can be pasted in scrapbooks according to nationality or they can be mounted on boards. All members of a unit can collect and look for pictures. They will find themselves, after a few hours of instruction in the course, trying to identify or recognize a pictured vehicle before reading the caption under it. We obtained some very excellent pictures by writing to some of the commercial photo agencies.



The various types of gun mountings are made very easily from some old mailing tubes and cardboard boxes.

Drawings can be made by some of the more talented members of the unit. By the use of a little color some very artistic and colorful drawings can be made and placed to good advantage in dayrooms or the mess halls. It is not necessary to have Leonardo da Vincis to accomplish this.

The Government Printing Office in Washington, D. C. puts out two charts (1941 -0-200667) each entitled

"Don't Fire on American Tanks."

One of the charts shows our own, allied and enemy light tanks. The other chart deals with the medium tanks. Again, these charts have become outmoded, as new models have appeared since they were printed.

The Corps Area Engineer may be able to furnish lithographs of the vehicles appearing in the field manuals. We obtained some 2′ x 3′ lithographs in this manner on the U. S. vehicles. These lithographs can be used in the event a balopticon is not available for use and can also be hung in dayrooms or points of assembly.

Reports of foreign observers very frequently contain information which will prove of value in the course. If nothing else they keep you posted on the various types of vehicles being used by the warring nations.

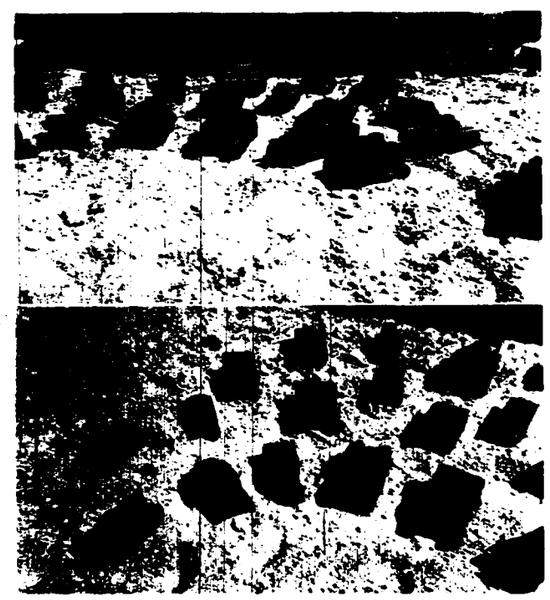
The wooden silhouettes can be made of plywood, tin, scrap wood, or similar material. They can be made to any desired size by "blowing" up the desired vehicle as pictured in the Field Manuals listed, with the balopticon, and tracing the projection directly on the material it is to be made from. All of our silhouettes are made half the size of the real vehicle. They can be placed to advantage by the mess-halls, the Post Exchange and the like. We place some of ours near the entrance to the mess halls and change models every two or three days. The silhouette is either named or some sort of distinguishing mark placed on it.

The different kinds of suspension systems or linkage used by the various countries can be made in a like manner from old cardboard and scrap lumber. A little paint adds color and helps to preserve the mock-up.

If you desire—you can build actual size mock-ups of the vehicles. These can be made so that they can be placed on vehicles for mobility or made only for the purpose of display in prominent places. Again—scrap lumber, tin and cardboard will serve the trick.

Last, but not least, are small scale models which can be built. We made our first ones out of old cigar boxes and thread spools with the aid of a coping saw, a pocket knife, a hammer and glue. Our first models were made entirely from the few pictures we may have had on the vehicle but, surprisingly enough, they are fairly accurate and serve our purpose. The models do not necessarily have to be made out of wood. The Tactics Department, for example, at Fort Knox, Kentucky, has cast some of the models. Our latest models are made on a scale 1:16. All of the units have a few hand tools and some even have power tools. With a little time and ingenuity these models can be made. Once they are made, they can be used time and time again for review or for new instruction.

The two hours on United States armored vehicles



Once made, miniatures can be used again and again.

The models are placed on a flat car which is pulled along the track by means of ropes fastened to the model at one end and to a windlass at the other.

A windlass and an operator are employed at each so that the silhouettes can be moved in either direction on the track.

are divided into one hour of conference and a one hour period during which the small scale models are studied. During the hour conference, the balopticon is used to project pictures of U. S. vehicles and the characteristic features of each model pointed out. (In regard to the pictures used in the balopticon—it has been found advisable to mount the pictures on thin cardboard or Bristol board. They withstand wear better and are not affected by the blower in the machine.) The second hour is devoted to a close hand view of the small models. The class is divided into groups so that not more than ten students are placed at a table which has a model on a turn-table in the center. The students have five minutes to study each model before getting a different one. During this time, they are required to fill out a mimeographed key characteristic chart on the vehicle—the purpose of which is to make the student look for the salient items which will aid in recognition—such as the type of suspension, turret, location of guns, etc.

The remaining conference periods on the British, Russian, French, Italian, Japanese and German armored vehicles is given in the same manner as the conference on the United States' vehicles. The two training films are given at the time shown in the outline.

The four hour period amounts to a review of all of the vehicles covered. Two hours of it are spent studying the small scale models and filling out the key characteristic charts as was done when the United States' vehicles were studied. The last two hours of the period are spent outdoors viewing the models and the silhouettes as they move along. We have built a 45-yard-long track out of wood which we use to run our models on. It is curved so that the student gets a side, front and rear view of the model as it passes by.

An operator, a windlass, and half the models at each end of the track enable us to run the models in both directions.

Actual size-appearance of the vehicle is accomplished by forming the students some distance away from the track. For example, a model built on the scale 1-16 would give the same impression to the observer 62 yards away as the actual vehicle would at 1000 yards away. A member of the class is called on to recognize the model as it travels along and to give the class his reasons for recognizing it as such. Large classes can be held at the same time with this method and the students find it extremely interesting.

We use much the same procedure with our half size silhouettes. In this case the track has to be much wider and the flat-car much larger. An old piece of pipe fixed vertically on the car gives support to the silhouette and prevents it from falling or blowing off.

The graded test given over the subject does not require the student to give model number or even the country to which a particular vehicle belongs. It is conducted by passing out unnamed, unnumbered pictures of vehicles belonging to all nations so that each student has a picture with which to start. The student is allowed to study the pictures for 15 seconds. During this time he is required to check on the test paper whether he would or would not fire on the vehicle in question. At a given signal the pictures are rotated every 15 seconds so that every student eventually sees all of them and checks the proper column on his test paper.

The subject is one which is definitely important. It offers unlimited possibilities. There are always new models to be made, new ideas to be worked out and the field is still new and ready for further developments.

Another article of particular interest to tank destroyer units will appear in the March-April issue of The CAVALRY JOURNAL.

HORSE BREEDING*

By Colonel Emiliano Fernandez Salaza, Cavalry, Spanish Army

THE select production of horses and mules in a nation is of manifest importance for the national economy and especially for its defense and its agriculture. That is the reason why, although with distinct modifications, all governments supervise this activity through official organizations, which indicate with uniform doctrine the indispensable directorate for the best efficiency in its development and improvement.

The natural aspiration of the stud and horse-breeding farms of the government is to obtain the best products of races recognized as improved with guaranteed pedigree, racial characteristics and excellent general conformation which, selected by tests, can be expected to be good for breeding.

It is impossible to expect so difficult a mission of the private stables in general which do not have at hand the technical personnel nor the economic resources which the government can count on, but it is obligatory that they aspire to make their breeding and production desirably efficient.

Selection and Appraisal of Breeders

The basis of all improvement in animals in general is to use the best breeders, and those of characteristics adequate for the use and service to which their descendents are destined.

As to the equine species specifically, it is indisputable that it would never be sufficient to qualify a presumed breeder on his pedigree, nor individuality, if his physiological development is not previously guaranteed by a test as adequate to his race or aptitude.

Thus, the pure English blood was attained not only by the purification of its ancestors, but also by the studied mating of the same; the care with which the animal was attended in his food, exercise and hygiene from the time of its birth; and finally, by the selection by test on the race tracks.

The traditional Arab owes his fame to the guarantee of purity of race demanded of the breeders, to the work exacted of them, proof of his agility, sobriety and resistance to fatigue, and also to the pastures and climate peculiar to the geographic area where it originated.

The equine species with characteristics of aptitude for draught, (recognized in Spain as of greater utility for agricultural service and horse-power traction in general) are known to have been obtained through cross-breeding and mixed breeding effected, under the influence of a favorable medium, climate and pasture, by a careful selection of the breeders in point of view of characteristics of general conformation appropriate and proved to be transmissible to its descendants. This procedure has formed families of well defined and uniform characteristics. Qualified as were the breeders in function of the quality of their descendance in point of fixed desirable characteristics, it was practicable to begin the edition of pedigree books with guarantees of efficacy.

We are obliged to follow such an example, not only for its effect on the national production of draught horses of the agricultural artillery type, but also of male jackasses in the known varieties such as Catalan, Leonesazamorana or Andalusian (whose utility and firmness of racial characteristics are manifest in determined territories of our peninsula).

In short (well known as the quality of a breeder's pedigree may be) it is undoubtedly the note which deserves higher coefficient for its proof, as is also its degree of fertility.

The castration of horses of bad characteristics, defective conformation, or with transmissible defects is inevitable, because their utilization for breeding purposes is very harmful for the development of horse breeding.

Mating

The conformation and characteristics of the mare in regard to weight, profile, proportions, energy and temperament should be in accord with those of the stallion. When there is antagonism between them, it goes far toward making the offspring a disharmonic animal indisposed to give the desirable efficiency of work.

It is a manifest error to suppose that mating a stallion possessing a certain failing through defect, with a mare which has the same failing through excess, will result in neutralizing the failings in the offspring.

The conformation of the pelvis in the mare is of the greatest importance, because a great number of dystocial or abnormal parturitions are caused by its small dimensions.

In the higher species of the animal kingdom there can be no fecundation without ovulation. It is recognized that as regards the mare and the she-ass the duration of its true heat in general does not exceed eight days, and that ovulation takes place days after the apparition of the heat.

It is not wise, therefore, to present the mare to the stallion at the appearance of the heat. Experiments performed have demonstrated that the greater percentage of fertilized mares have resulted on the fourth or fifth day.

The mare *customarily* receives the stallion on the ninth day of parturition. The period best suited to the

*Translated from *Ejercito* (Spain) for The CAVALRY JOURNAL.

success of fecundation is therefore from then up to the fifteenth day.

The mares dedicated to reproduction should be the object of special care during pregnancy. The period of gestation is approximately eleven months and ten days.

The most common causes of abortion are blows, inadequate food, such as pastures covered with dew (especially the artificial pasture grounds and alfalfa fields), excessive work, and sicknesses and infections. Among the sicknesses is the very dangerous durina, or disease of coition which causes so many ravages because of delay in proper diagnosis.

Fecundity and quality of pedigree, together with her morphological and racial characteristics, are the determinants for judging the deserved mare.

The methods of reproduction are:

a. By *consanguinity* which is that obtained by the mating of breeders of the same family.

b. By *selection*, mating of individuals of the same race.

c. By *crossing*, mating of individuals of different races. The improving one is called crosser; the one to be improved is called crossed; the resulting product is called crossed or hybrid.

d. By *interbreeding*, which is the mating among themselves of the individuals resulting from crossbreeding.

e. By *hybridation*, which is the sexual union of breeders of the same genus, but different species; the products obtained from hybridation are in the equine species infecund except for abnormalities.

In the animal or vegetable species in general, the characteristic of hybrids can be absolute infecundity, bilateral or unilateral; that is to say, they can be impotent or digenesic. In this case the female hybrids can be mated with males of one of the lines from which it is descended, and give birth to fecund offspring capable of reproduction "inter se" without being able to hope that such offspring will have characteristics of conformation both uniform and peculiar to the first mating. For this reason this method of reproduction has interest only in the utilitarian aspect and not in the zootechnic aspect.

We know that consanguinity is the reproduction of living beings brought about within very narrow limits of relationship.

Zootechnic authority Sanson expressed his judgment by saying, "Consanguinity raises heredity to its highest degree of power." It is manifest that if sexual divergences which neutralize the hereditary potency of the breeders are eliminated, the result will be the convergence of the action of said powers and the accumulation in the product itself of the bad as well as the good qualities of the parents; and as they cannot be exempt from any defect, it is necessary to take that into consideration.

Example of the highest degree of consanguinity that we have is that of plants which reproduce by self-pollenization, and in them degeneration is manifest in the course of a few generations. This is indicated by ***gradual debilitation, smaller production of seeds, and greater susceptibility to diseases*** whose damage grows until the fifth generation and establishes itself thereafter. Experience has shown that if during consanguineous reproduction a crossing is made with an individual free from the degenerate forms, the descendants will return to the normal state of the original forms.

The above refers to general cases, for it is known that there exist species ***immune*** to ***consanguinity***.

In any case we believe that the horse breeder can continue to allow consanguineous but not incestuous mating so long as there does not appear in the offspring any characteristic which would make it compare unfavorably. Then it is obligatory to refresh the blood, or better said, renew the blood by using a breeder of separate family, although of equal race, if this method of reproduction is desired.

It is known that the original stock of pure English blood were the *Byerley* (Turkish), *Darley* and *Godolphin* (Arab) horses, imported to England; the first, in the 16th century, and the others in the years 1712 and 1731 respectively. Stallions were crossed with native mares and thus also with their female offspring. The system of consanguinity was followed on the basis of a careful selection until the fourth generation. Later, the advantages of consanguinity having been obtained, in order to avoid the serious difficulties of the very near and repeated cansanguinity, various families were formed by using breeders of a near stock and by pursuing the unification of characteristics without using narrow consanguineous unions.

The examples cited were ancestors on the paternal side of the present *race horses* and direct ancestors respectively of *King Herod, Eclipse* and *Matchem*, heads of the famous *Studbook* (genealogical book of the *thoroughbred* race) the first volume of which appeared in 1808.

Eclipse, whose exceptional quality was universally recognized, was the son of *Spiletta*, daughter of *Regulus* and granddaughter of *Godolphin*.

Herod was also incestuous and to him is attributed the exceptional quality of his daughters.

Concerning the mares, historians disagree. Some attribute the most likely origin of pure English blood as the *royal mares* of King Charles II (1660).

Reproduction by Selection or Election

Reproduction can be *conservative* or *progressive* or *economic*. The names are descriptive of the characteristics of each. It should be kept in mind that the qualities more and more indispensable for a saddle horse destined for the mounting of the cavalry are those of speed, sobriety, resistance to fatigue, even temper, and good character.

The method of reproduction by selection consists of choosing and using those breeders endowed with the most perfect conformation in relation to the character-

istics peculiar to their race, provided that they have proved their capacity for adaptation to the territory or region in which they must produce and breed. The methodic and continuous selection, which is undoubtedly the surest method of improvement, suffers the inconvenience of being slower in its results than that of crossbreeding and mixed breeding; but it avoids the risks of other nature inherent to acclimatization and probable lack of harmony and uniformity of type in the offspring.

Naturally, although the utilization of the best breeders is necessary to the development and improvement of horsebreeding, it would not be sufficient unless the offspring are subjected in the years of their growth and development to an adequate diet, exercise and hygiene. As happens in the vegetable species, the selected seed will degenerate ostensibly if it is deposited in soil of incomplete composition in which the plant cannot avail itself of the elements indispensable to its nutrition and development.

Laws of Heredity

We shall confine ourselves in these lines to giving a brief note of names and refer to normal heredity without including pathology. They are: preponderant; bilateral; atavistic; homocron (characteristics which appear in the offspring at the age at which they are manifested in the parents); throw-back (which appears in the first age to the parents, and then, in the adult, to the indigenous); homotópica (detail or trait which transmits itself to the descendant in the identical region of the body); and heterotopica (when such an item is transmitted but in a different part of the body).

Finally we will point out the influence of determined breeders for the procreation of offspring of their sex and others for the transmission of color or characteristics of their coat.

Diet of the Stallion

During the time of fecundation, diet must be clean and abundant with a base of barley, oats, bran and hay, with preference given to natural pastures over alfalfa or clover. The fodder will be given in very small quantity and not to all the horses; and also, with great prudence, beans. Of manifest convenience are hay and bran with meal, and in certain cases hot feed, or *mash* made as follows: 200 grams of straw, 500 grams barley, 150 grams of bran of flaxseed, 80 grams of barley meal and 13 grams of salt. All of these substances are put in a wooden pail in the order of their greater specific gravity. Then is added boiling water to cover them. Cover with a cloth and, after letting it cool for three or four hours, serve it lukewarm.

This *mash* or hot feed—so beneficial to sick horses, those without appetite, or those that are undernourished or have bad digestion—should be given in place of the night feed once a week, with care not to exceed in the proportion of flaxseed because of its weakening effects.

In general, there can be used as base for rationing a stallion of medium weight during the time of fecundation that of 6 to 7 kilos of barley and 11 of straw. Included in the latter is the amount necessary for bedding. To avoid the difficulties accompanying monotonous ration, it is advised that prudent changes be made in the food diet and that rational substitutions be effected with due consideration, of course, for the nutritive value of those administered.

A model ration can be that composed of 3 kilos of barley, plus 2 of oats, 6 of hay, 4 of straw and 800 grams of meal in hay with bran.

The barley given must not have been recently harvested and the weight must not be less than 52 to 54 kilos per hectoliter. As to the oats, it would be acceptable with 4 kilos less weight per hectoliter.

Water should be the object of extreme precaution; avoid the use of public drinking troughs which do not show extreme cleanliness.

Diet of the Offspring

All efforts in behalf of the improvement of the horse breeds would be fruitless, if adequate rationing in quantity and quality is not accorded the offspring *exactly* in the age of their growth and development. To show its importance, some expert said, "Half of zootechnics is in the bin." This does not mean that the other half, no less important, which are the laws of heredity, are of inevitable fulfilment.

Exercise

Except in the pure blood, to which the male as well as the female must credit his aptitude in the hippodrome, in the other races or equine varieties the proof of aptitude (work) is different. It is necessary to have the proof before using the horses for breeders. The horse destined for this function of breeding should, outside the time of stables, accomplish work appropriate to his race and aptitude, for it is known that, "Vice is the sequel to idleness," and that, "The function makes the organ." Proof of this is the fact that if a horse of a breed adapted for draught is used only for saddle and in work requiring speed, his muscle stretches with detriment to its thickness, with the consequent modification of his form in general; whereas, if a saddle horse is used for drayage or cartage, the muscle shortens and increases in thickness modifying its elasticity and, in short, also the characteristics of general conformation of the animal.

As for the pregnant mare, functional exercise is also indispensable to her. If she lives a life of liberty or pasture, her instinct and her necessities will oblige her to take the indispensable exercise; but if her life is that of the stable, it is necessary that the work she performs be directed and rational. Nonobservance is the cause of numerous abortions equally as much as carelessness in things pertaining to hygiene and diet.

As to the colts, if in their early stages the program for pregnant mares includes them, from the age of two or

three years, according as they are of races with aptitude for draught or saddle, they should be broken and subjected to work through which it will be practicable to bring about the physiological development of which the animal is capable. It should not be forgotten that it is the period of its life most suited to the result pursued and if he is to be destined for a breeder the test of *work* is of the utmost importance unless it be wise to use as breeder an animal which has not been well qualified in it.

In *The Ruling of the Center of Training* and *Selection of Breeders*, subsidiary of *The Directory of Horse Breeding*, a detailed account is given on how much the selection is affected by the test of the future breeders.

Hygiene

The private stables should bear in mind that the influence of the environment (climate, quarters, pastures, altitude and economic development) is manifest in the animal species which live and develop in one region. Corpulence, characteristics of conformation, temperament and sanitary disturbances show ostensible differences in different countries, and for that reason the variations or modifications appear in the fenotype of individuals produced in an environment and climate not similar to the geographic area which was the origin of their race or type.

Thus, for example, in a poor country with scanty pastures and poor in nutritive principals it is not wise to hope to produce, unless artificially, horses of great height and corpulence. One must be satisfied with obtaining sober, rustic well formed horses of smaller size.

If the influence of the environment is evident in the constitution of the animal it is unnecessary to point out the importance which the quarters in themselves have in regard to situation, size, orientation, ventilation, materials of construction, arrangement of windows, mangers, racks, etc., whether they be for adult animals of both sexes or for the breeding animals, as also the beds and situation of straw lofts, hay lofts, granaries, and finally the dung hills.

The mangers and racks must be subject to perfect cleanliness and disinfection.

Genealogical Books

The primary purpose of genealogical books is that the buyer of a breeder may count on the guarantee, not only of the individual characteristics which appear in the presence and action of the animal, but also on the purity of the race of its ancestors with proved capacity for transmission of the former to its descendants through which can be estimated its ability to reproduce them without irregular variations peculiar to the mating of half-breeds and still more in hybridation.

Fenotype is similarity in the external characteristics on the whole and appreciable biological capacity; its transmission is problematical.

The genotype includes all hereditary factors received by the individual from his ancestors.

The genotype has characteristics of permanence in the descendancy, and the fenotype can be similar among individuals of distinct genotype.

In short, the genotype is transmitted by heredity and the fenotype not always.

The National Horseman

The Cavalry School of 1943

THE CAVALRY SCHOOL is operating at a tempo geared to the demands and pace of the high-speed war effort.

To anyone who knew the Cavalry School in its pre-expansion days, the increase in subjects, the number of students and the variety of courses will be amazing. Production line methods have been applied to training officer and enlisted students to fill the complex needs of modern cavalry. Instruction is intensely practical and directed to what the student needs to know under field and combat conditions. Courses are constantly and frequently revised to incorporate last minute information and methods of combat. Current courses at the Cavalry School are set up under a block system in which a prescribed number of courses are conducted in 12-week cycles. In any given 12-week cycle, the following courses are conducted as of January 1943:

In order that all cavalry commanders and individuals of the cavalry branch may know the type of training available at the Cavalry School, a summary of the scope and subjects taught in each course are given in the following paragraphs:

1. *Squadron Commander and Staff Officer Course.* The purpose of this course is to provide for selected squadron commanders and regimental staff officers of the horse or mechanized cavalry intensive instruction in up to the minute doctrine, tactics, technique and procedure, and to emphasize training in command, staff, and logistics, with special reference to the horse or mechanized squadron.

2. *a. Officers' Basic Course (Horse Group).* During this course cavalry officers are given detailed training to qualify them as platoon leaders of horse Cavalry.

b. Officers' Basic Course (Mechanized Group). This course is designed to train Cavalry officers by an intensified program of instruction to qualify them as platoon leaders of mechanized cavalry.

3. Officers' Basic and Officer Candidate Courses are divided into two groups, the horse group and the mechanized group. Approximately seventy-five per cent of the officer candidate and basic officer students receive instruction in mechanized cavalry and twenty-five per cent in horse cavalry.

a. Officer Candidate Course (Horse Group). Established under the provisions of paragraph 20 c (2), MR-3-1 and MR-1-4, this course is conducted to qualify selected warrant officers and enlisted men of the Army of the United States as Second Lieutenants of Horse Cavalry.

b. Officer Candidate Course (Mechanized Group). Established likewise under the provisions of paragraph 20 c (2) MR-3-1 and MR-1-4, this course is designed to qualify selected warrant officers and enlisted men of the Army of the United States as Second Lieutenants of Mechanized Cavalry.

4. *Special New Division Officers' Course, 2d Cavalry Division.* This course is a special one designed to prepare brigade, regimental and squadron commanders and selected staff officers and troop commanders for the activation of the 2d Cavalry Division early in 1943.

5. *Officers' Motor Course.* This course is designed to qualify officers for duty as squadron or regimental motor officers and as instructors in the operation and maintenance of wheeled and half-track vehicles and tanks assigned to the cavalry.

6. *Officers' Communication Course.* The aim of this course is to qualify officers in those subjects which will fit them for duty as communications officers.

7. *Enlisted Motors Course.* This instruction is given to selected enlisted men in order to produce skilled mechanics, capable of performing and supervising second echelon maintenance on all cavalry type wheeled and half-track vehicles and tanks.

8. *Enlisted Communication Course.* Enlisted men are trained in all types of communications procedure in the field.

9. *Enlisted Horseshoers' Course.* This course is set up to turn out students trained to perform normal shoeing in their units. The course is divided into eight general phases as follows:

(1) Horseshoers' Tools and Their Uses.
(2) Fire and Heat.
(3) Working and Shaping Iron.
(4) Anatomy and Physiology of the Horse's Foot.
(5) Normal Shoeing.
(6) Corrective Shoeing.
(7) Shoeing Refractory Animals.
(8) The Operation of and Welding with the Acetylene Torch.

10. *Enlisted Saddlers' Course.* The Enlisted Saddlers' Course at the Cavalry School is conducted to turn out efficient saddlers, capable of repairing leather, felt, and canvas equipment in case of emergency, and to make articles of leather, felt, and canvas which are not items of issue normally needed in organizations. The Saddlers' School functions under the Department of Horsemanship.

The methods of instruction include both practical and classroom work. Great stress is laid upon the composition of a notebook for ready and practical reference in the student's future work. In it the student records daily the various measurements, specifications, and drawing that he will need to refer to in garrison or in the field.

The following phases of work are stressed:

(1) The correct use of Saddlers' tools.

(2) The correct and economical methods of repairing equipment.

(3) The correct modification of McClellan saddles, saddlebags, and stirrup straps.

(4) The care of leather equipment in the field and in garrison; also methods of cleaning and agents for cleaning and preserving.

(5) Methods of fitting saddles to horses of abnormal types and horses in a run-down condition.

(6) Characteristics of leathers, including the correct methods of cutting, fitting, and assembling new leather to old equipment to make it serviceable.

Material is provided for student shop practice (both textiles and leathers) by the Quartermaster under the Table of Basic Allowances.

In addition to enlisted students, both the Officer Candidate Classes and Basic Officers' Classes receive some instruction at the Saddlers' School. This consists chiefly of lectures and practical demonstrations of the agents for cleaning and preserving.

11. *Enlisted Armorers' Course.* The purpose of this course, as conducted by the Department of Weapons, is to train troop armorers thoroughly in the nomenclature, detailed disassembly and assembly, functioning, repair, and care of all cavalry weapons, and ammunition loading equipment, so that they may perform these duties efficiently with their units in the field.

Instruction by Departments

For the efficient conduct of training, the Cavalry School is organized into six Departments. The following résumé outlines the functions and type of instruction conducted by each Department:

Department of Horsemanship and Horsemastership

This department gives instruction to students of six of the eleven courses currently conducted by the Cavalry School. The training is pointed to preparing the student to perform his duties under field conditions. It is divided into five principal phases as follows:

1. *Animal Management.* To teach the elementary anatomy of the horse, the basic principles of nutrition, the cause and prevention of animal disability, stable management and care of horses in the field, methods of transporting horses, and first aid treatment of common diseases.

2. *Horseshoeing.* To give a practical knowledge of normal and corrective shoeing, inspection for needs of shoeing and of newly shod horses; to instruct the student in the preparation of the foot and the securing of the shoe to the foot; to instruct the student in the use of acetylene welding equipment.

3. *Care and Preservation of Leather Equipment.* To impart a practical knowledge of the methods and means used in the caring for leather, the preservation of leather and the restoration of old leather.

4. *Pack Transportation.* To teach the student the fundamentals of the Phillips' Pack Saddle and its adjustment, including adjustment of pads, the selection of pack animals for suitability, and lashing of cargo loads.

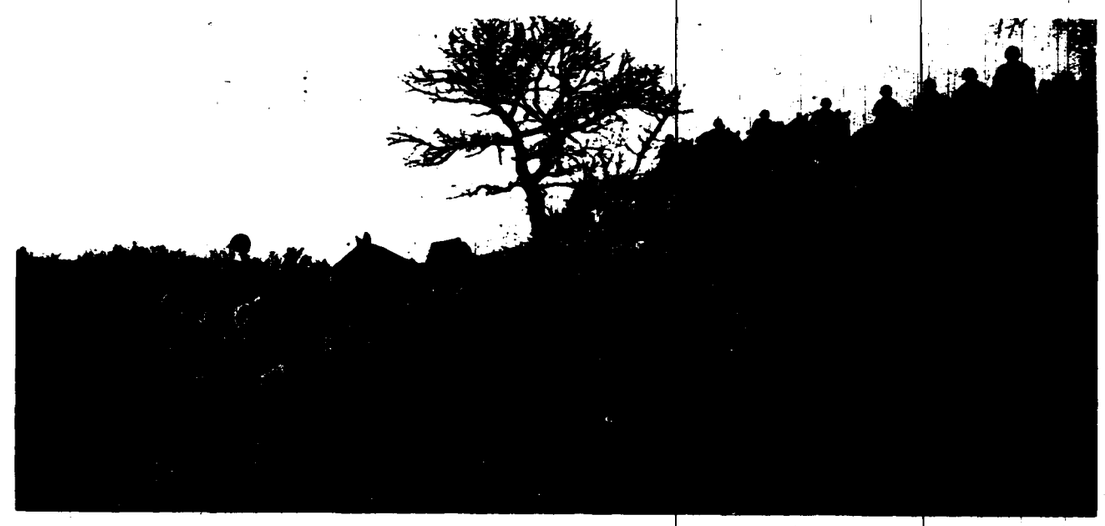
5. *Horsemanship.* To train the student for mounted duties in campaign. To teach the correct principles of the military seat, and to instruct the student in conduct, control and maneuver of mounted units, and in the proper methods of marching and gaiting.

Department of Motors

The Department of Motors is divided into five sections: Department Headquarters, Supply Section, Automotive Section, Special Classes Section, and Tank Section.

The Headquarters and Supply Sections perform the usual duties of supervision, administration, and supply.

The Automotive Section conducts all instruction in



The weapons and ammunition go along. A cavalry troop can go at speed even in very rough country.

The officer candidate class rights an overturned vehicle.

wheeled vehicles, half-track vehicles, and motorcycles for the Officers' Motor Course and the Enlisted Motor Mechanics' Courses. Facilities are set up on a production-line basis to instruct enlisted classes and officer classes in 12-week cycles.

The Special Classes Section conducts all motor instruction for the Officer Candidate, Basic, New Division, and Squadron Commander and Staff Officer Classes. Each of these classes is given approximately fifty hours of motor instruction, except the New Division Classes, which are given sixteen hours, and Horse Classes, which are given six hours. In each 12-week cycle, instruction is given to Officer Candidate Classes, Basic Classes and a Squadron Commander and Staff Officer Class. Thus far one New Division Class has been scheduled. Each of the Special Classes is given a short course in the mechanical functioning, operation, and maintenance of military motor vehicles. Stress is placed upon preventive maintenance and the supervisory duties of officers of mechanized units. The limited time available does not permit giving these students sufficient technical training to qualify them for duty as motor officers.

Commissioned and enlisted instructors in the Automotive Section and the Special Classes Section are graduates of motor courses at one or more of the following schools: The Cavalry School, The Armored Force School, The Infantry School, The Field Artillery School, The Ordnance Schools at Holabird and Normoyle, The David Ranken School of Mechanical Trades, and various service schools conducted by vehicle manufacturers. Every effort is made to incorporate the best instructional ideas of all of these schools into courses given at the Cavalry School and to standardize instruction with that given at other ground force service schools.

The Tank Section, which is currently in the process of inauguration, will be responsible for all training in the mechanical functioning, operation, and maintenance of full track-laying cavalry type vehicles. Classes enrolled in the Tank Maintenance Course will be made up of selected graduates of the Officers' Motor and Enlisted Motor Mechanics' Courses. They will be given a four-week course. Instructors for this course, in addition to being graduates of either the Officers' Motor or Enlisted Motor Mechanics' Course at the Cavalry School, are graduates of the Tank Maintenance Course at the Armored Force School.

Department of Communication

The Department of Communication has a communications class starting each week and a class graduating

each week. Classes are in attendance at all times: All instructors in this department have had previous communications experience and every opportunity is taken to present the latest information on the practical uses of military communications which may be obtained. Both the Officers' and the Enlisted Communication Courses are based *on approximately 70% practical work and 30% theoretical* instruction.

The Officers' classes receive basic communications instruction, which covers communications, security, air-ground communication, cryptography, message center operations, message writing, and organization of communications. Courses in Radio Procedure, Electricity and Magnetism, Radio Theory and Field Maintenance of Equipment are a combination of theory and practice. Many hours are spent on practical field operation of radio equipment and on command post exercises built upon the use of communications. Code Practice for the officers trains them to the extent that they are able to instruct other operating personnel, but does not aim at making expert field operators of the officers themselves. An intensive course in the duties of a communications officer gives them instruction in the command and staff duties of their assignment, signal supply, preparation of signal operating instructions, methods of instructing new cadres, and other personnel in newly activated units. This with the required outside work, which includes preparing a typical field training exercise, a command post exercise, and an hour conference to be delivered, in theory at least, to the officers of a new regiment, qualifies them to be communications officers of any Cavalry element up to the division.

The enlisted men are trained to be field radio operators and communications specialists. They must qualify at a minimum speed of 16 words per minute in Code Practice although the usual class average is above this figure. They receive an intensive course in Radio Procedure and the Tuning and Adjustment of Radio Equipment. A course in electricity and magnetism and radio theory gives them the background necessary to perform minor maintenance duties. Their basic instruction includes communications security, safeguarding military information, cryptography, message center operations, and organization of communications, and air-ground communications. A great share of their time is spent on actual field operation of radio equipment, both mobile and immobile and in the performance of all types of communications duties on command post exercises.

While the aim of both courses is to make the student proficient at any assigned duties connected with communications, emphasis is placed on how to instruct the subjects as they, the students, are being taught. The officers, in addition, act as assistant instructors during their last few weeks in the course to give them actual teaching experience. The enlisted men, while trained primarily as field radio operators, are so instructed as to

Students of an officer candidate class learning capabilities of cavalry type vehicle.

be able to assist their communications officers in giving instruction.

From reports of observers on recent maneuvers in all parts of the country, the cavalry communication personnel are living up to their mission; namely, "Get the information in and the orders out."

Department of Tactics

The Department of Tactics conducts instruction in five of the eleven courses regularly in residence at the School; i.e.:

Squadron Commanders and Staff Officers.
Officers' Basic Course, Horse.
Officers' Basic Course, Mechanized.
Officer Candidate Course, Horse.
Officer Candidate Course, Mechanized.

The first-named course covers intensively subjects pertaining to small cavalry units, and such instruction in tactics, command, staff and logistics as are applicable to squadrons and regiments of both mechanized and horse units. Among the subjects included are the organization of all cavalry units, their characteristics and missions; organization and characteristics of certain foreign armies; map and aerial photograph reading; estimate of the situation and terrain; combat orders; tactics and technique of the associated arms including air, infantry, field artillery, and engineers; instruction in umpiring; and map exercises, terrain rides, and field exercises that illustrate the squadron and regiment in the attack, defense, and on reconnaissance, security, and special missions.

The objective of the instruction given in the Officers' Basic Courses, Mechanized, is to qualify the student

Officers of a basic course (horse) dissect the feet of a horse in the animal management laboratory. Greater understanding of the anatomy and physiology of the horse makes for better horsemastership.

to command in the field each of the following types of platoons: reconnaissance, tank, and assault gun platoons of the Cavalry Regiment, Mechanized. This instruction includes map and aerial photograph reading, estimate of the situation and combat orders, instruction in the employment of the associated arms, and the principles of communication and staff functioning in the Cavalry Regiment, Mechanized. Also included is instruction in umpiring, street fighting, and dirty fighting.

Instruction in the Officers' Basic Course, Horse, is in general the same as that for the mechanized classes except that its purpose is to train leaders of the following types of platoons: rifle, machine gun, mortar, and reconnaissance, and antitank platoons of the Cavalry Regiment, Horse.

The instruction for Officer Candidate Courses is in general the same as that for the Officers' Basic Courses.

The instruction, generally, consists of conferences, illustrative problems, demonstrations, and exercises in the field in which the students actually function as members of the various organizations. Under the block system in operation at the school, the Tactics Department conducts instruction in the Basic and Officer Candidate Classes for approximately five weeks. For the Squadron Commander Course, instruction in tactics is practically continuous throughout the course.

The instruction is continually in the process of revision in order to enable the students to become familiar with the latest tactical methods employed in the present theaters of operation.

Department of Weapons

The Weapons Course at the Cavalry School has changed materially in the past few months. Basically, the instruction in methods of firing the weapons and in the functioning of the piece has not changed, but much has been added to the course to keep up with battle experience and to add realism to instruction. The greatest change in the past year has been the adding of small unit tactics to weapons instruction with emphasis on the employment, emplacement, and use of weapons in the squad, section, and platoon.

Instruction in new cavalry weapons, the M1 carbine, the 75mm Howitzer, and in rocket grenades, rifle grenades, and improvised grenades, has been added. Extremely practical instruction has recently been initiated, in village fighting, infiltration against automatic weapons fire (using live ammunition), and battle firing. An actual village has been constructed in which the students encounter the conditions peculiar to combat in towns and villages, and use live ammunition to overcome them.

Much construction and improvement of range facilities has been made recently. All firing of weapons, except known distance and landscape rifle firing, and 1,000 inch machine gun firing now takes place on the Magic School Range on the new reservation. Installations now include a field firing range, 1,000 inches and 500 yard moving target ranges, AA range, two blocks of buildings for village fighting, SMG-pistol-carbine range, quick firing range, dummy and live hand grenade courses, eight lane moving vehicle firing course, combat firing area for horse cavalry, and combat firing area for mechanized problems.

Officer candidates and basic officers receive identical instruction in weapons, while squadron commanders and staff officers, having fewer hours allotted, are given more demonstrations with emphasis on training aids and methods of training.

Great stress is placed on field firing and combat firing of each weapon. The combat firing is combined with instruction in small unit tactics. In mechanized classes, for example, six days are devoted to small unit tactics in which fire and movement of squads, sections, and platoons is stressed by actual work under combat conditions. Following this, one day is used to teach the employment, use, emplacement, and missions of the 81mm mortar; one day, the employment of the reconnaissance platoon reinforced with assault guns in delay; one day, the reconnaissance platoon reinforced with tanks and assault guns. This series of problems is culminated by a practical exercise in laying the various weapons to fire at night, and then firing after dark by using exploding targets to demonstrate the accuracy of the laying and firing of those weapons. Horse classes receive the same instruction and follow substantially the same sequence, but use tactical situations suitable to horse cavalry missions. Practice in control by students as leaders is stressed.

The new range facilities of the Cavalry School are a model of compactness, with common impact areas for all types of weapons. The installation enables the maximum instruction and training with the minimum loss of time. Sections of a class may be given instruction in various areas of the range and be shifted without loss of time.

Department of General Instruction and Publications

In this department the aim is to turn out officers capable of conducting field instruction and training in a highly effective manner. A general summary of its instruction includes the following:

(1) *Orientation.* This class emphasizes to the student the general nature of training problems which will confront him and to introduce methods of presenting instruction.

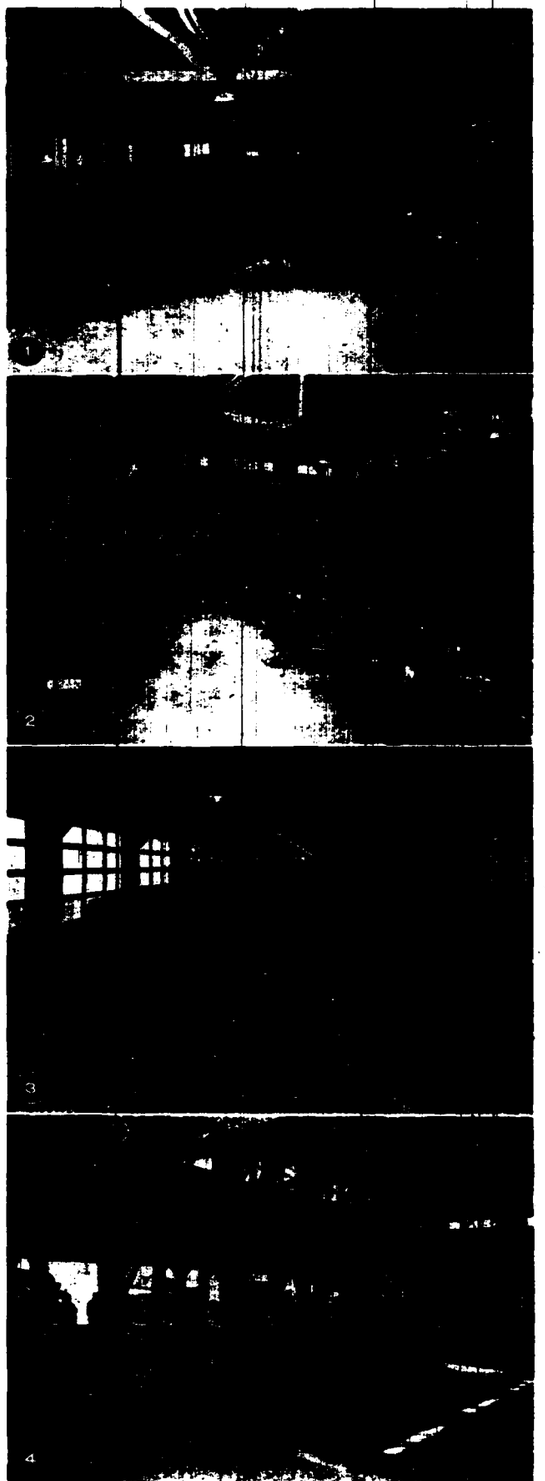
(2) *Military Courtesy and Customs of the Service.* Instruction is designed to acquaint the student with all pertinent regulations and indicate the standards required of all individuals and units.

(3) *Technique of Instructing.* This subject is continually emphasized throughout all instruction at the Cavalry School. Its purpose is to teach the student how to teach others, how to impart the knowledge he has acquired; how to plan, prepare, and give a period of instruction or training; and to demonstrate the preparation, application, and uses and effects of training films, film strips, and visual aids in training.

(4) *Troop Administration.* This covers the proper conducting of military correspondence, the use and preparation of daily troop reports; mess management (including nutrition, cooking, field messing, sanitation, rations and ration supply and accounting); supply, authorized supplies, how obtained; care and disposal; the administration of troop funds; to familiarize the student with the general nature of some of the problems of administration which will confront him on joining his organization.

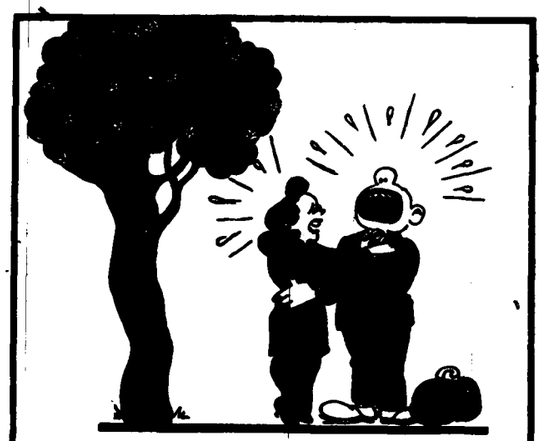
(5) *Training Management.* This instruction is designed to teach a fundamental and useful conception of training management to include the functions of the leader, principles of training, the preparation and use of training programs, the preparation of a simple applicatory exercise, emphasizing methods and mechanics of instruction, methods of inspection, and a standard of proficiency.

(6) *Military Law and Justice.* The purpose of this instruction, based on the Manual of Courts Martial of 1928 and the Articles of War, is to emphasize the knowledge required by officers in regard to this phase of military life and to discuss troop punishment and pretrial procedure. Explanation is made of the great necessity for good leadership necessary to reduce the number of offenses in a command to a minimum.



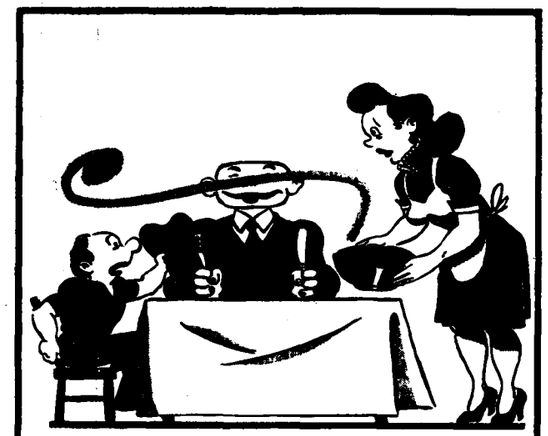
A CLASS IN ENLISTED MOTOR MECHANICS
1—Engine laboratory. 2—Motorcycles. 3—Scheduled maintenance. 4—Command inspection instruction.

Know Your Gasses



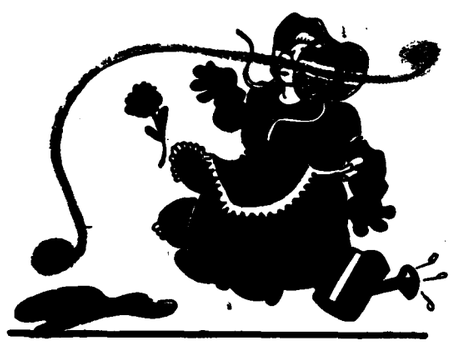
CN

APPLE BLOSSOMS LEND THEIR SMELL
TO THE SADNESS OF FAREWELL,
IT'S O.K. IF YOU FEEL BLUE,
BUT **TEAR GAS** STARTS
YOU SOBBING TOO.



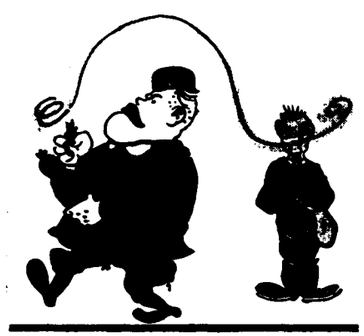
CG

FATHER WAS PLEASED THAT SUNDAY MORN
TO NOTE THE AROMA OF FRESH-CUT CORN—
CRIED LITTLE WILLIE — TURNING GREEN—
"GRAB YOUR MASK, POP—
THAT'S **PHOSGENE!**"



M1

GRANNY SMELLED GERANIUM,
STARTED FEELING KINDA BUM,
THOUGHT SHE HAD A GARDEN BLIGHT,
WHAT SHE'D FOUND
WAS **LEWISITE**



HS

NEVER TAKE A CHANCE, MY FRIEND,
IF SOME GARLIC'S IN THE WIND.
DON'T THINK MUSSOLINI'S PASSED—
MAN — YOU'RE BEING
MUSTARD-GASSED!

THE RED ARMY. By Michel Berchin and Eliahu Ben-Horin. W. W. Norton & Co., Inc. New York. 1942. 265 pp. $3.00.

At a time when the U.S.S.R. is again demonstrating its magnificent offensive spirit and power, it is fitting that a sober, non-partisan study of its army should appear. *The Red Army* provides such a study, and, in addition, reviews its development from the days when the Imperial Russian Army collapsed on the Eastern Front in 1917.

The authors trace the growth of the Red Army in size and power against the background of the Soviet Union's turbulent coming of age. During its two decades of existence it has been transformed from the ragged nucleus of an international revolutionary force into a tough, competent army for the defense of the homeland. Social theory has gradually been subordinated to the hard facts of the world as it is. "The Russian soldier is revolutionary today," say the authors, "in about the same sense as the French soldier at Valmy was revolutionary in 1793, or as the American soldier was at Princeton, or at Yorktown."

The Red Army has the world's strongest cavalry force and has freely combined therein the elements that compose modern cavalry. As Marshal Timoshenko says, "There is no conflict between horsepower and horses." There is evidence in this book that the Red Army horse cavalry would be even larger were it not for the decline in horse breeding (a consequence of the wholesale mechanization of the farms) and the fact that the Germans have occupied the territory which produced 48.8 per cent of the U.S.S.R's. horses.

This book adequately describes the development of all arms of the Red Army and concludes with a summary of the Russo-German war through last summer's campaigns.

L. B. C.

* * *

TORPEDO JUNCTION. By Robert J. Casey. Bobbs-Merrill, New York. 419 pp. $3.50.

Torpedo Junction is the Navy term for Pearl Harbor. Mr. Casey's book is the story of what happened to the Navy in the Pacific after Pearl Harbor. Aboard a heavy cruiser, he watched the Navy operate from the Marshall Islands through Wake, Marcus Island, the Coral Sea and Midway.

Starting out in an understandably pessimistic frame of mind Mr. Casey gives a blow-by-blow description of preparation, practice, dress rehearsals and finally action itself, until, after the victory at Midway, the last trace of gloom disappears, and he winds up his book with the optimistic statement that "the control of the Pacific may have passed to us as a result of it."

Necessarily, this is the tale of what one man saw from one ship, and therefore there are many tantalizing gaps in it. But what it lacks in completeness is more than made up by "local color" and human interest stories. The physical detail is excellent. This is one of the most readable of the current war books.

H. P. C.

REPORT FROM TOKYO. By Joseph C. Grew. Simon and Schuster, New York. 88 pp. Paper, $1.00. Cloth, $1.50.

Joseph C. Grew has had a long and interesting career as a diplomat. It is of particular interest that he was Counselor to the American Embassy in Berlin during the early part of the First World War. This equipped him with a sound knowledge of the German people, whom he graphically contrasts with the Japanese.

As American Ambassador to Japan from February, 1932, until the present war he was given ample opportunity to study the Japanese people. He is in an excellent position to judge the comparative attributes of our enemies, as few men are privileged to be.

Report from Tokyo is an account of the days before Pearl Harbor, of the character of the Japanese as a nation, and what the people have been doing to create this character over a period of time.

We are shown very clearly wherein we must correct our own faults if we are to succeed in conquering these people. We are told why we must conquer, why mere winning will not be enough.

This book should be required reading for every American, starting with students in the first year of high school.

E. S. D.

* * *

SUEZ TO SINGAPORE. By Cecil Brown. Random House, New York, 1942. 545 pp. $3.00.

This long personal history is the story of a conscientious war correspondent's attempt to tell of what he saw and the difficulties that beset him. About half of *Suez to Singapore* is a recital of events that the author witnessed from April, 1941, through March, 1942; and the rest describes in laborious detail the attempts of unsympathetic officials of the British Empire to douse his shining torch of truth.

Mr. Brown was extremely alive to the dangers of complacency in the face of skilled and ruthless enemies. Playing the always unpopular rôle of Cassandra, he went from one bastion of the Empire to another in the course of his journalistic duties.

As an American correspondent, Mr. Brown considered it his duty to arouse Americans to the dangers that they were facing. He wanted to make them realize that the power of the British would not be enough to stop the world-wide aggressions of the Axis. The British colonial authorities, all anxious to have their bailiwicks in good repute in far off London, were, perhaps naturally, averse to having Mr. Brown expose one inadequacy after another; and from this fact arose Mr. Brown's many battles with the censors. They are here recounted in rather too much detail.

Most of the author's time was spent in Singapore. He states that it was only a matter of weeks before the Japanese invasion that the British discovered that the rice fields were negotiable by Bren gun carriers. This belated discovery completely destroyed the road-bound foundation of their defensive tactics. They later lost a good many miles of

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northern Malaya before they learned further that the expression "impenetrable jungle" was not in the Japanese vocabulary.

Mr. Brown was on the *Repulse* when it and the *Prince of Wales* were sunk by Japanese land-based planes, and his description of that event is the high-spot of the book. This is one of the very best of the current bumper crop of war correspondents' books. L. B. C.

GUADALCANAL DIARY. By Richard Tregaskis. Random House, New York, 1943. 263 pp. $2.50.

As one of the two newspaper correspondents to accompany the U. S. Marines in their attack on the Solomon Islands, Mr. Tregaskis set foot on Guadalcanal when the first detachment landed on that desolate island. He stayed there for the first seven weeks of the occupation, and this book is his story of the start of our Southwest Pacific toehold campaign.

The occupation of Guadalcanal was a tough and dirty job, and base headquarters was never more than a mile or two from the outpost lines. The author's view of the Guadalcanal campaign was really a "fox-hole view"—and there is plenty of evidence in this book that the fox-hole is really the best vantage point.

Mr. Tregaskis repeatedly exposed his six-foot, seven-inch frame as a target in his effort to find out what was really going on, and his description of the battle for the Tenaru River alone justifies that considerable risk.

The story is one of fierce fighting, privations and hardships, and of the development under fire of a magnificent American fighting force.

Doubt and discouragement crept in as weeks passed with no reinforcement, and the Japs kept landing at night a few miles up the beach. But American courage and determination downed them and the reinforcements finally arrived. Mr. Tregaskis then retired to Hawaii to equip himself with some more size 14 shoes and to write this book. He is now back in the Solomons.

Quadalcanal Diary lacks the polish of some of Mr. Tregaskis' older colleagues' works, but it gives the feeling of the fighting on Guadalcanal, which is no mean praise. L. B. C.

HE'S IN THE ARMORED FORCE NOW. By Capt. Addison F. McGhee, Jr. McBride, New York. 256 pp. $2.50.

Captain A. B. McGhee has been in the Armored Force since its inception in 1940. From his abundant knowledge he has presented an exciting story of a group of typical trainees from the time that they begin as raw recruits until they are full fledged Armoraiders.

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The Signal Corps deserves special mention for their splendid pictures which bring to life this thrilling story. E. S. D.

BOMBS AWAY. By John Steinbeck. Viking Press, New York. 185 pp. $2.50.

John Steinbeck at the request and with the coöperation of the Army Air Force has garnered the material for this story of a bomber team, consisting of pilot, navigator, bombardier, crew chief, gunner and radio man.

Selecting six typical American boys, the author gives them imaginary backgrounds, outlines the requirements, details the training, and follows the progress of each man from civilian life to assignment with the team. Steinbeck then depicts the training of the crew as a unit until it is prepared for combat.

Great emphasis is laid on the ideal of unity and mutual coöperation essential in attaining successful completion of each mission by these courageous groups—an ideal which might well serve as a criterion upon which to found a real spirit of democratic accomplishment.

The author's style is well adapted to this type of writing. He has refrained from all personal observation or opinion and produced an account as clear cut and graphic as the very excellent photographs by John Swope which underscore the text.

This book is not a manual of instruction, but is an effort to give a better understanding of the caliber of men who are daily and nightly flying our bombers over Axis territory, what is required of them, and how they are trained. It will assist young men to decide whether or not they are fitted to become one of such a closely knit group. It will give families of men who are now participating in or are training for bomber combat a better understanding of what life their men are leading. It is quite probable that many army men will also find it both interesting and enlightening. E. S. D.

THE WAR IN THE WEST. By Daniel Vilfroy. Military Service Publishing Co., Harrisburg, Pa. 163 pp. Map. $2.50.

Daniel Vilfroy, as a staff officer in the 2nd Division of the French Mechanized Cavalry, saw the psychological and military collapse of France. In *The War in the West* he discusses the traditional French strategy built on years of fighting over the same terrain. He points out how this static thinking allowed modern German tactitians to overwhelm the armies of Holland, Belgium, France and England in so short a time. He also presents the German strategy and tells why it was successful. No effort is made to underrate the lack of foresight in the French command nor does he attempt to justify it.

The latter part of the book deals with the "Essentials of Modern Warfare" with separate chapters given to the rôles of infantry, artillery, tanks and cavalry, and aviation. It is not to be expected that the student of military affairs will always agree with the theories advanced in this portion of the volume, but he can hardly fail to find much of interest.

While giving mechanized forces their due as an essential part of modern warfare the author does not fail to remind us that horse cavalry is still a very vital part of any army. He states, "In certain conditions of terrain, cut and wooded, it remains the only arm capable of reconnoitering."

This book should prove an excellent background for any study of the present war. E. S. D.

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CRAZY HORSE. By Mari Sandoz. Alfred A. Knopf, New York. 428 pp. $3.50.

Maria Sandoz was peculiarly well fitted to write this swiftly moving biography of the man who inspired his people to deal Custer and the 7th Cavalry such a crushing defeat at the Little Big Horn. Her own life has been spent in the upper Niobrara river country. She was raised on tales of the Sioux Indians, many of them about Crazy Horse, Strange Man of the Oglalas. To this background she has added painstaking research and skilful writing.

Much has been written of Custer and his men, and books abound on the opening of the west from the white man's point of view. Little material has been available, however, by writers familiar with the Indian side of the question. Most of our information by Indian writers is too imaginary to be factual or too technical to be popular.

Mari Sandoz has produced a biography to fill the gap in that period of history which settled forever the position of the Indian tribes in relation to their white conquerors in the west. It is a magnificent epic of an extraordinary man.

Crazy Horse deserves to stand in any collection of books on Custer and his time, if for no other reason, because it gives a picture of the people with whom he fought, and the warrior who swept them into one last victory.

E. S. D.

WINGED MARS. (Vol. I.) THE GERMAN AIR WEAPON. 1870-1914. By John R. Cuneo. Military Service Publishing Co., Harrisburg, Pa. 338 pp. $2.50.

Complete in itself, this first volume of a history of air power endeavors to interpret current aerial warfare through the analysis of past mistakes. It deals primarily with the German air weapon, 1870-1914, but includes an outline of the growth of European air power generally. Excellent notes and thorough indexing give added value to the material.

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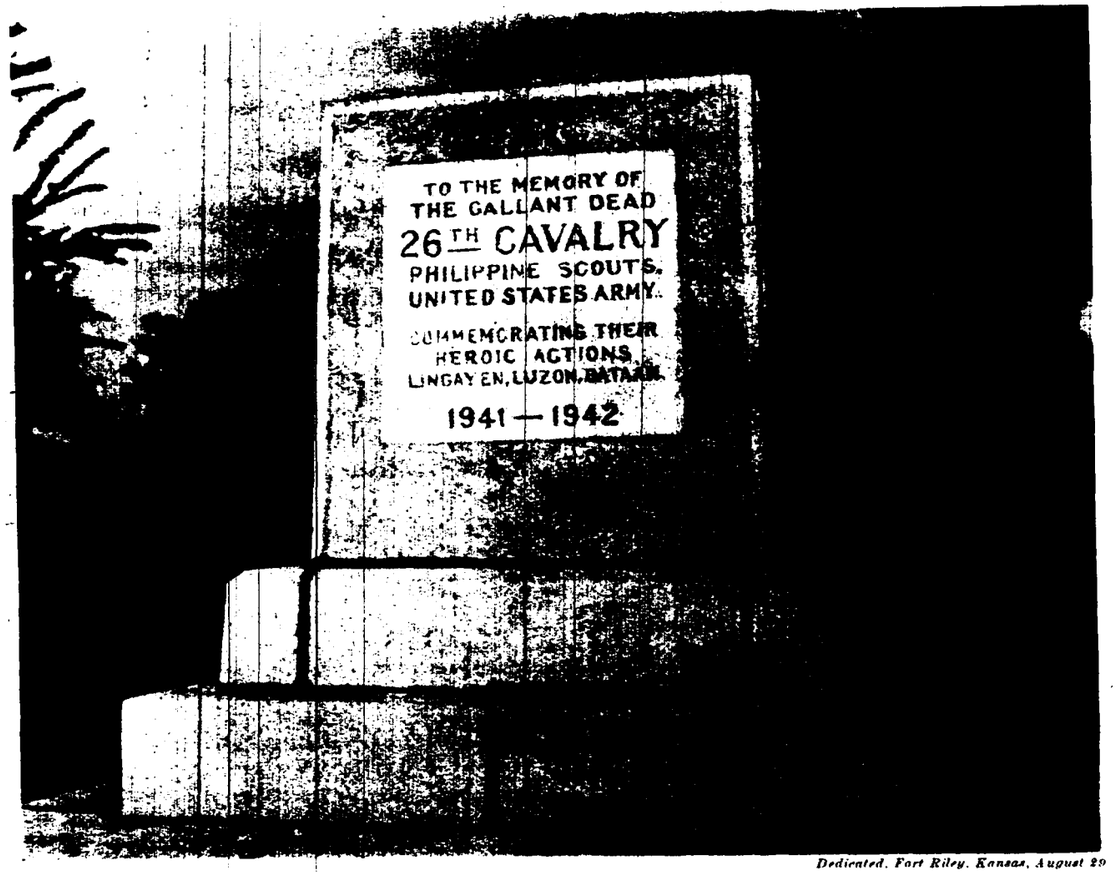


Dedicated, Fort Riley, Kansas, August 29

THE 26th CAVALRY, under the gallant leadership of Colonel Clinton A. Pierce, actively participated in the first major encounter of American forces in the present war. All through Luzon, the officers and men distinguished themselves to the highest honor. . . . The spirit of coöperation and the devotion to duty inherent in the 26th Cavalry represents the spirit of the whole Filipino people. It has taken the bitter experience of this war to bring a true understanding of our country to the people of the United States. This deadly war has shown the deep friendship for Americans held by the Filipinos, and to prove the depth of our appreciation for the material benefits that America has brought to us.

Tennyson once wrote about England some lines which very well apply to the Philippines:

"Not once or twice in our rough Island story,
The path of duty was the way to glory."

Such was the opportunity of the glorious 26th. It clinched that opportunity by courageously answering the call of duty.

We now have a double duty, for while we honor those who have defended the cause of right with their lives, we must also be prepared ourselves to make the sacrifices necessary to redeem and to justify the spirit with which those boys of the 26th Cavalry fought and died.

I can do no better, I believe, than to quote a few lines from Lincoln's Gettysburg Address: "It is rather for us to be here dedicated to the great task remaining before us; that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion."—THE HONORABLE J. M. ELIZALDI, *Resident Commissioner of the Philippines to the United States.*

The Fighting 26th

*by Clark Lee**

Without the 26th Cavalry, there might never have been a Battle of Bataan, and without the four months gained for the United Nations by that gallant, heart-breaking, hopeless fight, we might have lost Australia and all of our other bases in the South Pacific. The 26th Cavalry Regiment, commanded by Colonel Clinton A. Pierce, (later made a Brigadier General), fought a brilliant delaying action that for five days held up the thousands of Jap troops who landed on the east shore of Lingayen Gulf on December 22, 1941. Those invaluable five days made it possible for General Wainwright to pull back his outnumbered forces along the south shore of the Gulf and get them—almost intact—into Bataan.

As I drove up from Manila on that morning of December 22nd, after the Japs had landed at Lingayen Gulf, I still brashly believed that there were three or four divisions of American troops opposing the Japs, that our planes would sink most of their transports, and that the few who got ashore would quickly be annihilated. The truth (as I found out later) was that General MacArthur was withdrawing his troops to the Peninsular of Bataan, and that the 26th Cavalry, stationed at Damortis on the Gulf, was left to deal with the landing Japs and fight a rear guard action to cover the withdrawal. Their assignment was an old cavalry mission, and it was gallantly and successfully executed.

Perhaps the best way to tell the story is in Colonel Pierce's own words.

"We fought 'em in the streets and under the nipa shacks of Damortis all day," he told me. "Then late in the afternoon the Japs got some tanks ashore farther north and came after us with planes and tanks. We pulled back to Rosario during the night, and the next day they were on us again. We took cover in the rice fields and fought them off all day, and they fired a million shots without hurting us. We found that they could be stopped.

"The next day we fought them at Pozzorubio, which we reached during the night, and it was the same story. They couldn't hurt us until their tanks and planes came. Had we had any tanks and planes, it would have been different."

The following day, fighting at Binalonan, the 26th was cut off from its horses which were bivouacked off to one side of the town. "We could have gotten out of there all right," Colonel Pierce said, "but we fought our way over, got the horses, and pulled back during the night to Tayug."

Tayug is well to the east of Binalonan, and the main Jap force, instead of turning west and outflanking and surrounding General Wainwright's men on Lingayen Gulf, continued to follow the 26th. There was another battle which lasted all Christmas Day and then the Japs, sensing that they had been tricked away from their main objective, headed back and down the main highway toward Manila.

With the 26th covering the right flank, Wainwright kept his lines intact and backed southward.

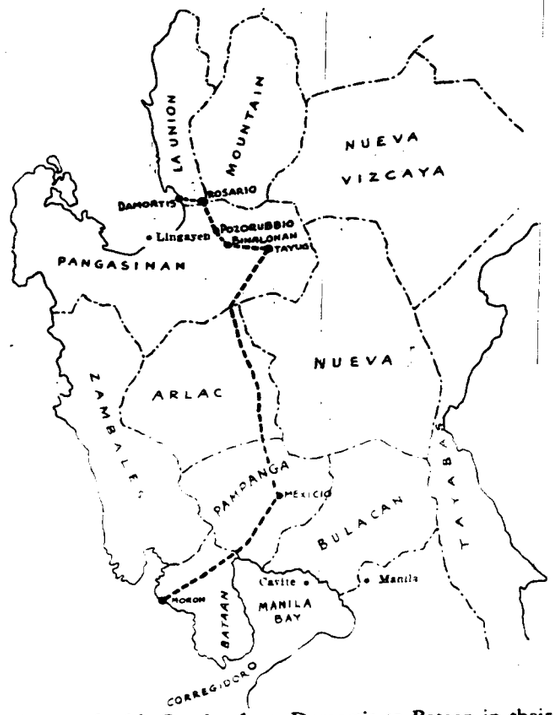
I found the 26th headquarters on December 29th at the little town of Mexico, five miles east of San Fernando. There I heard Colonel Pierce's story, talked to his men, and had the opportunity to thank them for the fact that I was alive and not a prisoner. I had gone up to Baguio on the night of the 22nd and was cut off there. A two-day hike through the mountains had brought me out at Tayug on Christmas Eve—safely behind the 26th's lines.

From Colonel Pierce on down, the men of the 26th were full of fight. They had sustained heavy losses—12 of 36 officers dead and 180 Scouts either killed or

A platoon of the Machine Gun Troop, 26th Cavalry (P.S.) fords Tipley Creek, Fort Stotsenburg. Picture taken, late fall, 1941.

Life **photo by Carl Mydans.**

*Associated Press War Correspondent. Author of *They Call It Pacific*. Mr. Lee, who accompanied the 26th Cavalry during most of its gallant fighting across Luzon, has written this account exclusively for The CAVALRY JOURNAL.



Route of 26th Cavalry from Damortis to Bataan in their action against the Japanese.

missing—but they were still confident that they were better soldiers than the Japs.

"If we just had a few planes . . .," they said.

While I was with them that day, orders came for them to transfer over to the left flank of Wainwright's line. They rode—and drove their few mechanized 75's[1]—westward across the plains of Pampanga, and there they held the gateway to Bataan until it was finally slammed shut on New Year's Eve. Part of the 26th was cut off then, but most of them took to the mountains and came out safely at the town of Moron on the China Sea side of Bataan.

There was no chance for them to rest, desperately as they needed it.

The Japs were pushing on quickly, confident of an easy kill, and they soon overwhelmed the youthful troops that had been holding Moron. MacArthur had to straighten his line and he called on the 26th Cavalry to do it. Already exhausted and battle-weary, they swarmed into the little town, routed out the Japs in a fierce fight and restored the original positions.

I remember one incident related to the fighting at Moron. We correspondents had written many stories about the 26th Cavalry because it had borne the brunt of the early Luzon fighting, and someone decided that it had been given too much publicity. So when the late Melville Jacoby wrote a dispatch to *Life* describing the Moron battle, someone decreed that he must eliminate the name of the regiment and all reference to horses. As censored, Jacoby's dispatch had a lot of anonymous troops reining in their —, spurring their —, and shooting as they galloped their —. Then the powers that be relented and put the horses back in.

The horses themselves, however, were not to last much longer. They had reached the end of the trail in Bataan. The survivors of the 26th were dismounted and assigned to other regiments, and the horses that they had loved so well had to be killed for food.

Brigadier General Clinton A. Pierce was given command of the troops fighting off Japanese landings on the west coast of Bataan. General Wainwright had command of that side of the peninsula, his headquarters well within range of Jap artillery.

I don't like to remember what happened in the next two months. But for me there will not be any victory—there can not be any thought that the war is won—until we are able to set free the men of the 26th Cavalry, and "Clint" Pierce, and "Skinny" Wainwright, and the Americans and Filipinos who fought with them to the bitter end—and until we can bring them home in triumph for the rewards that they deserve.

General Clinton A. Pierce (left) questions Japanese prisoners at Headquarters in Bataan. This picture was taken by Clark Lee, April 10, 1942.

Wide World

[1]Reference is probably made to the 75mm howitzer mounted on a half-track, fifty of which reached the Philippines just before war started.

Rearguard in Luzon

by Captain John Wheeler, 26th Cavalry

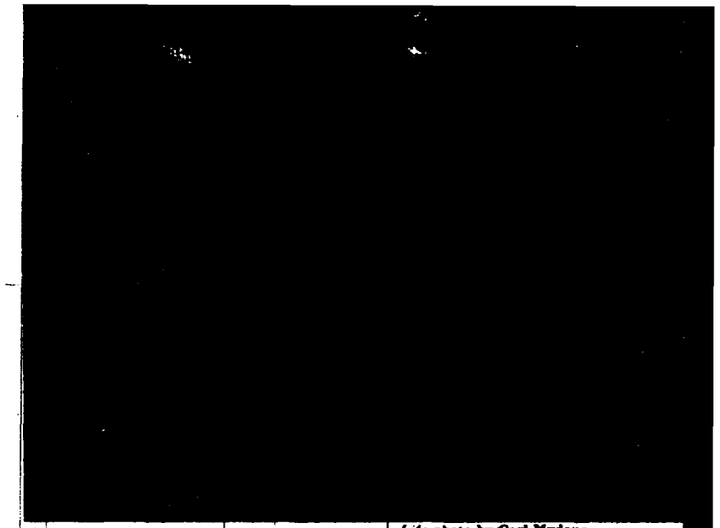
AFTER the battle of Damortis, our cavalry was assigned to cover the withdrawal of the infantry to the south. . . .

There was barbed wire on both sides of the road, so we couldn't deploy. If a man was knocked off his horse he was trampled. The rest of the regiment went galloping down the road with bullets going by on both sides. I heard Major T. J. H. Trapnell calling my outfit and found him by a bridge. He wanted to defend the bridge, but we seem[illegible]t that moment L[illegible]eterinary Corps came up wi[illegible] wasn't blasted off the road I will never know. I helped them push it down and pour gas on it and the bridge and light it. The fire just barely stopped the tanks from crossing the bridge and getting at our infantry.

On the way back we had to go through Damortis. Japanese patrols had slipped into Damortis on a flank and effected a mild encirclement. There they were in our rear. The regiment went through Damortis fast—through mortar, rifle and machine gun fire, even shells from Jap 47mm tank guns. There was no sleep that night of December 22nd.

The following morning about dawn, the Japanese attacked—throwing fire from long range. Machine guns chattered on both sides. We withdrew troops, as we usually do by delaying action, to Pozzorubio. We had to spend the day in foxholes.

That evening we were ordered to withdraw again—about 15 miles—to Binalonan. Everything imaginable was on the road—trucks, infantry, tanks,—all mixed up in the pitch darkness that concealed us from planes. At Binalonan we managed to get a few hours rest for the first time in four days. By dawn we heard firing from the outposts and were hurriedly called into dismounted action to hold against what appeared to be an attack by an unknown number of tanks and, without any question, a superior force of Jap infantry who had ridden down in confiscated red buses. . . .



Life photo by Carl Mydans.

Captain Wheeler at the head of the Machine Gun Troop, 26th Cavalry, a short time before the outbreak of war.

After this fight we dropped back again to Tayug. On Christmas Eve we ate for the first time in 48 hours—canned corned beef, asparagus tips, hardtack and coffee.

All this time the other divisions and regiments were pouring into Bataan behind us. During Christmas night we withdrew south of Tayug and reached Umingan after a 13-mile march, which is plenty tough in this country. Some of us fell asleep in our saddles on the way. . . .

The Philippine Scouts were absolutely splendid. Again and again, when we came in so tired we couldn't see straight, I would watch them going miles away to find some sort of hay for the horses. We kept up the daily withdrawals until about Dec. 28th, when our last position covered the final closing of the "Gate to Bataan."

After fighting a brilliant rearguard action all the way across Luzon, a part of the 26th Cavalry reached the China Sea side of Bataan and went into immediate action in the Battle of Moron.

This first-hand account, told by Captain Wheeler to Melville Jacoby, appeared in the March 2, 1942 issue of "Life," with whose permission it is reprinted here.

Captain Wheeler, now a prisoner of the Japanese, was awarded the Distinguished Service Cross.

Then we were cut off and forced to take to the mountains as the only route of withdrawal. We rode off into the hills and wandered for three days over the mountain trails—leading our horses and eating what little food there was in the saddlebags. . . . Finally we made Bagac on the China Sea side of Bataan. We had plenty of rest and most of the missing came in.

The Battle of Moron

About January 16th we learned that the Japanese, with artillery, were moving south along beaches and over trails toward Moron. The Philippine Army outfit was ordered to attack, with my mounted troop as advance guard. Under the very reassuring sound of our artillery, we moved forward across a stretch of rice paddies into the woods which surrounded the town. Lieutenant Ramsey volunteered to lead my advance guard into Moron, where, as he well knew, there was already a battalion of roughly 300 Jap infantry.

As we neared the town our artillery barrage lifted and left an unearthly quiet. Riding in between the houses with pistols raised, we did not know what was going to hit us, but knew something would. Halfway to the town square I heard Jap machine gun fire—a characteristic snapping sound caused by higher velocity and smaller projectiles than ours, and unmistakable. I rode at the head of the advance party as we moved up. When we were fired upon, we turned around, rode back and went into dismounted action. We tied our horses between nipa huts, then moved forward down the road with men in each gutter along the sides of the houses.

A messenger came galloping back from Lieutenant Ramsey saying he had been ambushed by an enemy force with machine guns, and he wanted support quickly. From there on, it was simply a matter of cautiously moving up under heavy rifle fire to Lieutenant Ramsey and his men. They had taken cover as best they could behind coconut trees and in a ditch. One was dead, three wounded in a small area. It looked like more.

Slowing up the Jap advance. The bridge was later set on fire and destroyed. This is one of the last pictures that arrived from Bataan.

Wide World

Pedro Euperio, Pvt. 1st Cl., a 19-year-old raw recruit by Scout standards, saw three soldiers ahead wearing Philippine Army uniforms. He moved forward until they fired, then shot quickly—they were Japanese disguised as Philippine officers. Despite his wounds, Euperio crept on up until ordered to lie down. About the first thing I saw was Euperio drenched in blood, propped against the house—a pistol in his one good hand, directing us how to move up, indicating points under enemy fire.

We attacked first straight through to the beach. We fired where we heard fire and were happy to see when we went through the bushes that there were dead Japanese. We got straight through to the water, reorganized and attacked around Ramsey. Using him as a pivot, we swept south and killed Japs under houses, in trees and under bushes. About 20 broke and threw down all equipment, even guns, in the high grass. I was surprised to see two of my men with bullet holes straight through their helmets, yet unscratched. I had Private Gonzalez behind me and as I went along I grabbed the Jap maps, compasses and so forth and hung them on Gonzalez. . . .

"All Hell Broke Loose Again. . . ."

Suddenly we heard a machine gun from the river, and all hell broke loose again. We realized that what we had been fighting was an advance group, and that a battalion was forming across the river.

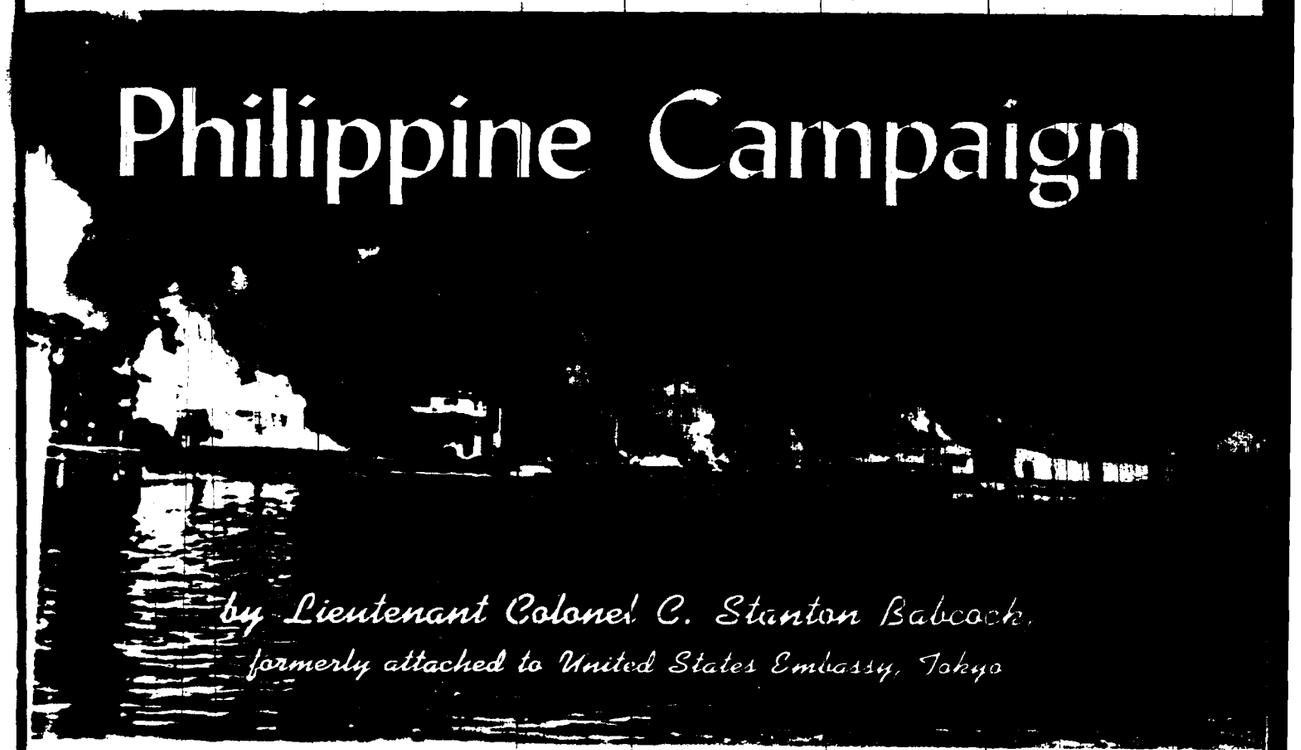
We fought in small groups, every man for himself. Sergeant Tolentino ran forward under heavy fire and threw a hand grenade in a house that had been giving lots of trouble. Later he grabbed a light machine gun and began chasing a squad of Japanese down the road—moving in on them absolutely alone and without fear. I grabbed a rifle and followed him because a machine gun does need a little security. We had no cover but it seems to me that if you run around and fight hard, you don't get hurt—you keep moving aggressively, and it's the best defense.

Moron was a hail of bullets that never stopped. There were so many in the air that if you had put out a sheet of cloth, in five minutes it would have been riddled. At first, knowing the Jap tactics, I had a nauseated sensation of being trapped—thinking they had let us have our fun and were sweeping around behind us on both flanks. We were outshooting them and could—any day.

We fought all day. . . . The Scouts were loyal to the nth degree—all they said were things like: "Don't go there, sir, I will go." "They are shooting from that, sir." "Be careful, Captain."

Late that afternoon our mission had been accomplished—the town was seized and held adequately and we fell back again in reserve. . . . Moron, incidentally, was held for 24 hours after our withdrawal and the final withdrawal was by order. . . . The battle for Moron was a successful offensive operation.

Philippine Campaign



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

Bombing of Cavite, December 9, 1941

THE war in the Philippines began early on the morning of December 8th when the Japanese, following the pattern that they had mapped out for all their campaigns, struck from the air with tremendous force at all of the important air bases in Luzon. The attackers converged from all directions—army bombers from southern Taiwan, navy planes from carriers cruising in the China Sea and the Pacific. The results that were secured appear to have been excellent.

Capitalizing on the initial surprise, the raiders blasted the planes and fields of the American Far Eastern Air Force until at the end of two days Imperial Headquarters could announce that more than one-third of the American air strength in the Philippines had been rendered inactive.

Japanese losses were light, for their bombing, which was done from a very low altitude, not only destroyed planes and hangars, but cut up the runways so badly that American fighters were unable to get off the ground the first day. The destruction of bombers and fields from which squadrons could operate, made it virtually impossible thereafter to interfere seriously with Japanese landing operations.

Preliminary Landings

The first landing was made just before dawn on December 10th at a point about five miles south of Vigan on the island of Luzon. The initial landing party consisted of bluejackets and marines who covered the debarkation of a reinforced brigade of army troops. The opposition was extremely weak. In fact, the only American troops encountered were a scout car platoon of the 26th Cavalry—on reconnaissance duty on the west coast road—which happened to be on the spot when the first Japanese units came ashore. The Japanese were not even delayed by the four scout cars, and succeeded in damaging one and capturing another. They were, however, unable to prevent the platoon from sending a radio message to regimental headquarters near Lingayen Gulf, and in this way the first news of a hostile landing reached MacArthur's headquarters.

The troops used in this operation, as well as those used in the subsequent landing at Lingayen, had been carrying out landing operations all summer along the China coast, from Canton to the Indo-China border. Little if any military advantage resulted from those operations and it would now appear that they had been intended solely for training. If so, they were well worth the effort, for the two landings at Vigan and Lingayen were effected rapidly and with a minimum of confusion.

The Invasion of the Philippines from the Japanese point of view.

Author's Note

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

Japanese accounts are nearly always vague, and in some cases conflicting, for the ideas of different agencies of the Government are frequently at variance in regard to the impression they desire to make on the public. Thus, the military would sanction the publication of a personal experience story which admitted temporary reverses and heavy losses, in order to play up the courage and fighting spirit of the Japanese soldier, while the bulletins issued by the Bureau of Information were inclined to minimize all enemy efforts, in an attempt to make the white man appear as an incompetent and a coward.

The information available, virtually all of which was published only in the vernacular, has been sketchy and disconnected, issued piecemeal over a period of six months, so that its translation and organization into a coherent story has presented many difficulties.

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. Every effort has been made to present the material without injecting either my own opinion or that of any one else, except insofar as was necessary to choose between conflicting versions of the same action.

Allied reports of the various events will undoubtedly disclose many discrepancies. It is believed, too, that the Japanese occasionally deliberately falsified dates in order to cover up reverses or to create an impression of greater speed or continuity in their campaigns than was actually the case.

It should also be remembered that all dates are one day advanced over those used in the United States. It is, therefore, the 8th of every month that the Japanese celebrate as Imperial Rescript Day, to commemorate December 8, 1941, when the Empire precipitated the war which they believe will liberate the races of Greater East Asia.

By the time that American bombers arrived on the scene at Vigan, some two hours after daylight, the Japanese had all of their troops and a good part of their supplies ashore and the air above filled with naval fighter planes from carriers of the escort force.

The American attack, which was carried out by eight light bombers (probably Douglas A-20-A's), was, according to Japanese reports, well conceived and boldly executed. The planes came in at an altitude of less than one hundred meters and dropped 250-pound bombs on the transports anchored in the roadstead and on the escort vessels which were patrolling the area. The Japanese admit the loss of one transport and one "warship" and the damaging of another transport. But if the fleet was anchored as described, and if the attack was in fact made from such a low altitude, considerably more damage must have been inflicted, although it should be remembered that the immediate effect on the landing force was negligible because most of its personnel and matériel were already ashore.

The Japanese claim that all of the American bombers were shot down by their protective fighters. Though this is undoubtedly an exaggeration, American losses must have been heavy, for the second attack, made some two hours after the first, was executed by only three planes.

The landing at Legaspi on the southeastern tip of Luzon, was carried out by a similarly organized brigade which had been assembled in the Marinas. The assault took place at dawn on December 12th and apparently was unopposed. Coming two days after the landing at Vigan and at the opposite end of the island, it resulted in delaying the despatch of American reinforcements to the northern sector. The timing of these two preliminary expeditions was excellent, for they kept the main American forces immobilized in the central plain awaiting the main Japanese landing. Both advance units behaved as though they were establishing beach-heads to protect the landing of larger forces. As the American Air Force had been driven from the air, except for a fighter squadron or two used to protect the concentration of the main army north and east of Manila, MacArthur's headquarters was deprived of its most important reconnaissance agency and could only wait blindly for the blow to fall.

Main Landings: Lingayen and Lamon Bay

All the Japanese actions up to that time had indicated that their main attack would come at one of the two places where landings had already been effected, *i.e.*, Vigan and Legaspi; and the defensive preparations of the Americans apparently were based on that assumption. The subsequent landing of the two main invasion forces at Lingayen and at Lamon Bay is regarded as one of the most brilliant moves of the entire war in the Far East. It required the Japanese to execute their main landings in the face of enemy resistance, but it split the American forces to such an extent that they

were unable to bring sufficiently strong forces to bear at any one point.

The troops sent to attack the beach-heads at Vigan and Legaspi were threatened in the rear when the main landings came at Lingayen and Lamon Bay, and had to fall back before they could accomplish their mission. This in turn enabled the Japanese advance expeditionary forces to facilitate the main landings by flank attacks on the American troops opposing those landings. This propensity for doing the unexpected, and a willingness to take great risks, have characterized the Japanese actions throughout the war in the Far East, and contributed in no small degree to their initial successes.

The first landing in force was made at Lamon Bay,

European.

Japanese troops attack a strong point of American resistance on Bataan. Photo arrived in the U. S. by clipper before the fall of the Philippines.

east of Manila, on December 22nd. The only opposition came from the normal beach guard units, for the bulk of the defending troops in the southern part of the island were engaged with the Japanese brigade at Legaspi. Sufficient American troops had been sent to that area to overcome the Japanese already established ashore and so prevent the landing of additional troops in that same area.

Had the Japanese attempted to land their main force at Legaspi they would have found their covering force driven back onto the beach, and it is highly probable that that part of the expedition would have ended in failure. But the bold landing of a large expedition at Lamon Bay without the protection of a covering force threatened the rear of the American troops pressing on the beach-head at Legaspi, forced their withdrawal, and destroyed the last chance the Americans had of defeating the Japanese in detail and preventing them from concentrating a large army on the island.

After this only one thing could save the Philippines: a successful attack by the main American army against the army advancing on Manila from Lamon Bay. This MacArthur apparently prepared to do, but before the battle could be joined in earnest there came news of the successful landing of another large contingent at Lingayen, and there was nothing left but to abandon Manila and withdraw to the Bataan peninsula, where the numerical superiority of the Japanese troops would be offset somewhat by the narrow front on which they would have to attack.

The Japanese attack on the beach at Lingayen on December 24th was further evidence of the perfection of their timing. Lingayen is the only spot on the west coast where a large force can be landed, and it was of course defended by all the American troops that could be made available. Any unassisted attempt to land there would have been exceedingly costly to the Japanese and might even have ended in failure. The first attempts to land in the early morning were repulsed; and the second attack, made after furious bombing from the air and shelling from the fleet, though successful, was costly and was stubbornly contested, and had actually been brought to a standstill by about four o'clock that afternoon.

Just then, when one more counterattack from the exhausted and outnumbered Philippine-American troops might have driven the invaders into the sea, the Japanese column, which had landed at Vigan and had been moving south by forced marches, arrived at San Fabian on the gulf and from there launched an attack on the right flank and rear of the lightly-held American defense lines. The attack was repulsed, but the troops used to repel it were the last of the reserves (a battalion of the 57th Infantry, P.S.),[1] and their diversion to that task prevented their being used in a counterattack against

[1] The Japanese reported the 57th Infantry. Actually, it was the 51st Infantry, P.A.

European.

This photo from neutral sources states that a Japanese landing party has reached shore in the Solomons Islands. This action is similar to landings made in the Philippines.

the Japanese troops which had fought their way ashore. During the night the Japanese succeeded in landing reinforcements, and the last chance of repelling the invasion at this point was lost.

The next two days were employed by the Japanese in enlarging and consolidating the beach-head, taking over and repairing the docking facilities at Lingayen, and landing more troops and supplies. About five divisions with Corps and auxiliary troops composed the expedition, and such was the thoroughness of the Japanese organization and the speed with which they worked that by midnight of December 26th, all these troops were in position and ready for the push south.

Advance to Manila

When it became evident that the beach defense positions were no longer tenable, the American forces—which apparently consisted of portions of the First Philippine Division with the 26th Cavalry (Philippine Scouts) and a battery of horse artillery attached—withdrew during the night to positions in the vicinity of San Carlos. Any further attempts to interfere with the Japanese landing would have involved the American troops in an action from which they probably could not have extricated themselves, and the road south to the plains around Manila where MacArthur's main army was concentrating would have been completely undefended.

The Drive South

When the Japanese jumped off on their southward drive at dawn on the 27th, they found that only a small force, consisting of the 26th Cavalry with its attached artillery and a few engineers, had been left to maintain contact with them and to destroy the roads and bridges in an effort to delay their advance. The Americans made no effort to hold any positions even long enough to make the leading Japanese division deploy, but contented themselves with employing the individual rifle troops of the cavalry as independent security detachments for the engineer working parties while the latter were engaged in their demolition work. It was a typical cavalry delaying action, with the Americans holding up the Japanese advance guards at the road blocks just long enough to make them halt their mechanized vehicles and deploy their cyclist infantry for an attack.

Before the attack could be driven home, the engineers would complete their work of destruction, and the cavalrymen would fade away through the woods, bamboo thickets, and cane brakes to reassemble and repeat the operation three or four miles farther down the road. Meanwhile, the Japanese would be left with two or three hours repair work on their hands and the problem of setting up their own outpost line to cover their engineers while the work of reconstruction went on.

The Japanese had organized their advance forces in the best possible way to cope with these tactics. Four years of operation against lightly armed guerrilla forces in China had taught them that the spearhead of their advance should be composed of light tanks and a mobile body of troops such as cavalry or cyclist infantry. The tanks would suffer comparatively light losses when opposed by light cavalry, and the light mobile troops could drive off the enemy covering forces when the tanks were held up by a road block or other demolition work.

In China the tanks were used as the point of the advance and, acting aggressively, pressed forward along the road until held up by a road block. If the terrain permitted, they attempted to outflank the resistance in their front. But if the site of the demolition work had been located in a narrow defile, the leading tanks opened fire from the road on any targets they could find. The supporting cavalry was then brought up, dismounted, and used to drive off the enemy covering forces. This allowed the engineers to repair the damage, after which the advance was resumed.

These tactics were employed by the Japanese on their march south from Lingayen, although they had no cavalry. That branch was not considered suitable for use in landing operations, because its transport by sea was uneconomical and difficult in the face of active resistance. In its place, they employed cyclist infantry. These required no additional transport space for carrying horses and forage, and were also useful as infantry in the assault on the beach. Later, mounted on bicycles, they possessed sufficient mobility to accompany and support the advance mechanized units.

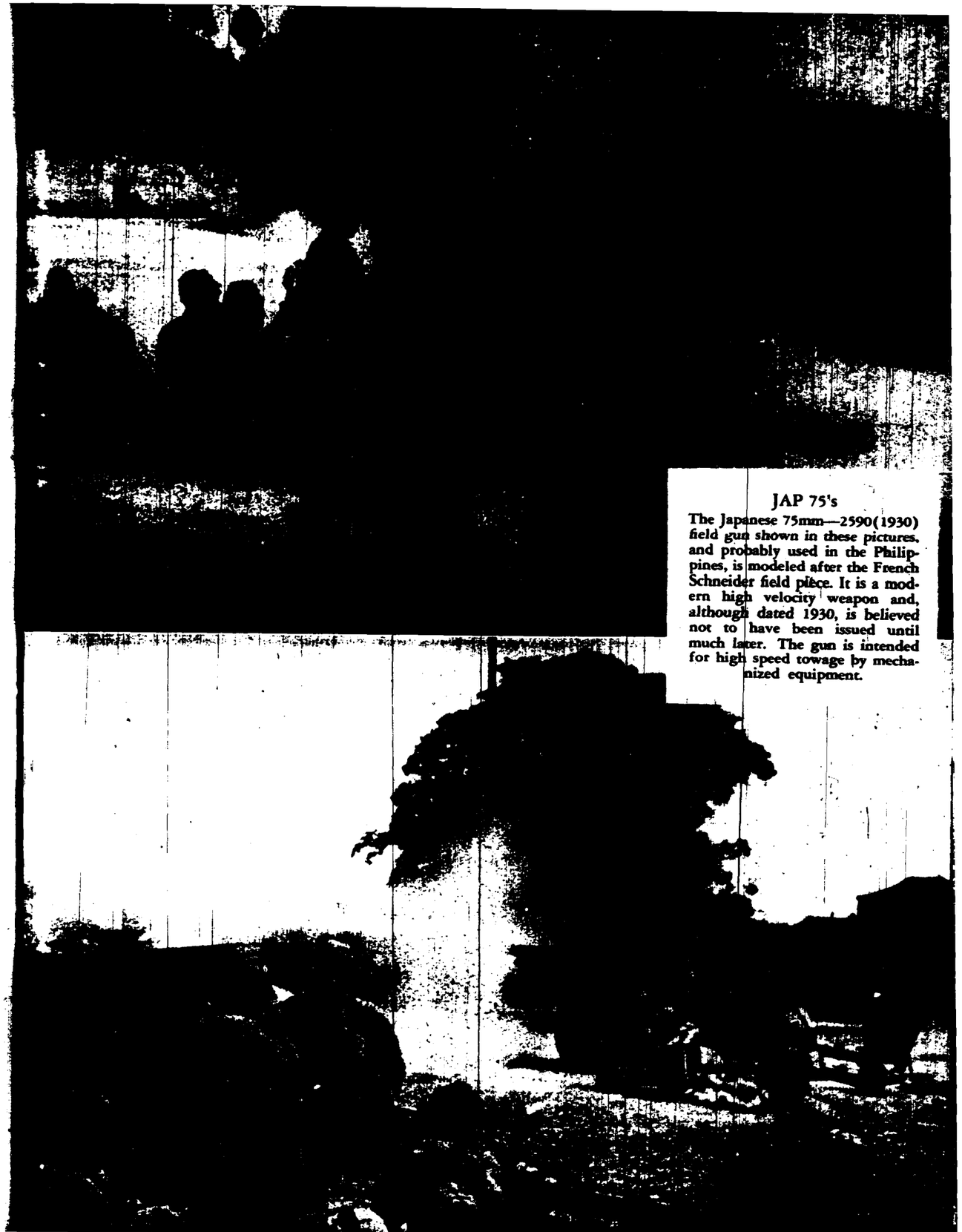
From December 26th, when the advance on Manila from Lamon Bay and Lingayen began, all the efforts of the Japanese were directed towards bottling up the American forces in the vicinity of Manila and preventing their occupation of the Bataan peninsula. Their two invading columns were ideally situated to accomplish this, for one was approaching from the east and another was pressing on Manila from the north, while the American army had to withdraw to the west across the very front of the latter Japanese unit.

This entailed almost superhuman efforts on the part of the two small American rear guards which were given the mission of delaying the Japanese advance until the withdrawal could be accomplished. They performed their work well, for the Japanese did not enter Manila until January 2nd, and by then the main American forces with the bulk of their equipment were safely in position on Bataan.

The virtual annihilation of the 26th Cavalry and two battalions of the 57th Infantry[2] speaks well for the gallant behavior of the rear guards which made this move possible.

[2] 51st Infantry.

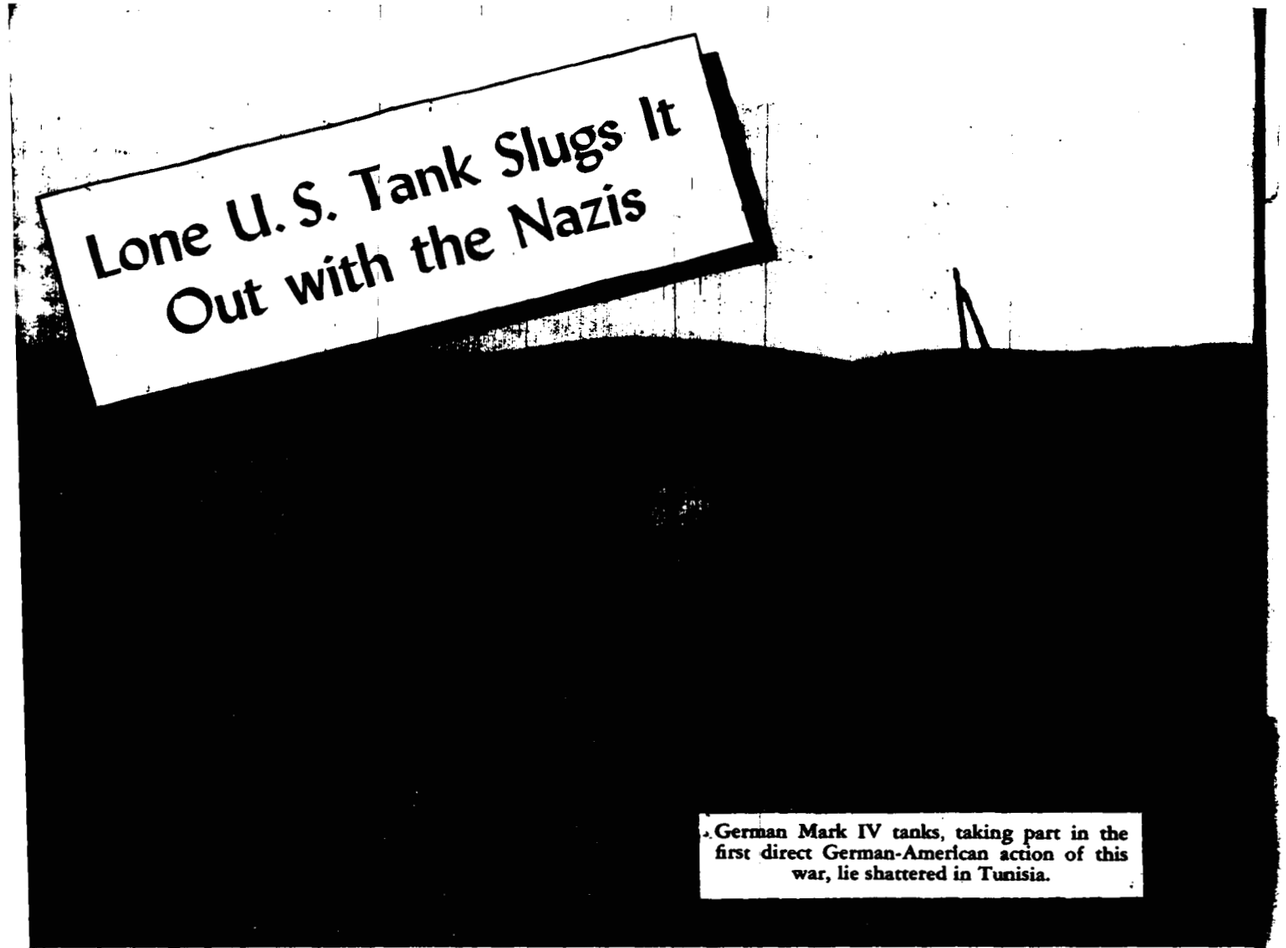
(This article will be concluded in the next issue with a graphic description of the siege of Bataan and the fall of Corregidor.)



JAP 75's

The Japanese 75mm—2590(1930) field gun shown in these pictures, and probably used in the Philippines, is modeled after the French Schneider field piece. It is a modern high velocity weapon and, although dated 1930, is believed not to have been issued until much later. The gun is intended for high speed towage by mechanized equipment.

Lone U. S. Tank Slugs It Out with the Nazis



German Mark IV tanks, taking part in the first direct German-American action of this war, lie shattered in Tunisia.

WHEN the Germans launched their unexpected attack on the lightly held American positions in Tunisia in early February, one lone American tank and crew boldly took on a running fight with a column of German Mark IV's and one giant 52-ton Mark VI. They destroyed four of the Mark IV's, rescued a column of American trucks and half-tracks, and saved an estimated 300 lives.

Here is the story of the embattled tank, the "Texas," as told by its commander, Lt. Colonel Louis V. Hightower, and reported through Associated Press by Harold V. Boyle:

We pulled out about 7 o'clock that morning while about thirty tanks were attacking us at a hill called Djebel Lessouda, not far from Faid.

When we got there, fifteen Mark IV's were ahead of us and twenty-two more on the crest to the left.

We sat there and shot at them, knocked out about five or six, and lost three ourselves. Then the twenty-two tanks came over the hill toward us and turned out to be fifty, including at least four of their giant Mark VI's which so far as I know have never been in action on any other front before.

We drew back to cover as they tried their usual trick of envelopment. We kept pivoting back and shooting at first one German flank and then the other. We kept from being surrounded, but at a heavy cost—then their dive bombers caught us, and came over in wave after wave.

They didn't hurt us much, but smoked us up so that we couldn't see through the dust. We pulled across two miles of open field into Sidi Bouzid while our artillery covered us by using their 105mm howitzers for direct fire. They were hitting German tanks at every pop, and I saw three go up in flames with just three rounds.

We reorganized in the town, but after two hours they began another huge double envelopment. We got our artillery and two supply trains safely out, and then started down the road to Gafsa ourselves.

After getting all our tanks away except two light and two mediums we took out across country and came across nine Mark IV's and one Mark VI about 700 yards away. They were opening fire on one of our columns of half-tracks and light vehicles, which were completely helpless before them.

The guns on the other medium tank were jammed, and since the light tanks were too thinly armored for the task before us, I sent all three away and signaled the column of our light vehicles to swing behind us.

As the Germans turned in for what they thought was a picnic, we let go and struck their commander's tank with our third shot and stopped him as cold as if he had hit a tree. We got a second tank with one shot.

Pulled Away Firing

The eight remaining Nazi tanks then braked to a stop, but we kept going at about fourteen miles an hour, and fired steadily as we pulled away. We hit one tank three times before discovering that it was a Mark VI. I saw the last shell burst against him but don't know whether he was disabled. However, he didn't fire any more.

As another Mark IV came up to him, we hit it at the same range with one shot. It went through the turret and the tank broke into flame like a flower.

Another Mark IV approached the burned tank—which was stupid because we had only to bring over our gun a hair—and he flamed up with our first shot. Then our gun momentarily jammed as the five remaining Mark IV's really opened up on us.

We could actually see the shells coming along close to the ground like a ricocheting stone in water.

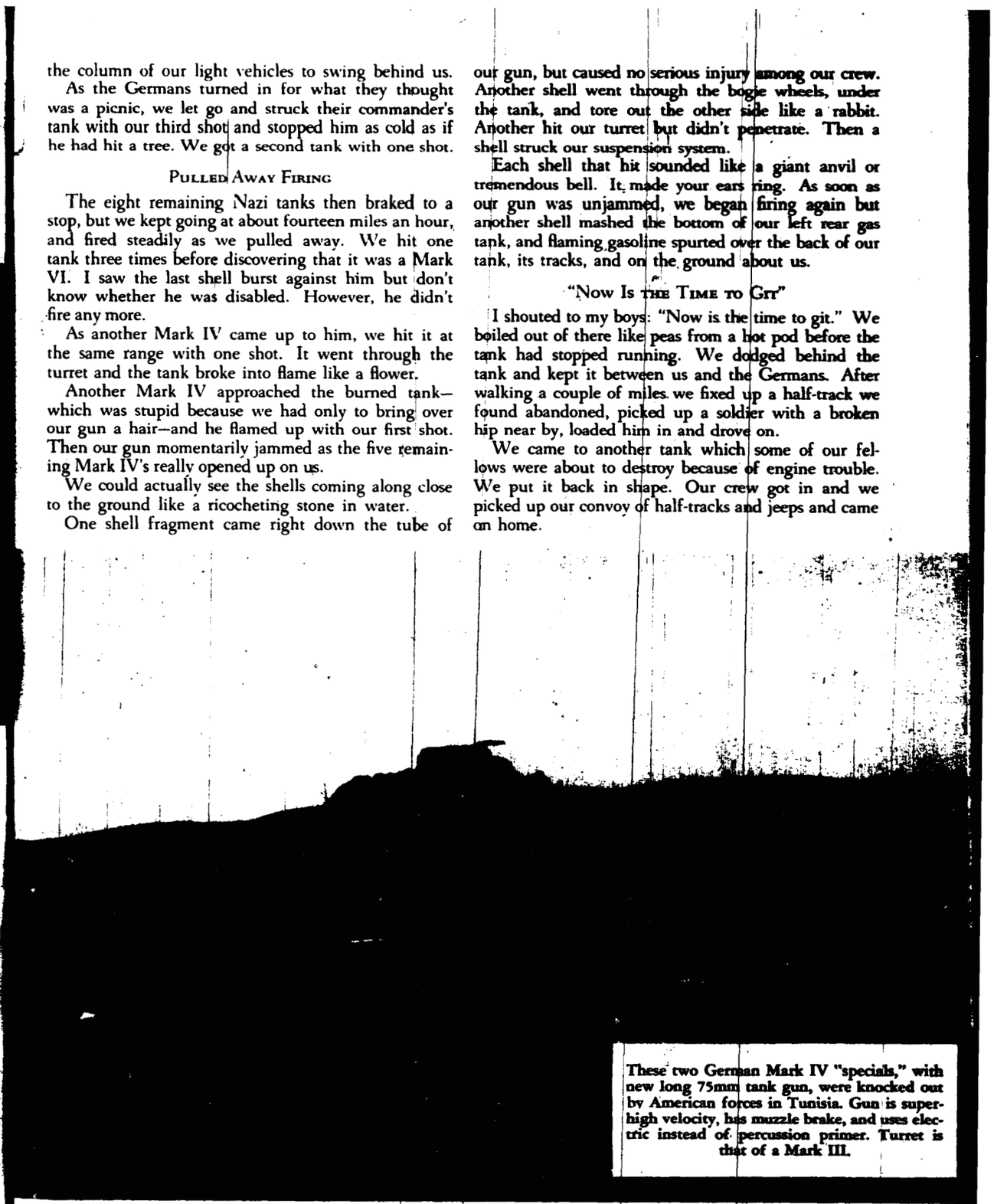
One shell fragment came right down the tube of our gun, but caused no serious injury among our crew. Another shell went through the bogie wheels, under the tank, and tore out the other side like a rabbit. Another hit our turret but didn't penetrate. Then a shell struck our suspension system.

Each shell that hit sounded like a giant anvil or tremendous bell. It made your ears ring. As soon as our gun was unjammed, we began firing again but another shell mashed the bottom of our left rear gas tank, and flaming gasoline spurted over the back of our tank, its tracks, and on the ground about us.

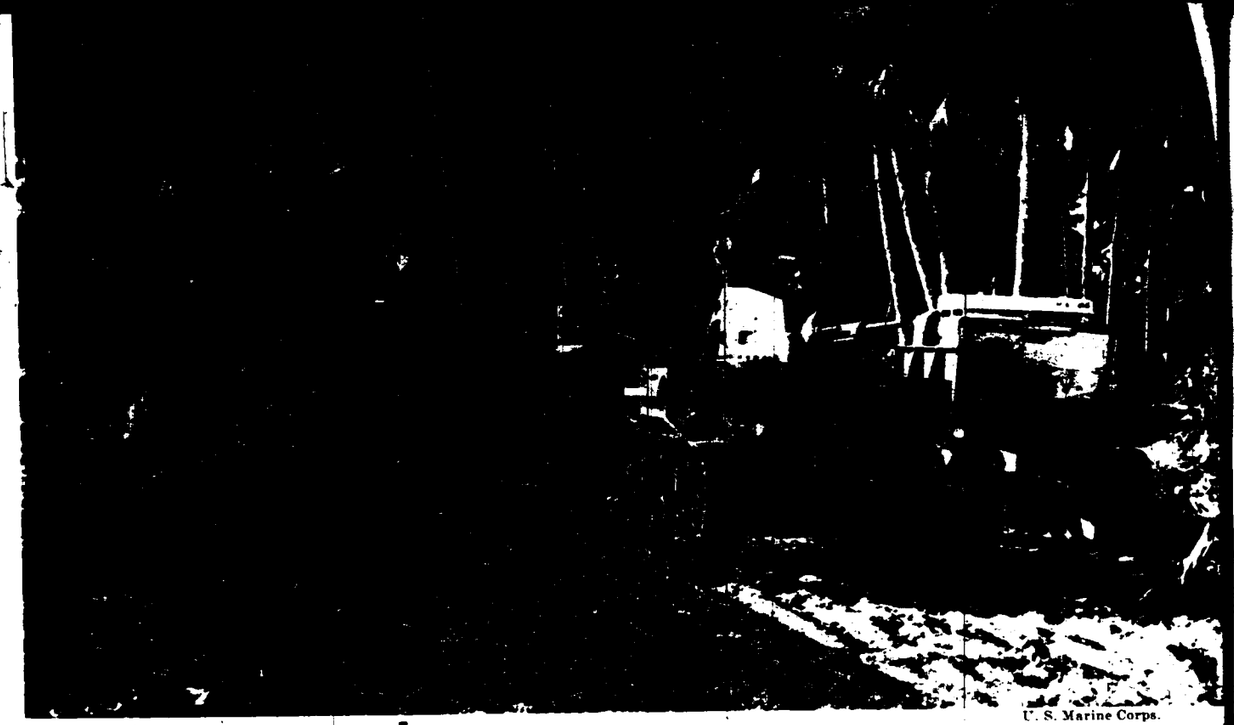
"Now Is the Time to Grr"

I shouted to my boys: "Now is the time to git." We boiled out of there like peas from a hot pod before the tank had stopped running. We dodged behind the tank and kept it between us and the Germans. After walking a couple of miles we fixed up a half-track we found abandoned, picked up a soldier with a broken hip near by, loaded him in and drove on.

We came to another tank which some of our fellows were about to destroy because of engine trouble. We put it back in shape. Our crew got in and we picked up our convoy of half-tracks and jeeps and came on home.



These two German Mark IV "specials," with new long 75mm tank gun, were knocked out by American forces in Tunisia. Gun is super-high velocity, has muzzle brake, and uses electric instead of percussion primer. Turret is that of a Mark III.



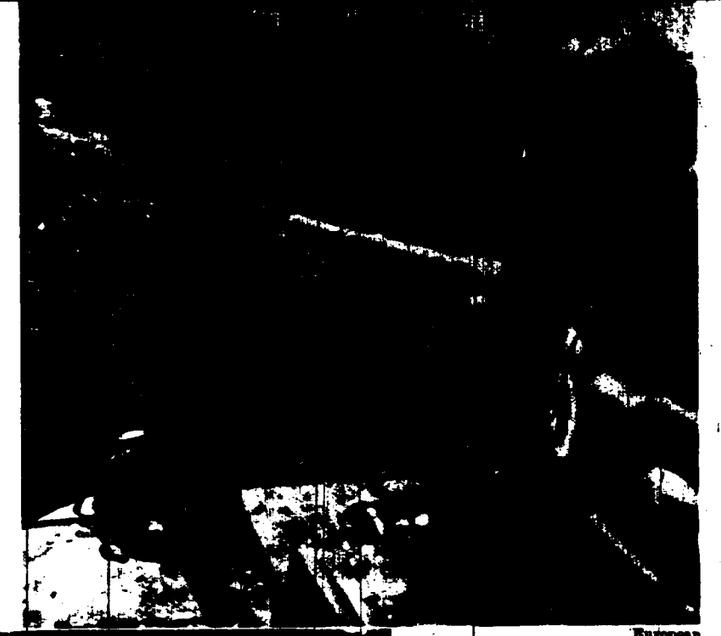
U. S. Marine Corps.

Guadalcanal

U. S. Marine tanks rumble through palm trees toward the front lines to assist ground forces turn back counterattacking Japanese at Guadalcanal.

Buna

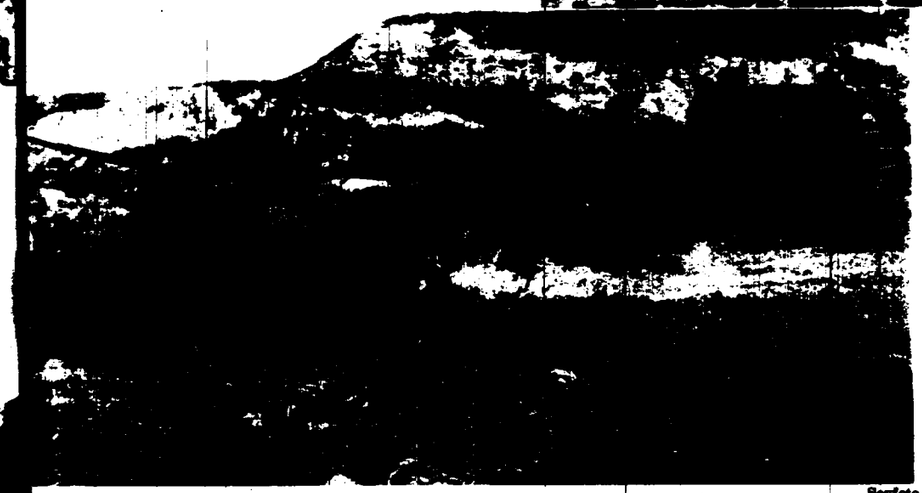
General Stuart tank advancing in Buna. Australian soldiers are seen marching ahead of the tanks into the tough battle, which the Allies finally won.



European.

Russia

American M-3 General Stuart tanks cross a mountain river in the Northern Caucasus.



Bevfoto.

Tunisia

A self propelled 105mm howitzer or M-7 ready to roll in Tunisia.

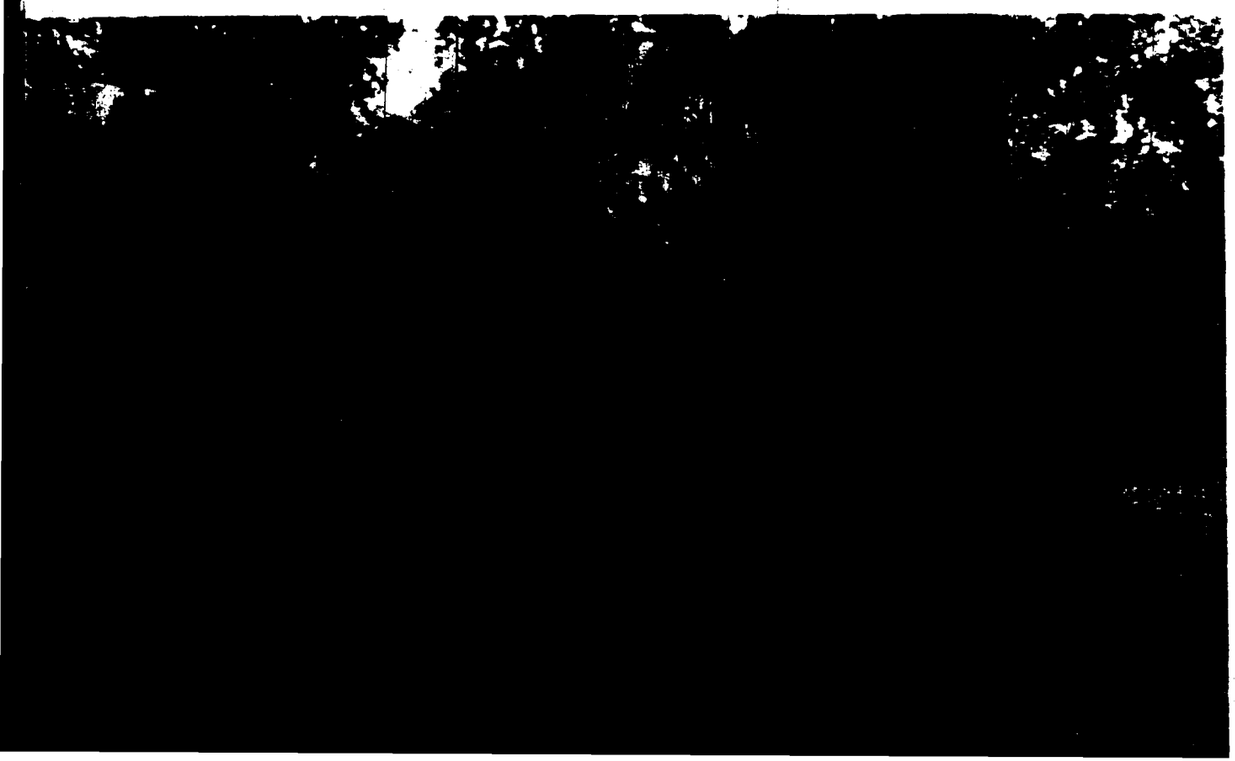
Wide World

Libya

General Sherman, U. S. built 30-ton tanks move up towards the Alamein line before the great Eighth Army offensive started. The General Sherman has a speed of 30mph, and its armament includes a 75mm gun in the turret with a 360 degree traverse. It has an all-cast body built in the U.S.A.

British official photograph.

American Bivouac in North Africa

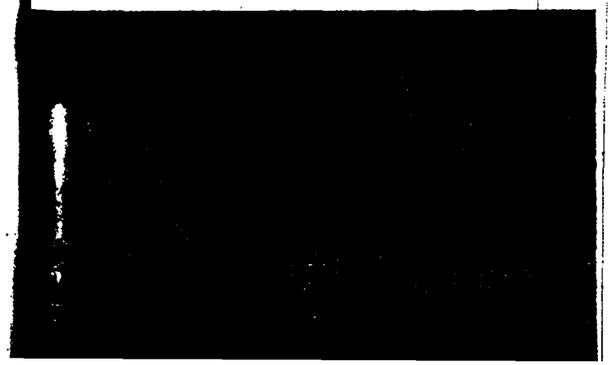


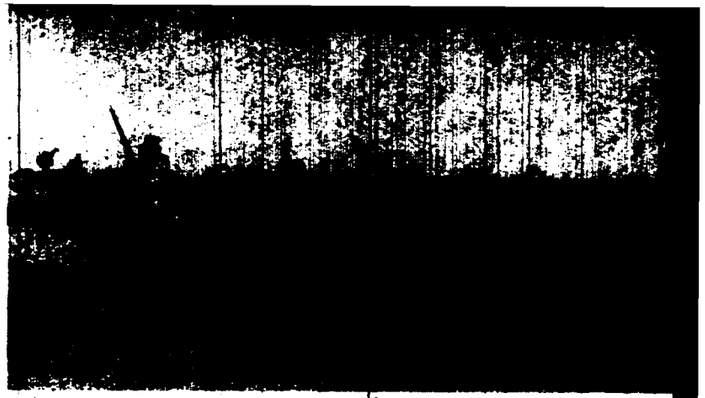
The Fighting French Reached Tripoli from South and East

TWO Fighting French groups participated in the Allied drive that forced Rommel from the gates of Alexandria to the relative shelter of the Tunisian Mareth line. One, under the command of General Edgar de Larminat, moved along with the British Eighth Army all the way from El Alamein to the "shores of Tripoli." Most of these men were veterans of the Battle of Bir Hakeim. The other column, under the command of Brigadier General Jacques Leclerc, made a record-breaking trip from the Tchad region—the hub of Africa—right up to Tripoli. They fought all the way, and arrived in schedule time to occupy Fezzan, now one of the missing jewels of the Italian Crown.

These two Fighting French groups differed in size and equipment, as the military situations they had to face were obviously different. The troops under de Larminat had to pursue a strong armored force of well trained and equipped Germans and Italians. The group under General Leclerc had to accomplish a long trek across mountains and desert, and it had to attack well defended and entrenched positions surrounding the Italian oases and the little villages that were the anchors of Axis communications across that region.

Equipped with British tanks, these Fighting French tank troops, along with their British allies, chased Rommel all the way from Egypt to Tunisia.





Troops of the famous French Camel Corps took part in reconnaissance work for Fighting French Brigadier General Leclerc's light armored column.

General de Larminat's troops used Brenn guns, medium tanks, and artillery in their march to the west. General Leclerc's forces used camel troops for reconnaissance and cleaning up purposes, light trucks, armored cars, and light artillery in their fight north to Tripoli. Both groups are now placed under the command of General de Larminat, since General Leclerc has been appointed to General Montgomery's staff.

The most severe fighting of this column took place at Cum el Araneb, Catroun and Mizda. Despite the constant fighting, skirmishes, and the great difficulties encountered in supplying the column with the necessary food and water, the losses were light.

To bring a full truck-load of gasoline from the Cameroons, where gas is unshipped, to Mizda, the town where the last fighting of the column took place, it was necessary to start with three fully loaded trucks. Because of the amount of arms and ammunition found in the conquered Italian outposts, however, the problem of supply in munitions and arms was simplified.

A small formation of the Free French Air Force kept the column informed of the movements of the enemy, maintained communications between the various elements of the column and, when necessary, brought the indispensable supplies.

On several occasions this flying group was attacked by Italian fighters. Once it managed to damage two of them which were later found in very bad shape on the Sehba airdrome when that base fell into the hands of General Leclerc's men. Many Italian soldiers were made prisoners, but it has not yet been possible to ascertain the exact number.

The column arrived in Tripoli soon after the Allied troops from Egypt.

The Fighting French light armored division that accompanied the Eighth Army from El Alamein in its pursuit of Rommel's forces across the Libyan desert, continued on into Tunisia.

Now the German *Swastika* flies no more in Bengardane, where the French *Tricolor* has been run up again by the Fighting French—a symbol of things to come in France proper.

MODERN warfare is characterized by the massed utilization of motors and multiform technique on land, on water, and in the air. This characterization has exerted its influence on tactics, and has also modified fighting formations, but from experiences of the present war, it has been proved that the value of cavalry as a modern arm of the service has not diminished.

Equipped with the powerful, first-class weapons created during the years of the Stalinist Five-Year Plans, the Red cavalry has successfully stemmed the advance (and started the retreat) of the German armored hordes. The charred remains of burned and wrecked tanks, the twisted frames of guns and machines, as well as thousands of corpses, lined the roads along which the Germans advanced into Russia. (The same roads over which the Germans are now retreating.)

Birth of Red Army Cavalry

Modern Soviet cavalry is an outgrowth of centuries of Russian cavalry tradition. In the military annals of the Russian people, the cavalry has always shown its heroic fighting skill, and its able and bold action has often decided the issue of battle.

During the First World War, the Russian cavalry had difficulty in showing its fighting abilities: first, because of the positional warfare that was waged, and secondly, because of the number of tsarist generals who failed to make proper use of this arm. In fact, the inefficient use of cavalry in almost ALL of the armies during the First World War, caused many shortsighted "theoreticians" to claim that cavalry was powerless against modern technique—that its rôle as an independent arm of troops was over. In this fallacious viewpoint, they contrasted the "new technique of war" with the former "purely saber cavalry," instead of visualizing a re-armed cavalry with tactics adapted to conform with new technical equipment.

In Russia, during the Civil War of 1917-19, Stalin visualized the huge rôle of cavalry as capable of performing innumerable independent missions. He stressed its mighty power when used in large forces rather than in small dispersed units. With great insight, he foresaw these large cavalry forces as one of the most decisive factors in the strength of the Red Army.

This new organization was started when the 4th Cavalry Division was formed in December, 1918, near Tsaritsin (now Stalingrad). Later, in July, 1919, with the addition of the 6th Cavalry Division, the First Cavalry Corps in the Red Army was formed, under the command of General Budyenny. This cavalry corps immediately proved of tremendous significance and value by dealing the Whiteguard forces many defeats.

When the Whiteguard bands threatened the capital of the country in the autumn of 1919, Stalin proposed a brilliant plan for routing them by striking through Karkov-Donbas-Rostov. He employed large cavalry forces as the decisive means of carrying out this plan. On November 19, 1919, as a result of the success of this operation, Budyenny's cavalry corps was expanded into the *First Mounted Army*, commanded by Voroshilov,

Budyenny and Schadenko. This Mounted Army, under Stalin's direction, was the basic and deciding factor leading to the destruction of the enemies of the Soviet people on all the fronts of the Civil War.

Besides the First Mounted Army, other cavalry units also covered their standards with undying glory in the grim years of the Civil War. The cavalry division commanded by Tomin on the Eastern Front in 1919; the Second Mounted Army, formed at Stalin's initiative on the Wrangel Front during the summer and autumn of 1920; the 3rd Cavalry Corps on the Western Front in the summer and on the Crimean Front in the winter of 1920; the guerilla cavalry detachment in the Trans-Baikal and Amur region in 1921-1922; the 12th and 18th Cavalry Division in the Trans-Caucasus in 1920-1921; the cavalry on the Turkestan Front in the struggle against the Basmach bandits from 1919 to 1926—all these cavalry units showed by their fighting actions in the most varied circumstances what strategic cavalry is capable of doing when it is properly utilized and directed.

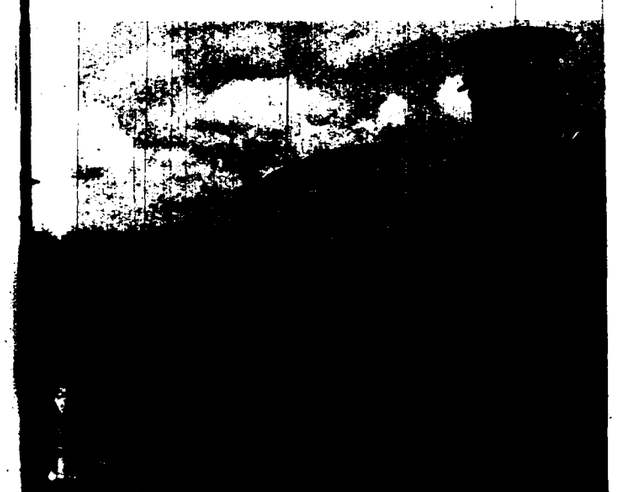
Thus, as far back as the 1920's, Soviet cavalry utterly refuted the assertion of the many "theoreticians" that "cavalry no longer played a rôle" in modern warfare.

Growth and Equipment

In the years of peaceful upbuilding that followed the Civil War, new arms of the service were formed in the Soviet Union—aviation, motor-mechanized units and others—but along with these, the Red cavalry continued to grow and perfect itself by acquiring new technical equipment.

In paying considerable attention to cavalry, Stalin was confident that cavalry units, fitted out with modern technique and well trained in military tactics, would find wide application in the impending war. In his greetings to the First Mounted Army on the occasion of its fifteenth anniversary (Nov. 19, 1934) he wrote: "Let us hope that the sharp sabers and the well aimed bullets of the Red cavalry will, when circumstances require it, serve the cause of the defense of our great country as it did in the not distant past."

This Red army detachment commander reports to Marshall Budyenny at an observation point. Lieutenant General Kureliumov stands behind the Marshall.



The Red Army cavalry was copiously equipped with machine guns and artillery of all types, trench mortar guns, tommy guns, means of antiaircraft and antitank defense, tanks, and armored cars. With these means, it acquired, more than ever before, the character of a powerful arm of the service, capable of waging all manner of warfare.

In actual operations at Lake Hassan (1939), in the encounters near the Halhin Gol River, and in the battles on the fields of Finland, the cavalry units had the opportunity to test their guns, improve their formations and to master modern forms of warfare. Soviet cavalrymen made a careful study of the experience of the latest wars in Europe, and on the basis of the conclusions drawn from this study, they reorganized the arm, improved their equipment, and prepared for combative action.

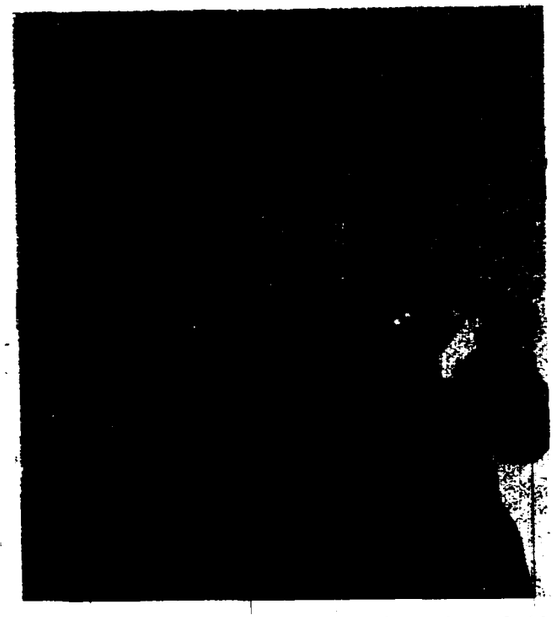
Soviet cavalry now comprises a manifold, well organized, formidable system of mechanized equipment and, in close coördination with land and air units, it presents a redoubtable force to the Hitlerite army, and particularly to their motor-mechanized detachments.

For the second year now the Red Army and the whole of the Soviet people have been waging a war of liberation against the German invaders, and the Red cavalry has completely justified the hopes of the leader of the Soviet people. By speedy maneuvering and the skilful combination of mounted and dismounted warfare, cavalry units, in coördination with other arms of the service, have inflicted and are still inflicting heavy defeats on the Hitlerites. Wherever the enemy has come up against Soviet cavalrymen, he has invariably been beaten.

Protecting the Withdrawal, 1941

In the initial period of the war, the cavalry of the Red Army carried out, for the most part, operations of a defensive character, which enabled their army units to fulfill two general strategic objectives: first, an orderly withdrawal to join the main forces of the army; and second, infliction of the maximum damage and losses to the man power and military technique of the invaders.

By thrusting "wedges" of armored tank units and motorized infantry into our defense positions, the German troops, accompanied by massed air forces, tried to make flanking detours around our units, close the wedge, surround our troops, and operate in our flanks and rear. At the same time, their own flanks were very often exposed to the blows of our cavalry detachments,



Colonel General Oka Gorodovikov, the author of this article, is a native of Kalmykia, a Soviet Republic on the northwestern coast of the Caspian Sea, southwest of the lower Volga region. He trains Cavalry reserves.

which broke through the lines of the enemy defense.

From June 24-31, 1941,[1] the cavalry detachment, commanded by Major General Kryuchenkin was entrusted with the defense line at the Ikva River, in opposition to the units of General Kleyst's 1st Armored Tank Army. On June 26th and 27th, acting in coördination with tanks, the detachment defeated the 16th German Tank Division, smashed more than 40 tanks and a battalion of motorcycle troops, and captured an antitank battery and a large number of motorcycles, trucks and guns. More than 1,000 German soldiers and officers were killed in this battle.

During the same period, Major General Belov's cavalry corps held the German-Rumanian army units at bay near the fordings across the Reut River, and, with a powerful blow of cavalry and tanks, inflicted a decisive defeat on the 50th German Motorized Division and the 1st and 5th Rumanian Infantry Divisions.

In August, 1941, several units of the 2d Armored Tank Army of the much vaunted General Guderian—one of the theoreticians of tank warfare—began advancing from the district of Chausi and Kricney in the direction of Roslav in an attempt to emerge behind the lines of our troops to the north of Roslav and surround them.

In their turn, the flank units of Guderian's group were exposed to the attacks of our cavalry detachments commanded by Colonels Yakunin and Kuliev. Effecting a forced march under cover of night, the Soviet cavalry, at dawn on the 2nd of August, attacked Guderian's columns near Shumachi and destroyed 30 tanks, 50 machines with infantry, and 2 trench mortar batteries. The cavalry thus engaged the main forces of the enemy and, by skillful maneuvering, enabled our troops to carry out their withdrawal as planned.

In the operations at Shtepov in the Ukraine during October, 1941, when the German armored columns were straining toward the northeast to reach Suman and surround the Soviet troops, General Belov's cavalry, augmented by tank units and motorized infantry, skilfully maneuvered and emerged on the flank of the detouring German group. With a powerful flanking blow, the cavalry routed the 9th Tank and the 25th Motorized Divisions of the Germans and wiped out 1,500 soldiers and officers and captured 300 trucks, 180 motorcycles and much other miscellaneous war material.

Attacks Against Armored Forces, 1941-1942

At Rostov (Nov. 28, 1941), for the first time, the Hitlerite army was counterattacked and fled the spot, and Kleyst's crack 1st Armored Tank Army was routed. Here, Soviet strategic cavalry carried out its first active offensive operations. The strong attack of the cavalry group of the Southern Front, was dispatched by Colonel General Cherevichenko to the flank of Kleyst's army, and, together with an attack carried out by our infantry and tanks, completely routed Kleyst's force comprised of the 13th, 14th, and 16th Tank and the 60th Mechanized German Divisions. This action resulted in the liberation of Rostov from the enemy.

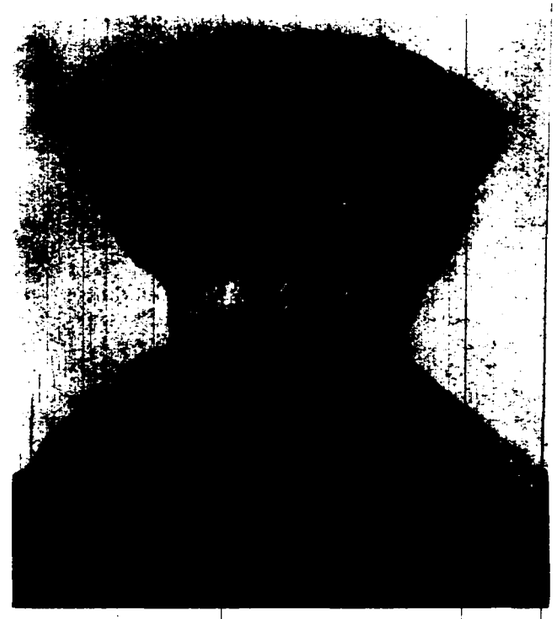
Major General Belov, Commander of the First Cossack Corps of Guards, defeated Guderian's armored columns during the First Battle of Rostov in 1941.

[1]Germany invaded Russian soil June 22nd.

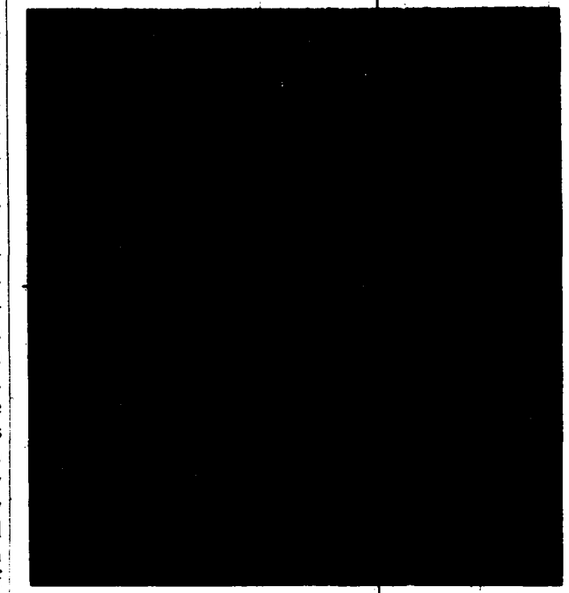
At about the same time on the Central Front, the German command concentrated a strong army group in the region of Yelets, where they intended to take the districts of Gryazi and Voronezh for their winter quarters and cut off the railroad communication between Moscow and the North Caucasus. In the operations undertaken to wipe out this grouping of the Germans, an active part was again played by Red Army cavalry.

On December 6, 1941, the Third Guards Cavalry Corps under General Kryuchenkin aimed a blow northward from the district south of Yelets, and in the resulting battle destroyed the 95th German Infantry Division and emerged in the neighborhood of Rossoshnoye on the communication lines of the enemy's 45th Division. Here the cavalry guards closed the circle around the German grouping by joining with Colonel Kuliev's cavalry unit, advancing from the region of Telegino. In coördination with rifle units and tanks, they utterly wiped out the 45th, 95th and 134th German Infantry Divisions, which lost 12,000 killed and wounded and left 226 guns, 319 machine guns, 907 trucks and a large amount of other war materials on the field of battle.

On December 7th, the First Guards Cavalry Corps inflicted a powerful blow at the flank of the German formation near Stalinogorsk and Venyev (to the south), cut the German "wedge" at its very foundations, and in coördinated action with Soviet tank forces, utterly wiped out the 17th Tank, 29th Motorized and 167th Infantry Divisions of Guderian's grouping. After suffering huge losses in both man power and machines, they were forced to retreat toward the southwest and to abandon all hopes of approaching the Soviet capital.



Major General Dovator, hero of the siege of Moscow, was reported killed in action while on a special mission behind the enemy lines.



Lieutenant General Kirichenko, Commander of the Fourth Cossack Corps of Guards, was particularly prominent in newspaper accounts of the Soviet advance in the Caucasus in January and February, 1943.

Cavalry at Moscow

The detachments of our strategic cavalry carried out important, responsible tasks at the most crucial stage of the war against the invaders—the great battles near Moscow where, under the personal leadership of Stalin, the forces of the Red Army inflicted bitter defeat upon the Hitlerite plunder-army and repulsed it from Moscow.

Hitler had placed before his troops the task of "finishing with the Soviet capital regardless of everything, by whatever means, and in the shortest possible time," and had thrown two-thirds of his aviation, 13 tank and 38 motorized and infantry divisions on the storm of Moscow. He was resolved to grip Moscow in a vise from the north and south and thus possess himself of the heart of the Soviet Union.

From the South, picked troops from General Guderian's 2d Armored Tank Army carried out a strategic detour in the direction of Kashira and Ryazan. The vanguard of this group approached to within 25-30 kilometers of these two points, and the heroic cavalrymen, commanded by General Belov, were the first to deal a crushing blow at the armored columns of General Guderian's troops.

Enjoying the support of the whole Soviet population in the territory temporarily occupied by the Hitlerites, our cavalry units and detachments penetrated far behind the enemy lines and carried out bold and energetic operations against the foe's communications. Particularly successful was a raid behind the lines of the 6th German Army by the Cossack groups commanded by Major General Dovator, Hero of the Soviet Union. Breaking through to the enemy position, these Kuban-Cossacks (armed only with machine guns for they had no artillery) carried out a heroic raid behind the enemy lines and routed the 430th Infantry Regiment.

Despite the fact that the German command dispatched considerable forces against the Cossacks, whose appearance in the countryside had caused terror and panic behind the German lines, General Dovator's cavalry broke through the enemy front for a second time and united with their own forces safe and unharmed.

The extent of the panic that reigned behind the German lines may be judged by the fact alone that the German prisoners claimed that "a hundred thousand Soviet Cossacks had gotten through their lines!" while in reality Dovator's cavalry numbered no more than 2,000 sabers.

After the Germans had been repulsed from Moscow in December, 1941, General Dovator was extremely successful in the pursuit of the Germans. Having met bitter defeat near Ruza, the Germans began to withdraw and covered their retreat with a strong rear guard. General Dovator sent a part of his corps after the German rear guard, while his main forces set out in pursuit of the Germans. Going parallel with the main column of the retreating Germans, he followed along forest roads, and came out to meet the 78th German Infantry Division. With swift, fierce attacks, he completely routed the enemy, utterly wiped out the man power and captured 82 guns, 143 machine guns, more than 400 trucks and other trophies.

Independent Missions

Major General Sokolov's units acted with equal daring and resoluteness. Penetrating far behind the enemy lines, they seized very important communications of the German troops, and over a period of several months inflicted heavy losses by their unexpected attacks. They thereby ensured the successful actions of our army units advancing from the front lines.

On another occasion, the Guards Cavalry Division commanded by Major General Tutarinov, was given the assignment of holding an important defense boundary. The enemy sent several units of an Alpine rifle corps, two tank and two infantry divisions into attack against the cavalry division, but despite the fact that the Germans far outnumbered them, the cavalry division held the line for several days and inflicted a crushing defeat on the foe. Wedging in between the advancing German units, under cover of night, the Cossacks left only small forces to screen their movements at the front, moved their main forces behind the enemy lines, and emerged in the rear of the central German grouping. At dawn the cavalry guards began a fierce mounted attack and by skilful maneuvering succeeded in cutting off the enemy infantry from their tanks. Then, in coordination with other forces, they completed the rout of the "SS" regiment and 4 Alpine rifle regiments.

In the vicinity of Kropotkin the Cossack Guards Cavalry Division commanded by Major General Milerov carried out a series of swift mounted attacks in coördination with a squadron of storming planes. In the course of a single day it routed a detachment of Rumanian cavalry and killed more than a thousand Rumanian soldiers and officers.

At still another time, the Germans sent two infantry regiments, supported by a considerable force of artillery and six tanks, against a guards cavalry unit. Cavalry Commander Danilovich went into counterattack and, after cutting a battalion of the infantry to pieces, scattered and repulsed the rest.

Rearguard and Counterattack During Withdrawal, 1942

During the second strategic withdrawal of the Red Army (July, 1942), a large group of German mobile forces having penetrated into the district near Balta, threatened to cut off the withdrawal of our rifle units by moving on Pervomaisk.

The cavalry corps under command of Major General Belov was dispatched to halt the enemy's advance, and in two days and nights it not only covered more than 100 kilometers in forced marches over roadless country, but engaged in battle during the course of the march. By a sudden blow from the flank, the corps drove the enemy out of Balta, and in this operation defeated the 19th Motorized, 293rd and 297th Infantry Divisions of the German army and ensured the withdrawal of Red Army units according to plan.

The entire Soviet people is proud of the fighting exploits of the Cossacks commanded by Lieutenant General Kirichenko. They show equal skill and bravery in fighting either mounted or dismounted. They make bold onslaughts in mounted formation into the enemy ranks, and with true Cossack daring and prowess, they do away with the German invaders. There is an iron rule prevailing among the Cossacks—not a step back without the commander's order. In ten days of fighting the Cossacks of Lieutenant General Kirichenko's guard corps destroyed 50 German tanks, 3 airplanes, 10 heavy gun batteries and captured 8 radio stations, and wiped out with sword and shell more than 5,000 German soldiers and officers.

Success of the Soviet Cavalry Guards

At a crucial moment for the country, the Cossacks of the quiet Don, of the majestic Kuban, and the stormy Terek, the peoples of Kalmykia and the steppes of Stavropol rose up in struggle against the mortal

In the northern Caucasus, the entire population helped the Red Army in the defense of their native land. The Germans in their drive south from Rostov in 1942 were never able to penetrate these mountains.

enemy. The entire population of *stanitsas* and villages—brothers, fathers and sons, and sometimes whole families—joined the ranks of the Red Army as volunteers. These people, from one village and from the same families, mounted on their own horses, united together to form companies, divisions and corps. Experienced fighting commanders were placed at the head of these Cossack units and detachments. They went into battle to take their revenge on the enemy for our desecrated land, for the plunder of our towns and villages, for the atrocities and violence perpetrated upon our women and children.

With rage and hatred for the foe in their hearts, the Cossacks are fighting ably and bravely—defending every inch of native soil. Their fighting motto is not only to halt the enemy but to beat him and drive him out of the country.

Merited recognition of the heroic actions of cavalry units is found in Stalin's order awarding the rank of guardsmen to four cavalry corps and a separate cavalry division: "For valor displayed in defending the country against the German invaders; for endurance, bravery, discipline and efficient organization; for heroism of the men and officers."

The Soviet Cavalry Guards of 1941-1943, just as the First and Second Mounted Armies formed in 1919-1920, are a genuine menace for the Hitlerite army of pillage and plunder. They set the pace for all the units of our glorious cavalry forces, which follow close behind, smashing the invading hordes.

The success of our cavalry detachments is ensured because at their head stand educated, daring and battle-hardened officers; while cavalry units are commanded by experienced and discerning generals. Among the cavalry commanders there are many older men who went through the school of the Civil War, as well as many young, valiant and talented officers. These men are not given to swagger and conceit. They persistently study and master new methods and forms of warfare. They learn all that they can from actual experience in battle and teach their subordinates.

In hard-fought battles, matching their forces in single combat against the perfidious enemy, Soviet cavalry is adding new pages to the glorious history of Russian cavalry. They are hastening the day of final victory over the enemy. They have firm faith that on the battlefields of Europe, English and American soldiers will soon be fighting side by side with them, so that by their united efforts Hitlerism will be destroyed and wiped out for all time.

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BELOV'S COSSACK GUARDS*

by S. Garin

THE weeks I was able to spend with Belov's cavalry corps gave me a chance to see for myself what a tremendous rôle modern Soviet cavalry played in the smashing of the armies of Hitler at the approaches to Moscow. It is not only horsemen that make up a modern cavalry force. The bulk of it, of course, is made up of mounted men armed with tommy guns and machine guns, but added to it are also tank, artillery, air and other specialized units acting in strict coördination.

Lieutenant General Belov's corps include representatives of numerous Soviet nationalities. They are all men united in their hatred for the enemy and in their devotion to the service they have entered.

But that does not mean that they only know their horse and keen, cold steel, as horsemen of foregone years. On the contrary, these cavalrymen of 1942 have among them many a skilled parachute jumper, veterans of successful descent operations; people who know the tank from A to Z, and men who can handle any gun made, including the guns taken from the Germans, and to whom modern infantry tactics is an open book.

"It cannot be otherwise," Belov himself often says. "The blade is a wonderful thing, but not always the most appropriate weapon. And it is not for Cossacks to sit back and wait!"

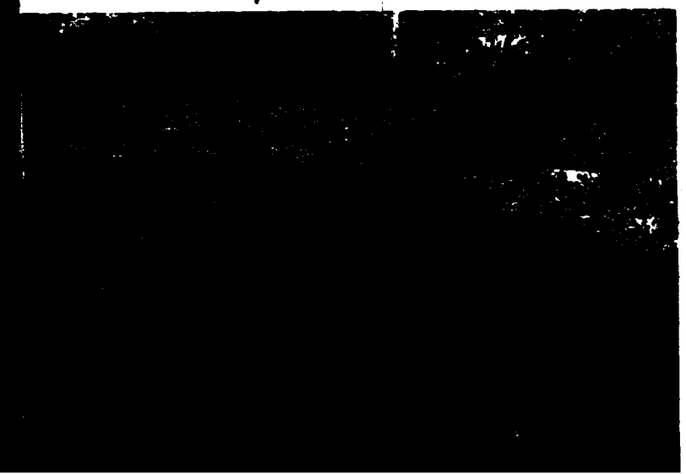
General Belov

I first met General Belov on the distant approaches to Moscow in the days when a fierce struggle was being fought for the Soviet capital. The commander of the cavalry guards corps was standing beside his horse, tenderly patting its sides. He was talking to a young Red Army man. Approaching nearer, I caught the end of the conversation:

"So you think my horse is something special," he was saying. "All horses like cleanliness, and what they look like depends on how you take care of them. I am an old hand in the cavalry. . . . You weren't yet born when I joined. And I must say that not a single day has passed that I haven't looked after my horse. And I haven't any too much time on my hands, have I?"

Later on I found out that while inspecting his squadrons before going into action he had noted the unsatisfactory condition of the horses of some young cavalrymen. He had immediately detected evidence of careless grooming. Now, five days later, he had looked up the men and had given them his advice.

To me this episode is quite characteristic of this fighting general. A courageous soldier, he is exacting toward himself and others, and makes his force fully worthy of its name: The First Cavalry Guards Corps.



"But training told . . ." Below Soviet cavalrymen are shown firing over immobile horses during training period.

Night Attack

During the spring thaw of 1942, the rising waters inundated the meadows and gullies, and turned the swamps into welling mire. From the southwest it was impossible to approach the city. The Germans were jubilant: "Wait until the river overflows its banks yet; the Russians can then just try and get at us!" During the winter they had fortified the approaches to the city, and even in places which now were under water there were forts placed in checkerboard fashion.

The Germans felt quite sure of themselves behind the barrier of water, reinforced concrete, and fire. The local people say that as the Germans soused themselves to celebrate Easter they kept on saying: "We'll sit here until summer, and then we'll push forward. . . ." But things turned out differently.

One nice night all the seemingly insurmountable barriers were breached.

Prisoner of war Werner Kraus told me later that he woke to cries of, "The Cossacks are in the town."

The Germans ran in panic, so much so that they did not even have time to destroy military supplies, and the town was taken by the cavalry guards of Lieutenant General Belov.

Preparations for the operation were as painstaking and detailed as the blow was sudden. The men put in some back-breaking work forcing their way through the thawing snow and wallowing for hours in icy water.

As usual, the advance was preceded by scouting details composed of the cream of the force. It was up to them to do away with the German field patrols and separate sentries, and pick out the best route for the artillery.

Contrary to tradition the attack was launched without preliminary artillery preparation, for the force was able to push up to the most vulnerable point of the German defenses under the cover of night and plunge into the final charge forthwith. The outcome of the battle was decided literally in 10-15 minutes, for the Germans had no time even to offer any worthwhile resistance.

Cavalry Against Tanks

To this very day we still know comparatively little of the rôle of cavalry in modern war. As a matter of fact not so long ago there were people who would smile skeptically when talk turned to the mounted branch of the service.

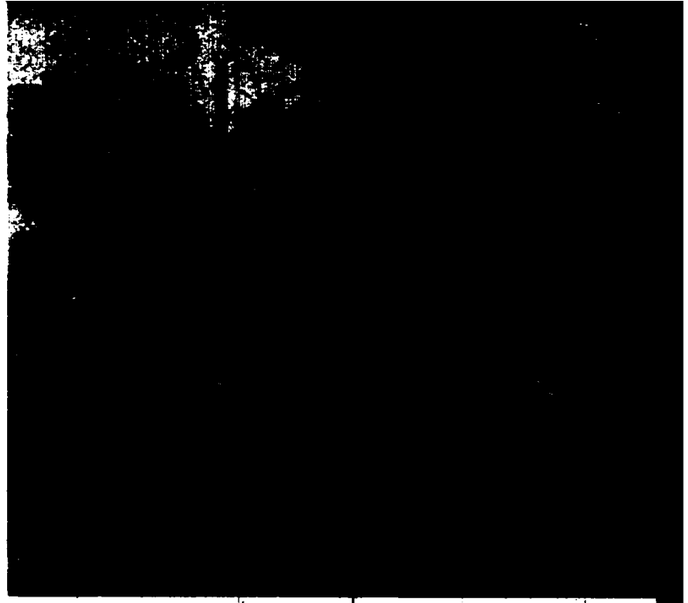
"Horses?" they would say with disdain. "What are they good for in this war of motors, tanks, airplanes and armored cars? These are not the times of Alexander Nevsky. . . ."

There will come a time, however, when war historians, paying tribute to the heroism of the Soviet soldier, will devote particularly inspired pages to the rôle played by the Cossacks in shattering the army of Guderian, the German "tank god." Stationed on a sector where Guderian's tank forces were operating, Belov's cavalry broke through the enemy's lines and began to press him back. All the varied weapons of a cavalry unit were put into action under the beneficent cover of night, so feared by the German tankmen. Encircling the enemy, the guardsmen on horseback and on foot drove in lightning-like hammer blows that forced the Germans out of their fortified positions and sent them reeling back.

Now the fascist air force was hurled into action to try to save the situation. As the dive bombers appeared, the cavalrymen rapidly scattered, took cover in the woods and camouflaged their prone, motionless horses with snow. The bombers swept the locality with machine-gun fire and showered down shrapnel bombs. Had the horses been stampeded by the raiders, they might have jeopardized success. But training told; and the bombs and roaring motors of the low-flying planes did not sow panic. Lying next to their horses, the cavalrymen kept up a steady fire from automatic rifles and machine guns at the attacking planes. One of them burst into flames and crashed.

"That's something new for cavalry," smiled General Belov.

By this time Soviet fighter planes appeared on the scene and the cavalry could continue pushing on. Shortly a horseman, Sergeant Krasavtsev, General Baranov's dispatch rider, who rode in at breakneck speed, his black cloak and scarlet cowl flying in the wind, reported to Belov that the object of the operation had been taken and that our units were pursuing the enemy.



"As usual, the advance was preceded by scouting details composed of the cream of the force."

We drove into the liberated city by motor car. On the way General Belov told me:

"Guderian bragged that when his troops took Yelnya the road to Moscow was open and that his tanks could go on without hindrance. I do not know what he says now, but it seems to me he has something quite different on his mind. The rout of the Germans has begun and now he has only one way open for him, and that is westward."

Cossacks March West

Today (fall, 1942), when the outcome of the spring and summer campaign is being decided on the field of battle, Soviet cavalry is pressing farther westward hard on the heels of the enemy on many sectors of the front.

I was with Belov's men when the Germans were driven out of their fortified positions at one point. The fascists were retreating so fast that our troops could hardly keep up with them. In one day they were driven back 25 kilometers. Then the Cossacks moved in and drove the Germans still faster, hammering blow after blow at them. This irresistible cavalry drive which gave the fascists no respite sent them 100 kilometers farther back.

At another sector of the front the enemy cut Soviet communication lines in an effort to hinder our attack. Belov's cavalry was sent to eliminate the menace. By a deep flanking movement it encircled the enemy. Striking from the rear, the Soviet cavalry force cut the Germans off in seven inhabited points and all of the Nazi troops were either killed in action or taken prisoner.

Today General Belov's cavalry guards are continuing to fight their way westward.

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*Reprinted from *Moscow News*.

RED CAVALRY*

Present successes of Red Army cavalry are the results of years of strategic planning and training under the command of brilliant leaders who know how to use it.

GERMAN military literature has been proclaiming the resurrection of cavalry for some time now. Leading German military experts—General Brandt, General von Kochenhausen, and General Poseck—and the *"Militar-Wochenblatt"* itself are never tired of declaring that the epoch of motorization can and must resuscitate that honorable arm. Two conditions are put forward for the use of cavalry in modern warfare:

Cavalry must be used in great masses and not in small formations.

Cavalry must be equipped with the latest weapons of modern warfare, and trained to coöperate in particular with tanks.

This German army thesis has been developed from the daily practice of the Red Army. What German military experts recommend in theory has been put into practice by the Red Army. In the civil war, cavalry played a big rôle. Budyenny, the Red cavalry leader during the civil war and later their Inspector-General, writes:

"Throughout the whole civil war two characteristic tendencies were observable in the use of the cavalry arm:

(1) an effort to use cavalry in masses; and
(2) the use of strategic cavalry for decisive aims."[1]

Cavalry is one of the most important offensive weapons of the Red Army. One can say, in fact, that today the Red Army has a monopoly of the mass use of cavalry under conditions of modern warfare. With its 34 Cavalry Divisions in peacetime, with 2 to 3 Brigades of 2 Regiments each, Soviet cavalry is stronger than the cavalry of Germany, France, Poland, Italy and Japan together. Whereas in the West—in Great Britain and France—cavalry is well on the way to being completely unhorsed and turned into lightly motorized formations, massed cavalry remains in full existence in the Red Army, and it retains its own special tasks. Whereas in Poland, which has the second strongest cavalry army in

[1]Budyenny, "Red Cavalry," in the *Bolshevist*, No. 4, 1935, p. 38.

*EDITOR'S NOTE: *This article is reprinted from a chapter of* Military Strength of the Powers, *published in the spring of 1939 under the* nom de plume, *"Max Werner," and translated by Edward Fitzgerald.*

It not only describes Red Army cavalry as it is being used today, but emphasizes (as does General Gorodovikov's article on page 18) that today's Soviet cavalry tactics and weapons have been carefully developed in active coöperation with Red Army mechanization.

As a foreword to the book, the publishers stated, "The author of this book is a noted military authority who cannot use his own name because of the possible reflection on relatives in his native land."

At the time that the book was published, it was dubbed by many as "propaganda." Already, however, time and events have more than once vindicated the author. In October, 1939, The CAVALRY JOURNAL *reprinted the chapter, "Poland Between Two Camps," which was such an accurate description of what actually happened that it might have been written after the fall of Poland rather than in the spring of 1939.*

Europe, cavalry represents a substitute for motorization, in the Red Army it represents a ***supplementary arm for use with motorized units.***

Red cavalry has a double purpose:

It is used as an independent arm for offensive purposes, and in this case it is used as the core of the troops with which it coöperates. Field Service Regulations 1934 declare:

"Strategic cavalry, with its considerable strength in arms and technical equipment (machine-guns, artillery, tanks, armored cars, and airplanes), is well able to carry out various tasks in battle (attack, defense, reconnaissance, raids) independently."

This idea has been expressed still more clearly in Soviet military literature:

"In future wars cavalry will be given very responsible tasks to perform. Cavalry formations, strongly supported by airplanes, tanks and armored cars will have operative-strategic tasks to perform; wide encirclement of the enemy, and the capture of his most important strategic, economic and political centers—as well as tactical tasks; the final disorganization and destruction of retreating and defeated enemy troops."[2]

This was the case when the army of Deniken was destroyed in the civil war, and it was also the case during the Russo-Polish War when the chief forces of the Red Army on the Southwest front consisted of cavalry supplemented by weak infantry formations, and of course, at that time, on a low technical level. Today the Red Army has much greater masses of cavalry ready for action, and they are equipped with the last word in military technique. Such masses of cavalry represent a very powerful offensive weapon in the territorial conditions of eastern Europe. The prominent Soviet military theoretician, Svietshin, points out very correctly:

[2]*Voina i Revolutsia*, September-October, 1933.

"Cavalry has not an intrinsic value, but one related to the territorial conditions in which the war is fought and in which cavalry will have to operate."

During the autumn maneuvers in West Russia in 1936 there was one phase of the struggle in which cavalry appeared as the core of an army, supported by tank units and airplanes, and a new combination of arms for future warfare became evident. Together with tank units and motorized infantry, the Red Army has powerful cavalry formations, a highly mobile weapon for an offensive blow or for maneuvering.

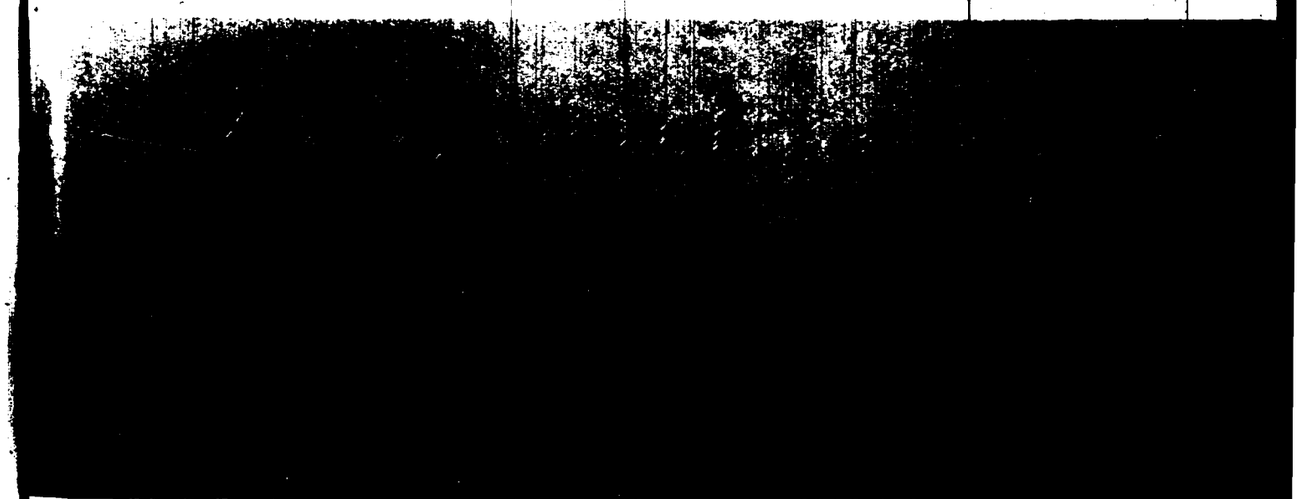
At the same time, cavalry in the Red Army is trained to coöperate closely with tanks, and it has its place in the decisive operations of the powerful mechanized units. It is the task of cavalry to follow up tank attacks, to occupy captured territory and mop up isolated enemy posts. It must never offer a good mark to the enemy. It must be highly mobile and be used against the manpower of the enemy, whilst the tanks are destroying his fire concentration. In such a combination of arms the operation of pursuit can be carried out rapidly and with all energy, and the exploitation of successes can be carried out at top speed.

The Soviet commander, Krivoshein, writes as follows in a book that, when translated into German, created a sensation in German military circles, which regard it as a pioneering effort in the tactics of modern warfare:

"Just as for cavalry, the pursuit of a defeated enemy is one of the most fruitful tasks of mechanized troops. The great mobility of cavalry is supplemented by the impetus and maneuvering capacity of the tanks, and therefore a mixed formation of cavalry and mechanized troops represents a very effective instrument of pursuit."

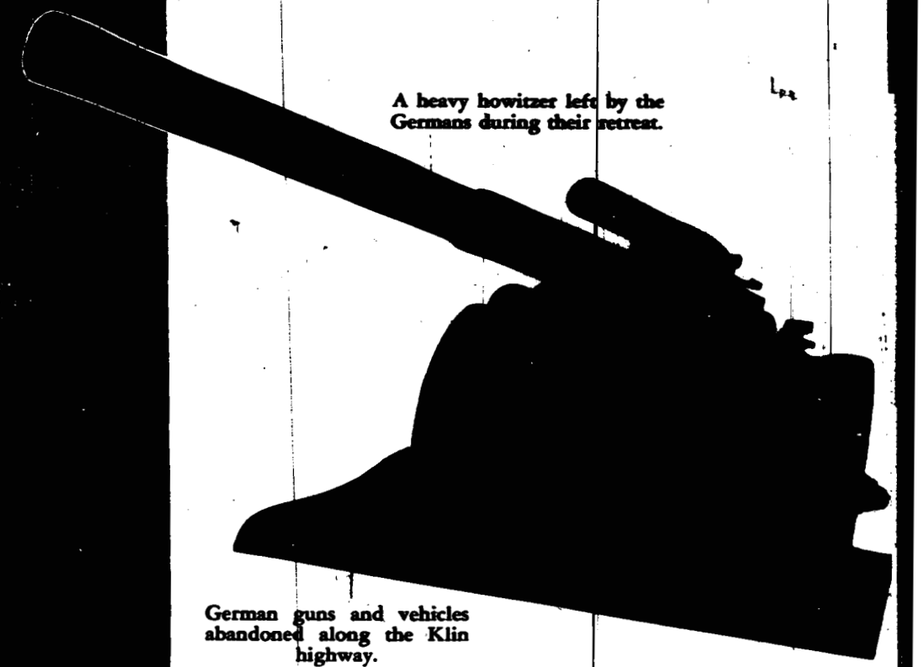
The Red Army has rehabilitated the cavalry; the rider of the plains now takes his place, with modern equipment, side by side with the mechanized unit.

A Soviet Cavalry charge on the Central Front.



Sovfoto.

This six barrelled smoke rocket launcher (150mm caliber) was abandoned during the retreat,

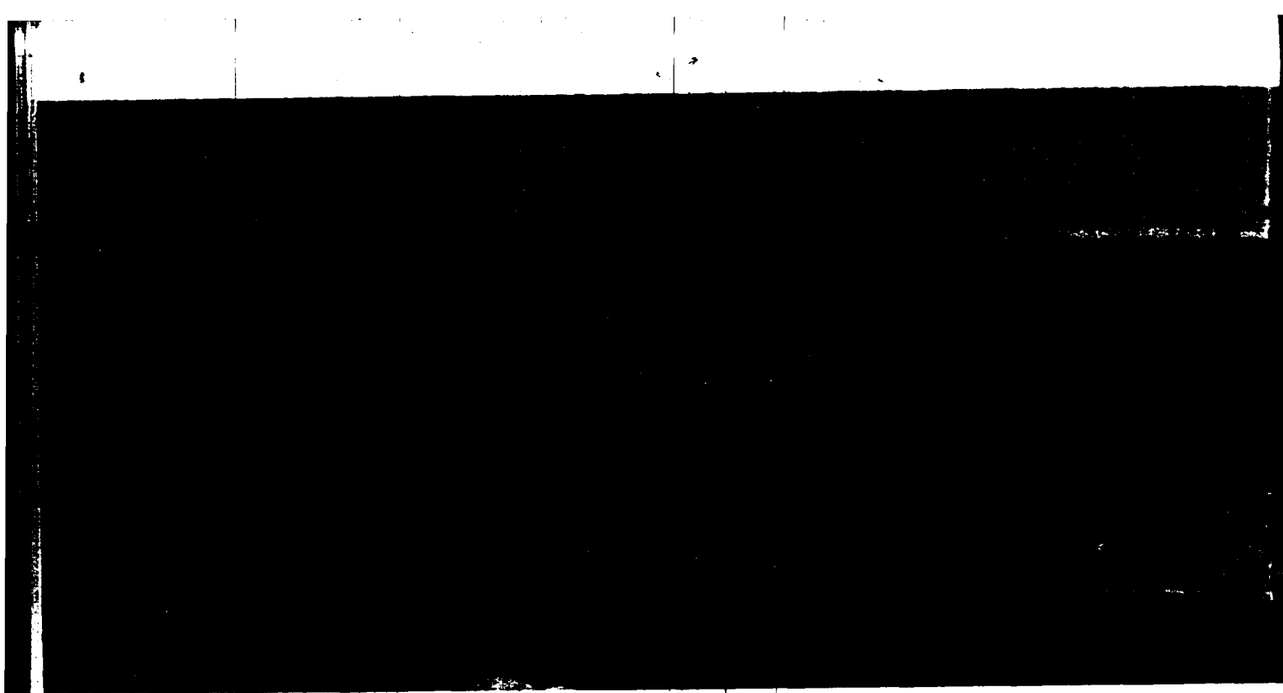


A heavy howitzer left by the Germans during their retreat.

German guns and vehicles abandoned along the Klin highway.

Road Back from Moscow, 1943

Men, machines, and guns have been left behind by the retreating Germans. The g a Mark III Chassis mounting a 75mm short tank gun. A close-up of the in the lower left corner has been identified as a 150mm infantry howitzer. Center mm short tank gun and armored mount is shown in lower right corner.



This Mark III tank, captured on the Southern Front, is off to the factory for repair. It is identified as a command tank because of its two radio aerials, one looking like a railing on the rear of the tank, and the other standing out above the turret. Armament consists of one 50mm gun on the newer models and a 37mm gun on the older ones. A dummy gun helps to conceal its command function.

The captured nine-ton Mark II tank pictured above, is on its way to a Russian salvage depot. It has two independent flame-throwers, one mounted on each front track-guard. Of short range, these flame-throwers are effective only against personnel.

Successful Withdrawals

The conquered countries of Europe ceased resistance when their armies were surrounded, cut off from supplies, and unable to withdraw to new fighting positions—for any nation at war has the power to resist for only as long as its armies remain intact.

In order for an army to accomplish a successful strategic withdrawal, re-form its lines, and prepare for another stand, a well executed rear guard action must cover the retreat, prevent encirclement from the flanks, and delay the pursuing enemy. Rear guard action is a mission for which cavalry has always been considered particularly well adapted, and the record of the first three and one-half years of the Second World War emphasizes its value when properly used in this rôle.

The three most successful strategic withdrawals of the war to date have all been covered by horse cavalry.

The withdrawal of General MacArthur's American-Philippine Army into Bataan in 1942 was covered by the brilliant rear guard action of the heroic 26th Cavalry. From Bataan, no further withdrawal was possible, but four months of invaluable time had been gained.

The successful withdrawal of the Soviet armies across half of Poland and a thousand miles of Russia in 1941, and a further withdrawal to the banks of the Volga in 1942, were made possible by the well trained Red Army cavalry (which include *two mounted armies*). In both of these cases the cavalry persistently delayed the advance of the invading "armored hordes" and prevented the main Red armies from becoming encircled. Except for this, the fate of the Soviets very probably would have been that of the other countries of Europe.

That horse cavalry was employed in these major successful withdrawals, and that it was not employed in other withdrawals that became disastrous retreats, may have been mere coincidence. But the record belies this!

* * *

Red Army Cavalry

In recent months The Cavalry Journal has published a great number of dispatches and articles on the Red Army cavalry that are of sufficient significance to warrant careful analysis and comment. The fact must be borne in mind that this information is based entirely on the battle experiences of *this* war—*this modern war*, where the matériel used is the most devastating and destructive that science and manufacturing facilities can produce.

Wherein lies the reason for these successes? A brief study of the data available reveals certain indisputable facts:

1—Modern Soviet cavalry is an outgrowth of centuries of Russian cavalry tradition.

2—As early as 1919, Soviet military leaders visualized the importance in future wars of modern cavalry, used in large forces and armed with tremendous firepower.

3—Pre-war cavalry was augmented by the training of reserve divisions and corps under capable, experienced cavalry leaders. (This training was carried on in the rear areas even during the period of the Nazi advance deep into Russian territory.)

4—Red Army cavalry tactics involved the employment of cavalry both against hostile tanks and in coordination with their own armored forces.

5—*Large* units of cavalry, maintained in reserve on the various fronts, reduced long strategic and administrative marches to a minimum.

6—Higher commanders have given cavalry the definite missions and objectives, which were particularly suited for its use.

It is quite enlightening to recapitulate the dispatches and news items from communiques. Following is a partial summary of the battles in which the Red cavalry played an important, and often decisive, rôle:

Battle	*Date*	*Commanding General*
Ikva River	June 1941	General Kryuchenkin
Reub River	June 1941	General Belov
Roslav	August 1941	Colonel Kuliev
Ukraine	October 1941	General Belov
Rostov	November 1941	General Cherevichenk
Voronezh	November 1941	
Yeleto	December 1941	General Kryuchenkin
Stalinogorsk	December 1941	
Moscow	December 1941	General Belov
Ruza	December-January 1942	General Dovator
Balta	July 1942	General Belov

Moscow, Stalingrad, Rostov, Kharkov, the Caucasus—these places will go down in military history along with the names of such brilliant cavalry leaders as Timoshenko, Budyenny, Belov, Dovator, Kryuchenkin, Kirichenko, and Gorodovikov. Their visualization, training, and development of the cavalry arm over a period of the past twenty years is now paying dividends, and their exploits and employment of cavalry in this war will be studied by the future military leaders of the world.

This long-range vision of Red Army leaders is significant, for modern cavalry is an arm that cannot be trained in a short time.

From Our Readers

Editor's Note: Lieutenant Colonels Engel and Cullum are both well known former cavalry officers who spent some time in the remount service before their retirement. They returned again to active duty soon after the declaration of war. Their views, expressed herein, are worthy of consideration at this time.

Dear Editor:

Glad to see how the horse is coming back in this war, and it will probably continue to do as the war progresses. I have lost my contact with our cavalry but not my contact with horses.

I have learned a great deal about horses since I left the army. Although I am still in the army, I feel that I am out of it even when on active duty and in uniform all the time.

The thing that I have learned that impresses me most is that if we expect to do well in the field, we must pay more attention to selecting our horses. They must be "easy keepers," "free goers" and "galloping types." Our daily march must be pushed up from forty to sixty miles a day, not by marching longer but by marching faster. We must use the gallop more than we do.

All this requires a horse that is raised in such a way that the volume of blood carried in the circulatory system is greater in proportion to the rest of the body. There is a great difference in this respect in horses, and it is not a question of breeding. It is a question of whether the horse is barn-raised or raised on the range or in the pastures, day and night, winter and summer.

One reason why the Russian Cavalry does so well especially in winter is the fact that their horses are range bred. They carry so much greater quantities of blood that they have energy enough not only to gallop but to keep warm in the coldest of weather. This is the one important thing that I have learned since my retirement in 1922. As this relationship of blood volume to body weight cannot be measured or seen, it is not even considered of any importance. The modern trend in horse breeding and in military horses in most armies has been away from this horse and the filling up of our armies with horses that are barn-raised. These are no good for campaign horses.

I am keeping my own horses in New Jersey on pasture winter and summer. I supplement this with a few ears of corn but when I am home I would only do this to the barn-raised thoroughbreds that cannot go through a winter without losing too much flesh on pasture alone.

This letter has been inspired by the recent issue of the Cavalry Journal and the prominence given the Russian horse cavalry. Tanks and planes are our main thought, but horses and men still play a deciding part.

Emil Engel, Lt. Colonel, QMC.

Resurrection of Saber

The January-February issue of the Journal has just come to my desk. Congratulations on its excellence, which of course includes the article that I always read first—"General Hawkins' Notes."

In the Editorial Comment you state "The Cavalry Journal, . . ., is making a desperate effort to bring to its readers the essence of lessons learned from combat."

Not only the notes on Cossack engagements, but the realistic photographs you reproduced, seem to me to point a lesson that is being overlooked in our Cavalry. I have long held the belief that we should restore the saber to our Cavalry. However, in this connection I have considered myself a theorist, as surely I could not speak from practical experience. Consequently, I have failed to comment. However, with the lessons coming from the Russian front I am convinced of one thing: *either we must change our cavalry doctrine or we must resurrect the saber.*

Again, admitting that this is theory, I will, however, hazard the following prophecy: If ever our troops engage in a mounted attack of any proportion you will hear a mighty yell go up for the saber.

As you so aptly say, "The time to learn and practice these lessons starts during unit training period." This applies to equipment as well as to tactics. As General Hawkins points out in his notes, the world should have foreseen not only the coming attack but should have been able to predict something of its nature.

Sometimes I fear, we give too much weight to public opinion in arriving at our decisions as to armament and component parts of our Armed Forces.

I give these thoughts for what they may be worth. At any rate, I greatly enjoy the Cavalry Journal and think that it is doing a bang-up job.

Grove Cullum, Lt. Colonel, QMC.

P.S. Just why I wonder, are these Russians carrying these sabers? Are they getting ready to slice bread or lance German bellies. Also, I note the rifles on their backs.

Subscription Renewals

Hereafter renewals of present subscriptions for overseas personnel of the Army to newspapers and other publications entered as second-class matter from any source will be considered as a continuation of the present subscriptions, and mailings under such renewed subscriptions are now allowed, regardless of whether or not the renewals may be paid for by others than the addressees without any request from the latter. This does not cover complimentary copies sent by publishers.

Gasoline Rationing

Now that national gasoline rationing is a reality, it is time horsemen took some stock of themselves and their horses. On every hand we hear it said that the country cannot return to the horse-and-buggy days; that

Erratum

In the above picture lay-out of captured German matériel, which appeared on pages 18 and 19 of the January-February issue of *The Cavalry Journal*, two errors in identification occurred. The gun at left is 150mm howitzer. The gun in lower right corner is probably 105mm standard infantry gun. The shield has been removed and can be seen on gun in the background. This caused confusion in identification.

our whole system of economy is erected on a plan of rapid transportation; that to return to the horse would cripple our industries and retard the war effort.

All this is very true.

We will agree that horses are slow and inconvenient transportation for most business purposes. We also agree that the nation at large is hesitant to see their value so long as one automobile remains on its ragged tires for personal or private use. We can hardly blame the various business concerns for pushing the horse idea out of the way in favor of any makeshift or nebulous solution to the problem. The fact remains, the problem is at hand. Either our 14,000,000 horses will be pressed into private use or there will be no form of transportation unregulated by the government or not controlled for the war effort. Otherwise, most private citizens can retrograde to the stone age and walk, which we will all agree would be a far worse breakdown than returning to the horse.

The fortunate thing is that we have 14,000,000 horses left in this highly mechanized country of ours. As things look, it is just a toss-up that we have any at all to draw upon in this emergency. According to information widely publicized, we do not see how they can be expected to supply the anticipated demand.

It is hard to visualize our large cities filled with horses, nor do we expect to see this. We do expect to see our small towns and rural areas making 100 per cent efficient use of horses. That is where horses can best fill in the gap. We do not expect to see a return to the horse-and-buggy days simply because buggies are not being manufactured any more and there is no way to set up adequate factories. Horses will be used under saddle.

Another fortunate angle to the situation is that at present comparatively few horses are being bought for army use. This is because of emphasis being placed on mechanized warfare. Whether this is right or wrong we do not attempt to say. If horses were used in the same quantity by our armies as those of the central European governments, it would drain the best and most useful animals from stock and there would be nothing left for civilian use except the disabled and aged groups. From everything we have been able to find out, civilians in rural areas would really have something to worry about.—*Western Horseman.*

Air Support in Tunisia?*

According to Axis sources the above picture shows dive bombers attacking an Allied supply depot in North Africa. In the foreground is the gear of one of the Stukas that has already struck at its objective.

EVEN more important than inferiority in types of planes was Allied inferiority in air tactics. The Germans were able to establish air superiority over the battlefield. That was why the stukas were able to operate against the American tanks. Correspondents have brought this out, and for weeks letters arriving from American troops in action have complained about inadequate air support.

The reasons for this go far back into army organization. The basic factor is the preoccupation of the RAF and Army Air Forces with strategic bombing—the blasting of enemy bases and cities with big bombers. A powerful propaganda advanced by such men as de Seversky has gained great publicity for the strategic bombing advocates. Last week another book on the subject, *The Air Offensive Against Germany*, by Allen A. Michie, appeared. The course it advocated would practically rob Allied ground forces of the little close-support aviation they have.

The issue is whether the ground forces are going to have enough support planes to give them air superiority on the battlefield or whether the major Allied air effort is to be devoted to strategic bombing that has not yet shown any decisive results. The consequences of stressing strategic bombing were seen in Tunisia last week. When the Nazis signaled for planes, they appeared in the minimum time, and their actions were perfectly coordinated with those of the ground forces. The Germans had the organization, the liaison, and the training. The Allies did not—although in the Southwest Pacific and in the Eighth Army campaigns, Allied air-ground coördination has surpassed that of the Axis.

A blueprint of how an air force should be organized for direct intervention on the battlefield appeared in the current issue of the authoritative Command and General Staff School quarterly. It was called "What Really Is Air Coöperation?" and the author was one of the best students of contemporary tactics, Capt. F. O. Miksche. It advocated an organization very different from anything possessed by the United States or Britain. But Miksche laid down one rule which seemed to have been proved in Tunisia: "An air force in which a sharp division is drawn between fighter and bomber commands can never lend to the ground forces that total dynamic support which is necessary to victory in a modern battle."

This was criticism that applied to both the RAF and the American Air Forces. There has long been a fundamental argument between the British Army and the RAF in regard to the matter of air support. A sort of compromise was reached with formation of the so-called Army Coöperation Command, but comments of Army spokesmen have frequently been bitter on the ground forces' lack of suitable planes.

The same bug hit the American Air Forces even though they were part of the Army. The preoccupation of the air forces has not been how best to support the ground forces but how to bomb the Reich by daylight. As a result, some armored units stationed in remote parts of the British Isles conducted battle maneuvers for weeks—without any air coöperation whatever. If the same energy that went into the bombing of Italy last week had been applied to direct intervention on the Tunisian battlefield, Rommel's dive bombers would never have stayed in the sky to strike the blow that started the American retreat.

*By the Editorial Staff of *News Week*. Reprinted from *News Week*, March 1, 1943.

A Few Principles for Tank Forces

EVER since the creation of the Armored Force, there has been a great need for a tactical doctrine for its employment. Of course, in the beginning, the officers assigned to mechanized forces knew no more about the actual tactical employment of such forces than did any one else. They did write a manual, but, as far as tactics were concerned, this manual contained only platitudinous generalities which were of no practical value whatever. The drill regulations, prescribing routine movements for deployment into line and ployment from line into column, were all right as far as they went. Some tactical doctrine, based on the principles of cavalry employment, were stated without the realization that any useful principles would have to be very different from cavalry principles.

It was a new arm untested in war. And although something was learned from the relatively minor use of armored forces in the Spanish campaign, those lessons were few and not always reliable. Even after the commencement of World War II, and the German *blitzkrieg* in Poland, the French, British, and United States armies failed to draw the true lessons. One lesson that should have been drawn, but was not, was that if the Germans invaded Holland, Belgium and France, as they had in Poland, the only way to stop the mechanized *blitzkrieg* was by means of numerous and very mobile antitank guns, and very numerous antitank troop units carefully trained. It should have been obvious that the French and British could not hope to oppose the Germans with as many tanks as the Germans would have at their disposal, and that a defensive campaign would have to be fought in which artillery and antitank guns of sufficient caliber would be necessary to deal with panzer divisions.

This lesson was not learned in time, and the German armored forces had no opposition. But the Russians, quietly observing the debacle, drew their own conclusions, and these conclusions proved to be correct. Even in these NOTES, attention was drawn to the correct lessons from the Polish campaign (as outlined above), but to no avail.

Now, the Russians, after two years of terrible warfare against the Germans, have learned many true lessons as to how to oppose armored forces and how to use their own. Starting with the correct idea, referred to above, they developed their own antitank means and at the same time their own armored forces. Experience has taught them the proper tactical use of their armored forces. They have learned that armored force alone cannot usually be depended upon to win battles and that there must be a combination of all forces and branches of the service. They have learned that armored force cannot be employed in the same way as cavalry, and that cavalry cannot be given the same missions as are suitable for armored forces. They make great use of cavalry but understand that the missions of cavalry and armored forces are different, though similar in some respects.

In the tactical use of their armored forces they have learned a principle that has been enunciated in these NOTES for several years. It is that tanks should not be used for head-on charges against on-coming enemy tanks except where it is impossible to avoid this. On the defensive, tanks should be used for counterattacks after our tank destroyers and artillery have crippled the enemy tanks. On the offensive, our tank destroyers and artillery supporting the infantry should protect the infantry forces from enemy tank attacks, while our armored forces are thus freed to attack the enemy main forces in flank or rear.

(Note: In our army at present, antitank guns mounted on tank chassis and designed for use particularly against tanks, are called self-propelled artillery. But whether they are called tank destroyers or antitank artillery or by any other nomenclature, I refer to them here as antitank guns.)

The CAVALRY JOURNAL has published in its last several issues some remarkable articles, written by experienced Russian officers on the tactical principles for the use of tanks as evolved or formulated from their battle experience in the war against the Germans. For convenient reference some of the principles are quoted —with some changes for brevity and clarity—as follows:

1. *A meeting engagement* is one where two forces, each hostile to the other, are moving toward each other with intention to attack, and finally meet in battle.

Success in a meeting engagement requires the gaining of time so as to ascertain the direction of the enemy's blow and make our own preparations.

The enemy blow must be delayed by launching land and air operations simultaneously.

Reconnaissance is necessary, and the best reconnaissance results are attained by fighting.

There must be a force (advance task force) assigned beforehand to accomplish both reconnaissance and delay of the enemy.

For this task, only joint air, tank, motorized and cavalry formations, correspondingly reinforced with antitank and antiaircraft means, can cope with the situation.

2. *A meeting engagement* demands swift, decisive, stubborn action. The lack of clarity regarding a situation must not delay the adoption of a decision or influence the energy with which operations are conducted by the advanced task reconnaissance and delaying force.

3. To strike a decisive blow at the enemy's task force in a *meeting engagement* between our own advanced task force and that of the enemy, time must be gained, the enemy pinned down on a definite area, and his maneuvering possibilities thus restricted. This task, including the necessary reconnaissance, must be performed by an advance group of the task force.

This group operates on a wide front and, if necessary, sacrifices itself to hold the enemy in a defined district until the main task force can launch the decisive attack in flank.

4. Experience has shown that battles between tanks are inevitable. Whenever possible, however, it is more profitable to destroy the enemy tanks by action of aviation, artillery and other antitank weapons, and leave our tanks free to operate against enemy personnel and small arms weapons.

Battles in which only tanks participate seldom, if ever, occur; therefore, combined coördinated action of all arms is imperative for victory.

5. *The rôle of aviation* in the battle against enemy mechanized forces is particularly important. As the air force can engage enemy tanks and auxiliaries at greater distances than artillery or any other force, the task of the air force is threefold. *First:* It bombs the enemy tanks in their jump-off positions, during their movement into battle, and when they concentrate at their rallying point. *Second:* Enemy mechanized auxiliaries such as gasoline trucks, munitions, field repair shops, etc., should be put out of commission. *Third:* The air force must protect our own tanks from enemy air attack.

6. In order to *first weaken* the enemy tanks with all means at our disposal (and *then* finish them off with our own tanks) artillery, including antitank guns, should engage them when they come within range and observation.

7. In *defensive operations*, the enemy usually has to be weakened by our antitank obstacles and fire in order to reduce his superiority in numbers. Counterattacks should be launched at a moment when the enemy is disorganized and before he can regroup his units for another attack.

8. A commander must be kept informed always by *all-round reconnaissance*. After a cool, cautious estimate, he must decide whether it is best to attack at once with movement, or temporarily to assume the defensive and engage the enemy with stationary fire from concealed positions. His tanks must not cruise around exposed to tank and antitank fire, but by keeping them for too long in a stationary position, he may be outflanked and caught in an enemy pincer movement.

9. In *tank pursuits*, enemy antitank traps may be set up in depth, and ruses to lure our tanks into such regions must be considered. Don't break into a village or forest without prior reconnaissance (covering detachment). Tanks should enter such places only along with infantry or in rear of it. (Cavalry would be ideal.)

10. A tank brigade fights in both attack and defense by use of maneuver, although sometimes a tank group fights defensively and temporarily in a stationary position in which trenches, camouflage, and cover are available. Whether the army is fighting a general offensive or a defensive campaign, any one unit must fight sometimes by attack and sometimes by holding defensively. In either case, tank units usually fight by attacking or counterattacking *on flanks* of enemy units. Head-on attacks against enemy tank units are usually wasteful of tanks and ineffective.

11. When infantry, supported by artillery, holds a line, tank groups should be posted behind both flanks ready to *counterattack against the flanks* of the enemy advance against our own infantry. Thus the enemy may be caught by a pincer movement either in front of our position or deep into it. If our position has *open flanks*, however, these flanks must be guarded by prearranged artillery and antitank guns.

12. When a group of tanks moves out to attack or counterattack the enemy, either in flank or elsewhere, it must always be preceded by a *covering detachment* until the enemy is in plain sight. Also, it must have *combat patrols* on its flanks and rear at all times during the movement and throughout the action. This is in addition to the all-round reconnaissance for information about the enemy's strength and movements so necessary during all operations.

13. When the enemy attacks with tanks, and we counterattack with tanks, he will attempt to hold us with fire in front and then pass a large force of tanks around the flank of our counterattacking tanks, so as to catch us unprepared or by surprise on our flanks and rear. We must avoid this surprise by careful operations of our combat patrols. When his tactics become apparent, we must in our turn attempt to hold his frontal attacks by tank and antitank fire from a holding force of our own. This holding force then attempts to withdraw in such a way as to lead the pursuing enemy main tank forces into an ambush prepared by our retiring main tank forces, which had previously advanced to the counterattack and been stopped by the enemy fire, and which have now retired to lay the ambush.

When the enemy tanks have been lured into this ambush, our tanks may open fire on their flank, or advance at full speed to attack the enemy flank by fire and shock.

Thus, it is a question of outmaneuvering the enemy. It is always a matter of *seeking the enemy flanks*. When he attempts to outflank us, we outflank him. Only by getting timely information from our constantly operating combat patrols and strong reconnoitering patrols can we hope to do this.

14. When the enemy has superiority in tanks, counterattacks by our tanks must be avoided, as in such a case it is best to use tanks for operations from ambush.

15. Antitank troops must be everywhere—with infantry, with cavalry, with artillery, with tanks. Otherwise, our armored forces will have to remain with other ground forces to protect them from enemy tanks, and our tank forces will have to meet enemy tanks head-on before our tanks can maneuver for attack on his flanks.

Summary

a. *Reconnaissance.* Strong task forces of all mobile units—tanks, cavalry, motorized artillery—are sent to gain information of the enemy and fight for it if necessary. These task forces also delay the enemy advance in order to gain time for our maneuver against his flanks.

b. *Security.* All-around security must be provided by use of covering forces and combat patrols. This applies to all separated forces.

c. *Flanks.* Seek the enemy flanks in all tank battles.

d. Avoid head-on collisions.

e. *Light holding forces,* supplied with mobile artillery and antitank guns, meet the assault of enemy tanks and enable our main tank forces to attack enemy tanks in flank; or the light forces in front make a show of resistance and then fall back so as to lead the enemy tanks into a trap or ambush.

f. Do not counterattack with tanks against superior numbers of enemy tanks; instead, delay and draw them into ambush.

g. Antitank troops must be everywhere. Some antitank guns must be with every unit the size of a regiment, but the mass of these guns must be incorporated in mobile antitank units held somewhat in the rear of the first line units but ready to be sent to points most threatened by enemy armored forces.

German Self-Propelled 75mm

This photo, received from neutral sources shows an 8-wheeled German armored vehicle moving toward the front in Tunisia. It is minus the usual 20mm gun turret and has been rearmed as a motor gun carriage (probably a 75mm tank gun). This is a very fast car. Tops 50 m.p.h.

Organization of a Tank Attack

by Captain A. Bandik, Red Army

PRELIMINARY RECONNAISSANCE

1ST ECHELON—*Heavy tanks attack first line and uncover hostile defense.*

2ND ECHELON—*Tanks with tank-borne troops consolidate position.*

3RD ECHELON—*More heavily armed tank-borne troops attack flank and rear—start pursuit.*

ON a certain sector of the front, our troops recently smashed an extremely well prepared German defense system. The enemy had made the most of the terrain. They held the village of Yulayevo, situated on a height from which they could shell the river and the valley in both eastern and southern directions.

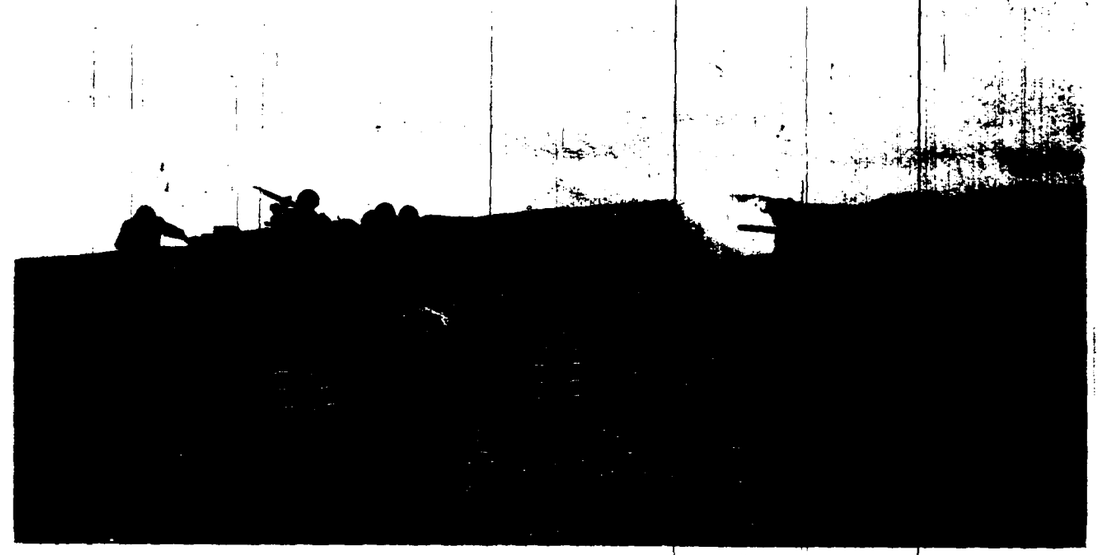
A church on the village outskirts served as a firing position and an observation point. It bristled with machine guns and antitank guns. In the southeastern corner of the village there were four firing points with both machine guns and artillery, and at least three bunkers. The place was garrisoned by an infantry regiment.

The right flank was protected by a powerful system of bunkers disposed on slopes running southeast to northwest. South of these and easily visible from the eastern bank of the river was a powerful defense area consisting of a series of mine fields and barbed wire entanglements three or four rows deep, that protected Karpovka.

The enemy had another stronghold in the village of Popovo, from which he could also observe and keep the eastern river bank under flank fire. But there were fewer firing positions in Popovo than in Yulayevo. Entanglements two or three rows deep had been laid on the approaches.

The bunkers and firing positions in this defense zone formed a system of stratified fire that was echeloned in depth. There was also a powerful zone of fire before the perimeter of the defenses. Obstacles were arranged

These "KV" 42-ton tanks with a 76mm (3-inch) gun, are used as a shock force in attack. This is probably the type referred to in this article as the "first echelon of attack."



The tank at left is a 42-ton "heavy" tank used for assault. The tank at right is a 25-ton T-34 "medium" used by the second and third echelons. They both carry 76mm guns. The principal differences are in armor and speed.

to correspond with the fire system. Every bunker group formed a support point.

The enemy attached particular importance to this defense system, since its capture would enable our troops to penetrate to the rear of a very strong German grouping. The defenses were situated on the flank of our spear-head troops, which enabled us to conduct flank fire on advancing German units.

Our infantry commander decided to start to destroy one key resistance center that had four groups of bunkers. He estimated that if we succeeded in this the success of our attack would be assured. A tank unit was given the job. Rifle units were to go into action with them as tank-borne troops and attacking groups.

Our *reconnaissance* the day before the attack, gave the tank commander the fullest information about the outline of the German defense perimeter, and about the positions of the bunkers in the populated points in the direction from which he would be attacking.

He also had complete details about natural and artificial barriers which were not visible from our observation point. The tank troops were fully informed about the position of both our own and the enemy's minefields. They knew exactly where all the openings were, their width and how they were marked.

The unit commander personally saw that the infantrymen, tank-borne troops and tankmen had fully coördinated their plans, particularly in regard to targets. Special attention was paid to support for the tanks, as the commander foresaw that the Germans might suddenly open fire from some woods west of Yulayevo.

In preparation for the attack, the Soviet troops built models of bunkers with various arrangements of embrasures. On these our tank-borne troops practiced the technique of blocking and destroying. Each attacking party consisted of ten men and a tank.

The tank crew knew exactly to which bunkers and embrasures they should direct their fire; each tank-borne soldier, as he was carried towards the target, had a clear mental picture of the dugout or embrasure into which he had to throw his grenade. Tank-borne troops and tank crews agreed on an exchange of signals to warn the machines to cease fire at the moment when the tank-borne soldiers went into the attack.

It was decided that the battle order of the tanks should consist of three echelons. The first was to advance in deployed formation followed by some infantry with guns to support the tanks; the second echelon was to advance at an angle, the third in rows to the right.

The commander calculated on simultaneous destruction of the first and second line of bunkers. Each echelon had a definite task and an objective to attack, but at the same time each was expected to follow up and develop the successes of the echelon that had gone ahead.

The first echelon consisted of heavy tanks. Its purpose was largely for probing, and it was supported by artillery which, from the moment the tanks left their starting point, plastered the forward bunkers. At later stages of the operation this artillery fire was switched over to support one or the other echelon, at signals from the tank commander.

The second echelon followed the first at a distance of 500 yards, and carried the tank-borne troops. Its task was to destroy any antitank guns that the first echelon might have uncovered in the depth of the defenses, and then to attack the bunkers.

The tank-borne troops were armed with heavy and light machine guns and antitank rifles, grenades and fire bottles. This second echelon was divided into three groups, and each had the task of destroying one bunker.

The third echelon was similar to the second in composition and purpose. It had to develop the progress made by the second echelon and attack the next line of bunkers. If the enemy began to retreat, it was the job of the third echelon to begin pursuit, either at the commander's signal or on its own initiative.

Some of the riflemen were to go into the attack from the starting point, directly after the first echelon. Their action was to support and consolidate the successes of the second and third echelons.

The machines in the first echelon advanced simultaneously from the starting points. The supporting artillery opened fire on the first line of bunkers. When they reached this first line, tanks, rifle units and supporting guns opened fire on the antitank guns, the positions of which had been discovered during the advance of the first echelon of heavy tanks.

The less heavily armed tank-borne troops of the second echelon alighted between 200 and 300 yards from the first line of bunkers. The tanks did not halt, but slowed down to allow the men to jump off. They maintained fire at the embrasures of the bunkers that the troops were attacking and at firing points on the flanks which interfered with the attackers. The tanks carrying the more heavily armed troops halted for half a minute behind cover.

When the first echelon had advanced to between 100 and 150 yards of the first line of bunkers, the commander signalled to the artillery to transfer its fire to the second line of bunkers, for which the third echelon of tanks was heading.

The third echelon followed the second at a distance of half a mile. While the third echelon was attacking the second line of bunkers the attacking infantry reached the first line and consolidated the success of the second tank echelon. The second echelon quickly regrouped for a further advance, and moved on the third line of bunkers, where the first echelon had completed its task.

Between 30 and 35 minutes after the opening of the attack the second echelon was already at the approaches to the third line of bunkers, and smashing at the embrasures. Then the tank-borne troops, applying the technique they had patiently acquired in mimic attacks on dummy objectives, rushed the bunkers and showered grenades on them. The bunkers in the other lines were all wiped out.

These consecutive blows by our tank echelons smashed the whole system of German defenses. Over 40 bunkers, dugouts and other firing positions were destroyed. This operation cost our tank unit only one machine.

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Fire from Moving Tanks

A GROUP of Soviet tanks dashed out of concealment and trained their guns on bushes where Nazi antitank guns and tank destroyers were ambushed. Volley after volley, cannon and machine gun fire demoralized Nazis and a large part of their antitank guns were silenced. The Soviet tanks continued to press forward at top speed against German defenses and thus greatly facilitated the advance of the Soviet infantry.

Fire from moving tanks proved itself extremely effective. Simultaneous fire from several moving tanks usually silences the enemy guns. Although their isolated antitank centers survive, they do not constitute a vital danger, for a lone gun has little chance of hitting a rapidly moving machine.

In this particular engagement, machines kept up steady fire and emerged unscathed although the German guns were in constant action. In addition, the rapid movement cut to a minimum the losses of infantry mounted on the tanks.

Results are never so effective when tanks halt for fire even if for only a few moments. This enables the enemy to range tanks and inflict telling losses.

Fire from moving tanks is particularly important in woods. Shrapnel from tank guns destroys the enemy snipers and antitank ambushes. Combing woods with shrapnel fire for a wide safe passage for the rifle units that follow the tanks, tends to paralyze the enemy small caliber guns and prevent them from cutting the Soviet infantry away from the tanks.

Moving ahead, the Soviet tanks brought their guns to play on all bushes, shell craters and hillocks—in fact on every spot where the enemy was likely to conceal his forces.

Fire from moving tanks is the most effective method against the enemy manpower and equipment. It requires well thought out preparations. Actual fighting experience shows that this method by no means is less effective than fire from a stationary tank. Targets are beforehand divided among tank crews so that each machine can concentrate on a definite objective selected by the infantry. Very often Soviet tanks set guns in motion as soon as they leave the attack positions, for targets are determined beforehand and all suspicious spots in the enemy line chartered.

Fire from moving tanks naturally requires high skill and training of the crews. In particular, this method requires that gears be shifted; then gun fire does not affect the tanks' movement.

Winter Attack By Small Units

*by Captain Shumilov**

WINTER sets its mark on every kind of operation, and German tactics in winter have their own particular peculiarities.

The Germans entrench themselves in inhabited centers and refuse battle in the open. With the enemy's forces thus grouped around inhabited points and commanding heights, it is easier to penetrate behind their lines in winter, effect a sudden blow from the flanks, and make bold raids by utilizing the gaps between strongholds.

In winter small parties and ski detachments are widely used. These small units afford great assistance to infantry in forcing a breach in the enemy's defenses and in repulsing counterattacks. The best troops are selected for these detachments. Surrounding of blockhouses is carried out by three such groups in close collaboration with mortar and artillery.

The center group, whose task is to storm and blow up the enemy fire position, usually consists of from six to eight riflemen, two sappers, and two or three men armed with automatics or machine guns.

The second group attracts the attention of the enemy, exploits successes, destroys neighboring machine guns and mortars, and deals with enemy tommy gunners. The third group consolidates the successes of the first group, is responsible for the final mopping up of the blockhouses and for clearing the way for attacking units.

The attack by assault groups is usually preceded by careful preparation. Reconnaissance determines the nature and direction of fire from the blockhouses; selects areas which do not come under fire; ascertains positions of sentries, patrols, mine fields, communication trenches and slit trenches; and determines the character of neighboring fire positions in the area of the blockhouses being besieged.

Small assault groups in Lieutenant Ninesanov's unit operate very successfully. After a careful reconnaissance, a well thought out detailed plan is drawn for every operation. Runners and skiers are used for communications, and rockets and whistles for signalling. Here is an instance of operation carried out by small assault groups:

The command had ordered the unit to occupy the inhabited point of Nikitino. There were several blockhouses in front of the village which held the surrounding country under enfiladed fire and prevented the village from being entered. The commander thereupon decided to employ small assault groups to attack the blockhouses.

He put his best automatic riflemen, Kriuohovsky, Shikov, and Antonov, in charge of the groups. There were two blockhouses in the sector that they were to attack. Each had two embrasures, one directed at the flank and the other at the front. In one of the blockhouses there was a cannon and a machine gun; and in the other, two machine guns.

The Shikova group engaged one of the blockhouses on the right flank and attracted the fire of the neighboring blockhouse. During the night a bold group had crawled to within 150 or 200 meters of the German position and had opened fire on them. Fire from both blockhouses was concentrated on this group, and this is what Shikov was waiting for. He then ordered Kirpichnikov to give signal—a burst of tracers.

The second group under Krivchkovsky passed between the blockhouses, and the third group went around them on the left flank. The attack of the central group was carried out in the following manner. Two sappers went in advance, and were followed within sight by the remainder of the group.

When the sappers gave the signal that the lane had been cleared, the whole group crawled rapidly through to the rear of the blockhouses.

By this time Antonov's group had completed its flanking movement and had begun pouring volleys of fire into the embrasures at close range.

The Germans would have returned their fire; but the central group meanwhile had reached the communication trench between the two blockhouses, had burst open the door and plastered the inmates with grenades. After this blockhouse was taken, all fire was immediately directed on the other blockhouse. At a given signal, all three groups rushed it, and in a short struggle wiped out about twenty Germans and captured three machine guns and cannon.

By the capture of these two blockhouses, small groups of bold fighters laid the way open for the infantry to attack, and the inhabited point was soon captured. The success of small groups depends upon a careful detailed plan of attack and the careful training of men. A unit commander should take advantage of any lull between battles to send his troops back behind the lines to build training blockhouses and practice attacking them.

*By cable from Moscow, December 29, 1942. Courtesy, Soviet Embassy.

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25-ton fast tanks go into action.

Guard Well Your Flanks!

by Major General Tagartkiladze, Red Army

THE fate of every offensive is decided on the flanks. From the beginning to the end of an operation, the enemy's attention is riveted on the flanks of the advancing party. It is there that he seeks decisions and directs his retaliatory blows.

By counterattacks on the flanks, the enemy seeks to restore his lost positions, to cover up a break-through, to smash the battle order of the advancing party, and to cut off the advanced units from the reserves.

Continuous action against the flanks of a break-through is a typical method of flexible defense. The present war has produced quite a few examples of offensive operations which, though carefully prepared and successfully launched, have been total failures *simply because of an unexpected counter-maneuver against the flank.*

During one of the German attempts to pierce Soviet defenses in the area southwest of Stalingrad, a rather strong tank group, accompanied by a large infantry force, drove a deep wedge into the Soviet lines. But they were cut off, and the Nazi attack failed under sudden Soviet counterblows from both flanks.

Recently, under enemy pressure from the flank, one of our units was compelled to desist from developing its success. The screen, that had been left to cope with the German center of resistance on the flank of the break-through, was too weak to parry the enemy's counterattack. The Germans regained the heights that they had lost the day before, and, threatening to cut off our troops, compelled our unit to fall back to its initial positions.

The conclusion is clear. Care of the flanks should be a necessity for every advancing unit. You cannot always rely on your neighbors. Events may take a turn that will compel each unit to solve its tasks independently.

The commander of a unit that has forged ahead, is always faced with a dilemma. Should he wait for his neighbor or go ahead without heeding his flanks? Sometimes it is not so easy to solve this problem. To pierce the enemy's defenses, dislodge him from the forward edge, and then have to mark time, allows the enemy to recover from the blow. It permits him to re-form his troops, retreat to a new line and organize fresh resistance.

Such a turn of events is a disadvantage to the advancing troops. It may mean excessive losses, gradual exhaustion of one's forces, and even the complete failure of the operation. It is clear, therefore, that procrastination and pauses are enemies of an offensive.

On the other hand, to proceed with an offensive without heeding the flanks, is also fraught with grave consequences. In forging ahead, a unit easily exposes itself to the enemy's blow. Every soldier knows how sensitive the flanks are to counterattacks.

The decision should not rest somewhere between carelessness and caution, but rather in a sober appraisal of the situation and of the relative strength of both parties. Much depends on one's estimate of the possible course of enemy action. The Red army holds that one principle is valid at all times—to secure your own flanks and go boldly on.

The problem of protecting the flanks should be dealt

with before the offensive opens. The commander of an infantry division, operating in the direction of the main thrust, must decide in advance what forces he intends to use to cover his division's flanks and what reserves could be moved to the flanks to help parry the enemy's counterattacks.

Commanders of flank units should have at their disposal at least a small antitank reserve. The artillery commander should always be ready to switch divisional and attached artillery to the flanks. The route of the division's offensive requires the most detailed study, especially regarding the roads leading to the flanks of the break-through and the centers of resistance from which the enemy could deploy for a counterattack.

In order to anticipate more or less accurately the forces with which the enemy may attempt a counterblow in the depth of his defenses, the commander should also know the dispositions and strength of the enemy's tactical and operational reserves.

In calculating his shock, auxiliary, and reserve forces, the commander must assume that immediately after the forward edge of the enemy defenses has been breached, the action may shift to a considerable degree to the flanks. In this situation the division will have to combine offensive movement with defensive action. This does not mean that the piercing capacity of the troops should be weakened; on the contrary, it must continually be reinforced.

The securing of the flanks, apart from the immediate screening, is a matter for mobile forces; hence, the necessity to detail a mobile reserve before the offensive begins.

Continuous reconnaissance on the flanks is the first and indispensable condition for a commander who wishes to spare himself unpleasant surprises in the course of an offensive. Reconnaissance must be extremely varied—infantry, cavalry or tanks, and artillery; infantry or cavalry reconnoitering units sometimes need to be accompanied by artillery. The whole terrain within a range of not less than a mile and a quarter from the exposed flank should be probed carefully by patrols. That is the only way to safeguard the flanks from sudden counterthrusts.

Experience has shown that to cover the flank of an advancing division, it is expedient to detail at least one infantry battalion, reinforced with artillery, as a flank detachment. Since the enemy almost invariably counterattacks with tanks, one must place tank extermination groups on the flanks. This should include antitank guns and rifles, incendiary bottles, and grenades.

Light tanks can be used on the flanks to the best advantage because of their mobility. They are quite reliable against infantry. Tommy gunners are also very good insurance against infantry counterattacks.

In essence, flank protection should, above all, include protection from hostile tanks.

The securing of the flanks by engineer troops is another question. In situations where troops are moving, it can be effected by laying mine barriers. The commander of the flank force should always have at his disposal not less than two groups for laying mines in the direction of possible tank attacks.

As soon as the scouts detect the movement of enemy tanks on the flanks, the commander should order the mining of all approaches and give due warning to neighboring units.

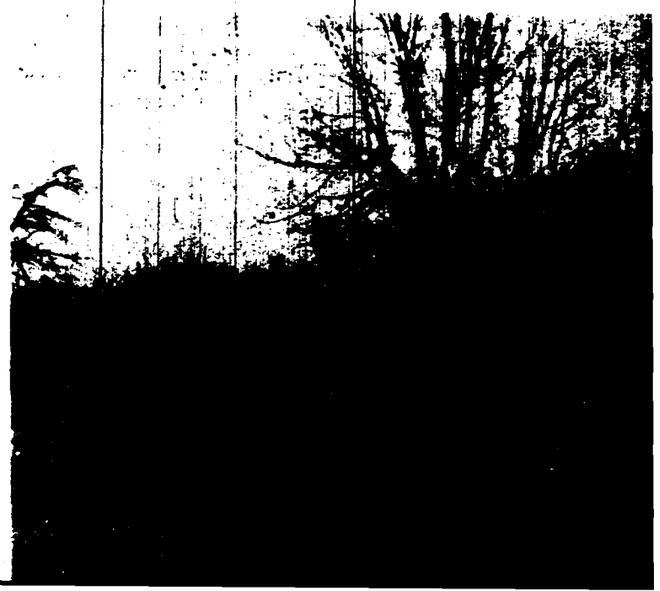
The enemy may counterattack in such strength that one battalion proves insufficient to parry the blow. It may become necessary to deploy the flank battalion and even the whole regiment. In anticipation of such a turn of events, the commander of the flank force must have with him an artillery commander and representatives of infantry companies to ensure good liaison and the rapid conveying of orders.

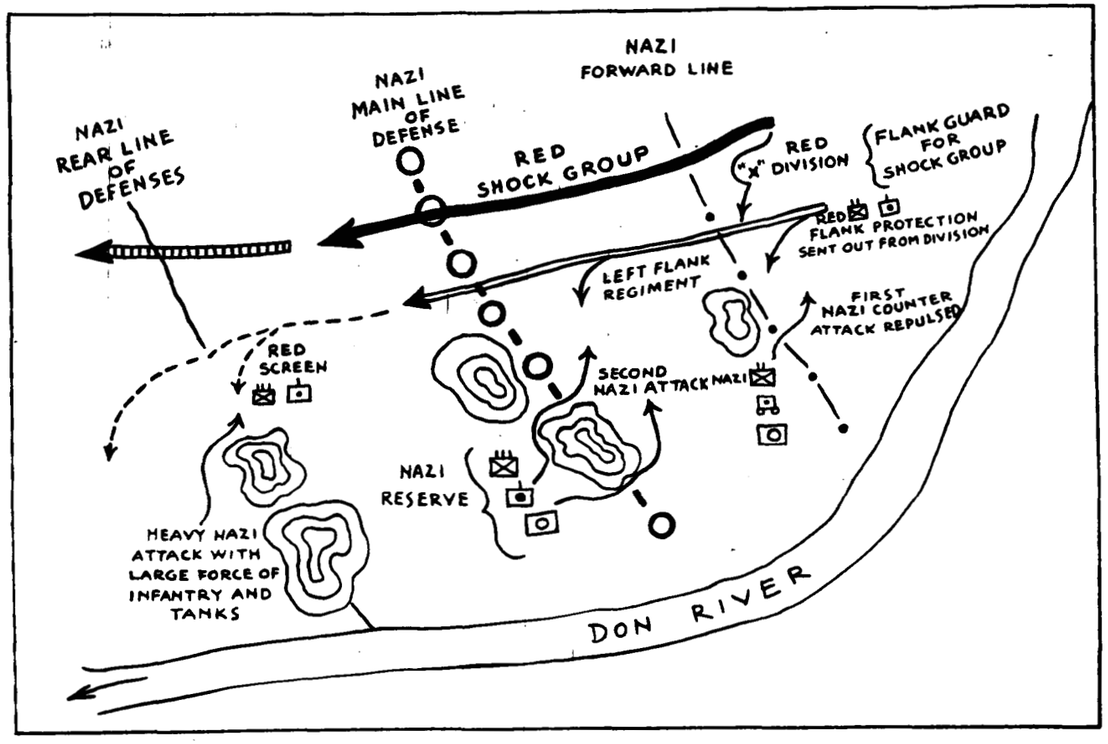
The divisional command post is best placed in the center. A division, advancing with exposed flanks, should move in wedge formation with its apex pointing forward. Flank regiments must be echeloned in depth with a half-turn to the left or right. Such an arrangement considerably speeds up and facilitates the deployment of the flanks for repelling the enemy's counterattacks.

Let us illustrate all of these propositions by the experience of the latest offensive operations of X Division in the Don bend. The division had the complex job of securing the left flank of a large shock group. While the main task of the division was to cover the left flank of the break-through and ensure the unhindered advance of the main forces, the problem of covering its own flank was even more urgent.

The enemy was in a position to hurl big forces against the exposed flank, so large reserves of Red army

These "Tetrarch" (British) light tanks are used largely for reconnaissance. They mount a 40mm gun and have a 7.62 Besa machine gun in turret.





troops had to be held in readiness. The Germans launched their first counterattack as soon as the division moved forward to the edge of the Nazi defenses.

The case was a typical one. A big enemy center of resistance remained on the flank of the break-through. It was obvious that the enemy would try to counterattack from there. Sure enough, over a battalion of infantry, with several tanks and gun carriers, sallied forth from the center of resistance.

Reconnoitering groups met and engaged them at a distance of two kilometers. Under cover of this action, the left flank battalion deployed, along with one battery of light guns and an antitank rifle squad. The Soviet flank proved to be protected adequately. After losing two tanks and more than a company of infantry, the Germans rolled back.

The main body of the division continued to develop its success without halting. A heavier counterblow followed when the main body passed the tactical depth of the enemy's defenses and wedged into them for over six miles. At this point, the Germans threw in an infantry reserve regiment, supported by artillery and eight tanks, and brought heavy pressure to bear on the division's whole flank.

Under cover of their own flank detachment, the whole Soviet left flank regiment deployed to repulse the counterblow. The engagement lasted for three hours, and ended in the Germans' defeat. Having accomplished its task, this flank regiment then overtook the division's main body and resumed its place in the formation.

When the division was approaching the *rear* line of defenses and was turning with its front to the east, the enemy sensed an outflanking maneuver, and again tried to cut off the division by striking at its flank.

A big center of resistance—part of the rear defense line—lay in the road of the division's offensive. Reconnaissance revealed that the fighting for this center of resistance might be protracted. In order not to immobilize its shock forces at the very beginning of the maneuver, the division screened itself from the center of resistance and cut it off from the south.

It was then that the enemy launched a countermaneuver and hurled a big tank group with infantry against the division's flank. The situation became very complicated. Regiments were in movement, and the thin screening force could be pierced easily by tanks. This menace, however, was countered by the artillery, which, together with the tank extermination groups, was moved to the flank just in time.

A mine barrier also played a useful part. Some of the enemy's tanks struck the mines and blew up. The artillery cut off the enemy's infantry from the tanks and drove them into a pincers of fire. About one battalion of enemy infantry was annihilated, and many officers and men surrendered. The engagement lasted

80 hours, but *did not effect the maneuver of the division's main forces.*

After reaching the enemy's rear, the division moved away from its neighbor on the right. This move created a gap about five miles wide. The right flank regiment detailed one battalion to cover the flank and echeloned to the right, and the division once again adopted the wedge battle formation.

In the area of one center of resistance, two German motorized infantry regiments, with strong tank support, brought heavy pressure to bear on both flanks of the Soviet division. This attack temporarily stopped the advance of the division and compelled it to take up an all-round defensive position.

The regiments deployed in a semi-circle, and the rear of the division was protected by a reinforced detachment. The artillery concentrated in the center in order to facilitate maneuvers to the flanks. The engagement fought by the right flank regiment against the enemy's motorized infantry was especially fierce. This regiment repelled several furious counterattacks and substantially wore the enemy down. He was then finally hurled back by the division reserve, and the main body continued with its freedom of movement.

Under such circumstances, passing to all-round defense was quite justified. To fall back, in order to seek contact with their neighbors, would have been the worst solution. It was necessary for the division to consolidate its positions, to protect itself reliably on all sides and, after drawing up the rest of its forces, to move forward with them.

Thus, one principle of the offensive is not to be afraid of tearing away from your neighbors. Contact and mutual support are the basis of coöperation, but the lagging behind of a neighbor is no reason to allow your flank to be exposed.

The commander should completely eliminate from his mind the very concept of the "exposed flank." Secure your flanks by a reliable force, and they cease to be exposed.

Small Arms Tactics Against Tanks

EXPERIENCE shows that the various types of weapons employed by Soviet infantrymen enable them not only to repel tank attacks, but also to strike at the enemy infantry which move behind the tanks.

An esssential condition for success is the correct organization of antitank defense in infantry units. This is how the problem is solved in certain Soviet rifle formations. On the routes menaced by tanks, special defense centers are formed, composed of antitank guns, riflemen and tank destroyer groups armed with hand-grenades and fire bottles. The antitank guns open fire before the machines come within range of rifle fire. As the tanks approach, the rifles go into action, aim at the most vulnerable spots in the enemy machines and support the fire of the antitank guns.

In the meantime the destroyer groups get ready to meet the enemy. Each group selects a particular tank for destruction, and sets it ablaze with fire bottles. The tank destroyers cover the positions of the antitank guns and riflemen and enable them to maneuver as necessary.

In some units this system of antitank defense is supplemented by mobile patrols consisting of one or two sappers armed with antitank mines, and one rifleman armed with semi-automatic rifle or submachine gun. On roads where tank movements are most likely to occur, the patrols select points to be mined. They then take up their observation post under cover.

As soon as the movement of enemy tanks is reported, the sappers swiftly lay the mines, level the ground and withdraw to cover. If the tank hits the mine and its crew tries to climb out, the rifleman goes into action and fires on the enemy tankmen. Such patrols operate for the most part between antitank fields or on sectors where the terrain permits only single tanks to penetrate.

This is one of many possible methods adopted by Soviet infantry to combat enemy tanks. The antitank rifle is an infantry weapon which has proved its worth in action. Though light in weight, it effectively pierces the armor plating of medium and light tanks.

The intrepidity and staunchness of the infantry are qualities of exceptional importance in antitank engagements. Courage and grit permit even a single fighter to accomplish much. The following incident was observed in a recent battle. A Soviet sub-division was defending an inhabited point when suddenly three German tanks broke through. The enemy had the upper hand.

Taking stock of the threatening danger, Sergeant Makarenko crept towards the tanks and hurled a bunch of hand grenades under the caterpillars of the leading machine. The tank was brought to a standstill, and its crew, not realizing immediately what had happened, opened the hatch. The sergeant leapt forward and hurled a grenade through the open hatch. There was another explosion, and the tank burst into flames.

The crew of the remaining two tanks tried to machine gun Makarenko. The sergeant ran nearly up to the tanks, so close that he was out of reach of the machine guns. This threw the Nazis into a fury. One of them opened the hatch and cocked his pistol. Makarenko replied with another grenade, which went flying through the hatch.

Two Red Army men hastened to Makarenko's assistance. Just then the third tank drove to one side and began to spray the street with fire. Makarenko took a bunch of hand grenades from the men and headed boldly for his third victim. The grenades went flying under the caterpillars. The disabled tank came to a halt, and the crew surrendered.

TANK AMBUSHES*

by Major B. Tretyakov, Red Army

A small tank unit separates the enemy tank spearhead from its infantry, breaks the tank formation into groups, and destroys them piecemeal.

RECONNAISSANCE PATROLS reported that the enemy was preparing to deliver a blow at the village of Kirillovka, situated on the outer perimeter of the Soviet defense. Faced with the necessity of strengthening defenses in that sector, the command brought a tank group up toward the village. Two hours later a message was received from an outpost which stated that enemy tanks had appeared north of the village, and the indications were that the main enemy thrust against Kirillovka would be undertaken with a force considerably superior to that of the defenders. Only stratagem of some kind could save the situation which was becoming precarious.

In the center of the defense area southeast of Kirillovka, and in front of good antitank terrain, there was a height with a marshy stream running to the south of it. The Germans had double superiority in force, but the advantages of terrain were on the side of the Soviet troops. It was decided, therefore, to set an ambush and defeat the Germans piecemeal.

A Soviet tank group was concentrated on the eastern slopes of the hill, but southwest of the hill and farther west toward Kirillovka the terrain offered no place of concealment for enemy tanks. In case of a breakthrough at Kirillovka, they would have to move over open ground under flanking fire from the Soviet tank group concealed behind the hill. The stream would have to be negotiated under fire from the antitank zone.

The Soviet infantry, holding the front line positions at Kirillovka, were to let the German tanks through and then cut off the German infantry when it tried to follow. After letting the tanks through, Soviet infantry was to mount its camouflaged antitank weapons along the southern edge of Kirillovka in order to protect its rear should the enemy tanks turn back to aid their own infantry. The tank group was to remain in concealment until after some of the enemy armored vehicles had crossed the stream, then some of the guns in the antitank zone were to open fire and lure tanks on farther. As soon as a part of the enemy tank force crossed the stream, they were to be engaged by a second defense of antitank guns, rifles, and artillery. The tank group in ambush was to drive to the top of the hill and attack those enemy tanks that had not yet crossed the stream. Thus the enemy force was to be divided into three parts and destroyed piecemeal.

At noon the enemy tank column easily broke through the front line of defense and drove at high speed towards the antitank zone. Some of the German vehicles attempted to circle around the hill where the Soviet tank group was concealed, but just then several guns and rifles opened up from the antitank zone and the enemy turned sharply toward the south again.

The main body of German tanks started across the stream after its vanguard. The second echelon slowed down and gave fire support to the first echelon. At that moment, the second line of antitank guns and field

*By cable to The CAVALRY JOURNAL from War Department, U.S.S.R., Moscow.

artillery opened up at the tanks that had crossed the stream, and at the same time the Soviet tanks in ambush directed their fire at the enemy vehicles that still remained on the northern bank. The surprise was so great that the enemy tanks scattered in confusion. Those that turned back were met by fire from the first line of antitank guns placed along Kirillovka's southern edge.

The enemy apparently could not at first determine the direction of fire. Panic spread among the enemy. Several tanks were burning, and others, crippled by Soviet shells, were standing still.

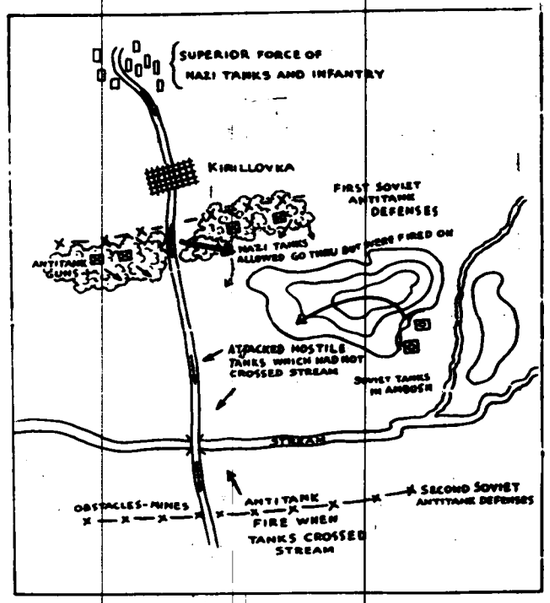
The Soviet tanks chose that moment to launch their attack. Some more enemy machines were destroyed at point blank range, and the rest turned back and fled around to the west of Kirillovka. The Soviet tank group engaged in pursuit of the enemy vehicles and then crushed and dispersed the motorized infantry which was attempting to capture Kirillovka.

While the tank group from ambush was engaging the enemy tanks to the north of the stream, fighting to the south of it had developed as follows:

When the Soviet artillery opened fire, the German tanks that had crossed the stream attempted to storm the firing points in the antitank zone but came up against antitank obstacles and mines. Several machines were blown up, and others were destroyed by antitank guns and field artillery.

Having received considerable casualties, the enemy was forced to turn back and recross the stream under a tornado of fire. Eight tanks got stuck in the stream, and members of the crews who climbed out tried to escape on foot. The tanks that succeeded in recrossing the stream were met by the fire of a tank company protecting the movement of the tank detachment that was in ambush. Only half of the enemy tanks were able to break out of the trap. German losses amounted to 56 tanks out of 120 and two battalions of motorized infantry.

The Soviet-German war has presented numerous examples of tanks operating from ambush. Well arranged ambush offers the possibility of successfully engaging a superior enemy force.



Ambush may include large tank formations operating in conjunction with infantry and artillery, or it may consist of small tank groups supported by submachine gunners, antitank guns and rifles.

The choice of terrain and the factor of surprise play important parts in determining the success or failure of ambush. Experience has shown that the most effective tank ambushes are ones placed on uneven ground on the fringe of a forest or else in thickets. Ambushes in forest-covered mountains were widely used during operations in the Caucasus foothills. Terrain should restrict movement of enemy armored vehicles and afford wide opportunity for the maneuver of friendly tanks.

A surprise attack always stuns the enemy. That is why ambush should always be concealed from the air as well as from land observation. Ambush early discovered is doomed to failure.

The possibility of the enemy appearing from some previously unforeseen direction should be kept always in mind.

Ambushes should be organized so as to ensure repulse of the enemy even should he appear from the rear. For this reason reconnaissance and constant observation is necessary. Tanks in ambush are wise to cooperate with other arms of the service. Antitank rifles and guns augment the firepower of the tanks. Submachine gunners protect them from enemy tank fighters, while sappers mine the terrain so that enemy tanks, in circling around minefields, will inevitably fall into the ambush.

Tanks in ambush in a lightly wooded area await attack by the enemy.

Sovfoto.

All ambushes should be organized with an advance in mind. They are used not only in defense but in other types of engagements as well. Their purpose in meeting an engagement is to hold the enemy and gain time necessary for concentration of the main body of troops.

In an offensive engagement an ambush is employed to rout the counterattacking enemy forces and sometimes to protect the threatened flanks of advancing troops. During reconnaissance in force, ambushes are also used to capture prisoners and destroy enemy scouting patrols.

In a defensive operation small tank ambushes (a company or battalion) are used to cover the retirement of the main body of troops to new positions. As a rule, small groups of tanks are placed in ambush along the most likely directions of the enemy advance (highways and defiles). These groups are located along the front or in depth at a distance from each other that is sufficient to ensure mutual fire support. Antitank guns and rifles are placed in ambush along with the tanks, and submachine gunners take up positions some 50 to 100 meters ahead. It is desirable to have approaches to every tank group and spaces between them mined.

The officer in charge of an ambush, usually a company or battalion commander, should be in constant communication with each group by wireless, light signals, or telephone. He also has the mobile tank reserve and sometimes antitank rifle reserve at his disposal. The system of fire is arranged in advance and each group is assigned a definite sector. At a signal from the command post, fire may be concentrated in any direction.

Last August Major Khoroshko, commanding a force defending the approaches to an inhabited point on the Don, arranged an ambush in the open steppe. On terrain so unfavorable to defense, the movement of vehicles may be observed at a distance of five kilometers. The major placed groups of light medium tanks along a front of from two to three kilometers and at an equal distance in depth. He then issued orders for his men to dig themselves in and camouflage. Several score medium and heavy tanks were concealed in a small grove behind these ambushes, and submachine gunners took up positions in front of the tank groups, with antitank guns placed at intervals between them.

The enemy tanks appeared in the morning, formed up, and stopped from two to three kilometers from the group of Soviet tanks in ambush. Some German tankists leaned from their hatches to observe the terrain but apparently saw nothing suspicious, for the enemy tanks, accompanied by self-propelled artillery and numerous submachine gunners, rushed to attack. The Soviet tanks and antitank guns in ambush opened a tornado of fire at a range of less than one kilometer. The enemy was caught by surprise but, unable to sight any targets, he continued to advance and kept up a desultory fire.

Sovfoto.

With no trees in which to ambush, this tank crew has dug a pit and topped the tank with brush.

After losing 62 tanks, a large amount of artillery, and several hundred officers and men, the Germans were forced to retire to their initial positions. Soviet losses were 17 tanks and 6 guns.

When enemy tanks are sighted, tanks and guns in ambush open fire at a signal given by the ambush commander, and great firmness and accuracy are needed to choose the right moment for fire. The following episode is characteristic in this respect:

A group of Soviet tanks had concealed themselves in ambush near the town of Novoe when a small group of enemy tanks soon appeared from a grove. They approached to within 800 meters of the ambushed tanks, then turned and disappeared in the grove again. The enemy repeated such sallies several times, but the ambush commander guessed the enemy's intentions and directed his men to hold fire until further orders. Noticing nothing suspicious, about 50 of the enemy tanks crawled from the grove and drove forward in close formation. The tanks in ambush opened fire at short range, destroyed about 20 tanks, and forced the enemy to fall back to his initial positions. Experience has shown that coolness, firmness, and sober thinking determine the outcome of ambush.

In some cases it may be profitable for advance ambush groups to let part of the enemy tanks get through in order to place them under crossfire of tanks located deeper in the ambush zone. Then the rest of the tanks and infantry may be cut off and the enemy routed piecemeal.

Should the enemy attempt to outflank an ambush or crush it with a large force, the commander should immediately order his mobile reserve out to meet the attack. The reserve may also be used as a decoy to lure the enemy under the fire of the tanks in ambush. For this purpose a part or whole of the reserve moves ahead of the ambush and, after engaging the enemy, falls back and draws it toward the trap.

A Soviet tank unit was moving along a valley in the Mozdok area when its vanguard reported that it had sighted an enemy tank column approaching from the opposite direction. The unit commander decided to organize an ambush and ordered the vanguard to fall back but to keep a steady lookout for the enemy. Soon another message came in, which stated that enemy advance units were turning into the neighboring valley. The commander then ordered two platoons to move ahead, open fire at the enemy, then retire, and lure the enemy towards the ambush.

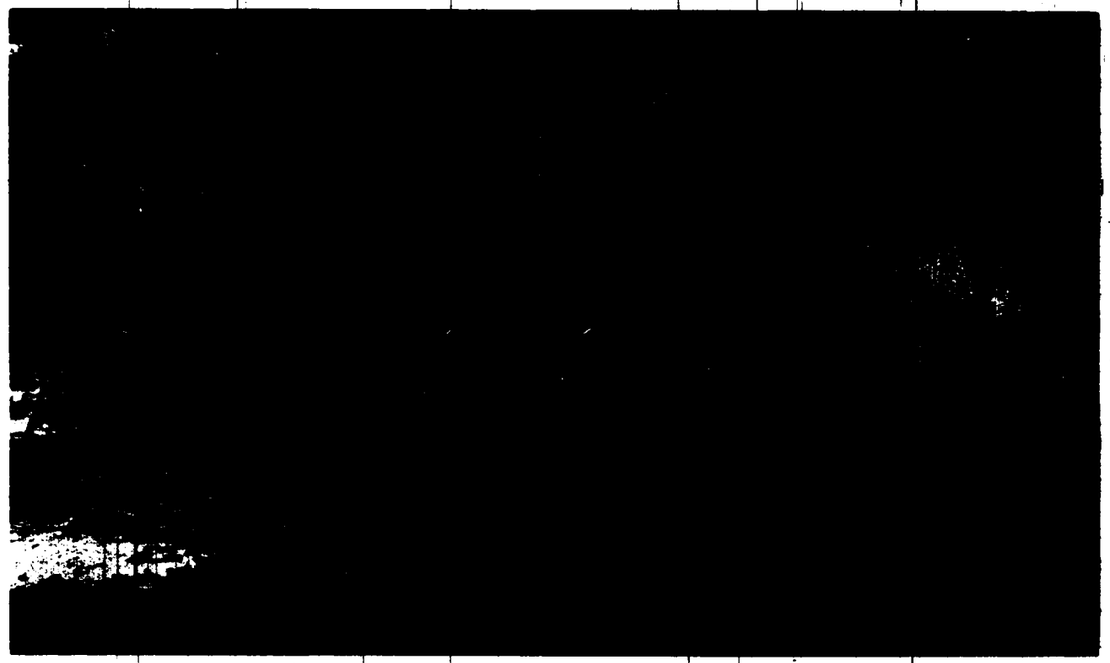
At the approach of the Soviet tanks, the enemy assumed battle formation and started in pursuit. The enemy suddenly found himself under a heavy crossfire, and his forward and rear tanks became crippled first and blocked the way for the rest.

When threatened with encirclement, tanks in ambush should retreat swiftly to new positions. For this reason, tanks should be entrenched in such a manner as to afford them opportunity of slipping out easily. First to retire should be the antitank rifle detachments, followed by submachine gunners protected by tanks. Retreat of advance groups should be covered by a group situated farther inside the ambush zone, while the mobile reserve should hold up the enemy and gain the time necessary for the whole force to take up new positions. The reserve force should then lure the enemy under the fire of the tanks in the new ambush position.

The best time for retirement is at night when observation is difficult or in the daytime under cover of a thick smokescreen. In this case, it is possible to escape pursuit altogether or else mislead the enemy or even force him to engage his own troops, as did Lieutenant Semenov.

A group of tanks under Semenov's command placed themselves in ambush in a thicket along a forest through which the road cut. The enemy tanks were met by fire and rushed back into the forest. Sometime afterward one of the neighboring groups informed Semenov that two enemy tank groups were outflanking him, with the intention of making an obvious envelopment. Semenov immediately ordered fire to be opened at both flanks and, by taking advantage of the falling darkness, moved back. The enemy tanks fired back, then moved towards each other. Drawing pincers together, the enemy machines fought each other, while Lieutenant Semenov's group, which had retired, looked on.

These examples do not cover all of the problems connected with tank ambushes, nor do they touch upon ambushes organized by infantry and other arms of the service. They attempt to describe only a few of the possible tactical employments of small tank units.



These tanks, ambushed on the edge of a dense forest need less camouflage.

Salvage and Supply of Tanks in Battle*

by Lieutenant Colonel A. Afonskyk, Red Army

THE salvaging of wrecked tanks from the battlefield and the constant replenishment of their ammunition and petrol is of primary importance in the Soviet army. This work is particularly complicated under actual fighting conditions and requires special care and attention.

First of all, to salvage wrecked tanks and replenish ammunition and petrol, a definite plan for this purpose must be prepared at the same time that the general plan of operation is drawn up. The rear unit of the supporting tank group must contain a special salvaging group with an officer in charge. This group is responsible for the timely evacuation of wrecked machines from the battlefield and sees to the constant supply of ammunition and petrol to fighting tanks.

In addition, the general plan of operation should provide the necessary measures for this work, but the details depend upon specific conditions in each given engagement. The second in command of the group performing the operation, together with the assistant commanders of the various units, watches the movement of the tanks from an advanced observation post, stationed from one to one and a half kilometers from the actual tank formations. Contact is maintained with our posts by submachine gun groups of four or five men each.

About 600 to 800 meters behind the advanced observation post is the salvaging and supply group. This group consists of tractors, field repair units, petrol tanks, and armored haulage tractors that carry supplies and spare parts. Their job is to salvage wrecked tanks and get them to repair units, to help tank crews in repairing damaged machines on the battlefield, and to replenish ammunition and petrol supplies during the battle. The officer in charge of the salvaging and supply group maintains contact with the advanced observation point. For this purpose he is assigned several dispatch riders, and when necessary the group is reinforced by sappers and submachine gunners.

The first echelon of rear units, where the damaged machines are repaired, is located from three to four kilometers behind the salvage and supply group. The advanced observation point receives information on the condition of tanks from scouts who act in conjunction with the forward units. After verifying these reports, the commanding officer sends orders to the chief of the salvage and supply group who then organizes the salvage of the wrecked tanks or arranges for their repair on the battlefield. For this purpose all available tractors, and when necessary sappers and submachine gunners are used. If the tanks are to be repaired on the battlefield, he then dispatches repair gangs from the advanced field repair base. The repair gang approaches the damaged machine on foot or on an armored haulage tractor.

Experience has shown that the enemy always tries to hinder the repair of damaged tanks. For example, when approaching one damaged tank near the villages of Sharovo and Fedosino the salvage group was met by enemy submachine gun fire. One enemy submachine gunner actually fired from the wrecked tank itself, so before salvage could be started the area first had to be cleared of all Germans.

At another sector where a Soviet tank was damaged by a land mine, it was necessary to de-mine the area before salvage could be made, and a group of sappers was dispatched for this purpose.

On another occasion the commander had to ascertain the condition of the damaged tank on the battlefield. As he approached it, the enemy opened strong fire from submachine guns, and our men reached the machine only after a smoke screen had been set up.

In still another case, as the Soviet salvage group approached a damaged tank, it was met by artillery and mortar fire. Not until after Soviet artillery had retaliated by a powerful barrage and silenced the enemy guns was it possible for them to start to work.

These examples show that salvage work on the battlefield is usually rendered easier by having submachine gunners and sappers accompany the salvaging force, and in certain cases even artillery support is necessary.

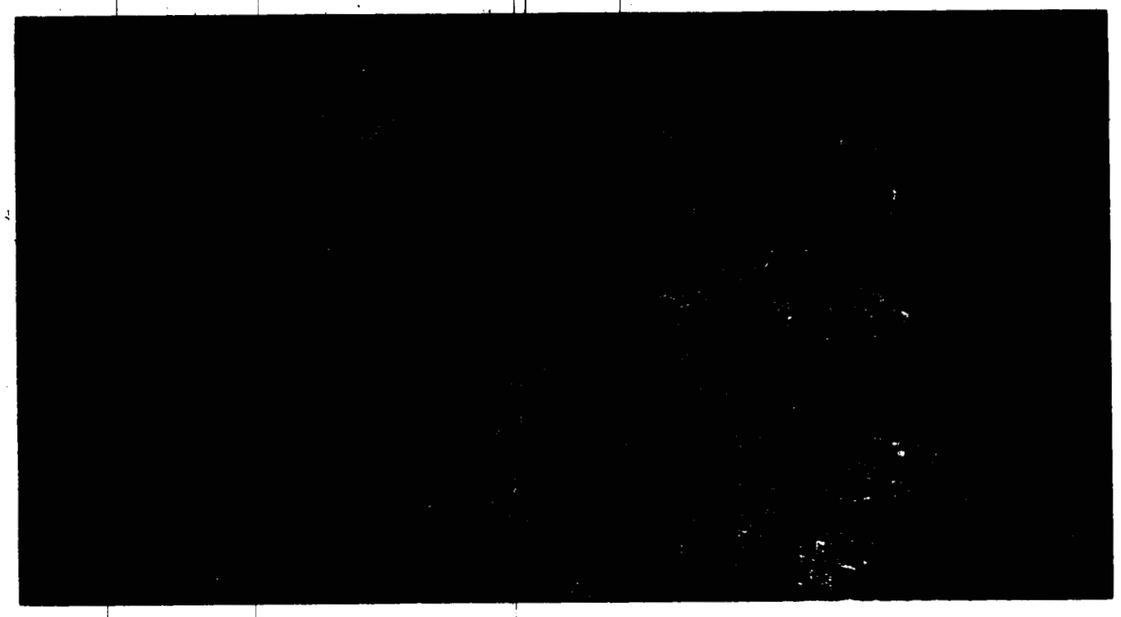
Salvage must proceed throughout the battle so that by the close of the engagement, all damaged and wrecked tanks may be safely evacuated. The work involved may require several days, particularly if proper equipment is lacking or the situation in the battle area is complicated. Meanwhile, it is possible that the enemy may locate the position of the stranded tanks and direct his artillery and mortar fire against them. In such cases salvaging is usually performed at night and under cover of our artillery.

Replenishment of ammunition and petrol for tanks is carried out directly on the battlefield, because the return of tanks from the battlefield for fresh supplies often results in reducing the pace of the offensive, and sometimes the absence of tanks encourages the enemy to launch a counterattack.

In Soviet tank units, this supply work is organized as follows: The tank in need of replenishment of ammunition or fuel seeks cover, while the salvage and supply group rushes an armored haulage tractor with the necessary supplies, which are taken from the first rear echelon. As soon as the tanks have reached their objectives the first rear echelon moves up to the tank positions, and all machines receive fresh supplies.

*Cabled to The CAVALRY JOURNAL by the War Department, U.S.S.R., Moscow.

These Nazi tanks, captured in the northern sector, were repaired by Soviet salvage groups in time to go into action against their former owners.



Captured German tanks undergo repairs at a Soviet workshop behind the lines.

GERMAN DEFENSES

In Woods

IN wooded areas, the German defenses conform to the pattern shown in the accompanying sketch. Near the forward edge, lanes are chopped in the form of an obtuse angle. Mines are laid in the center of the cuts; and on either side barbed wire, wooden and other obstacles are constructed. During the day the lanes are patrolled and covered by enfilade fire, but at night they are vacated while the Germans await the arrival of Soviet infantry.

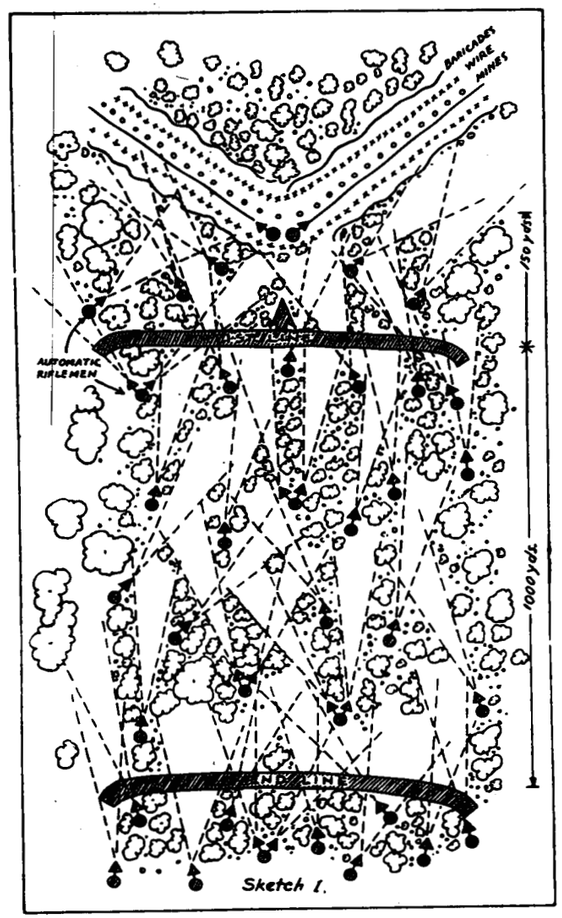
About 150 yards behind the cut is a thinly held line of infantry, and about a thousand yards farther to the rear is another stronger line of infantry. In the intervals, separated by about 50 yards, the Germans place *dzots*,[1] each armed with two automatic riflemen. Each *dzot* has individual acute-angled cuts cleared out for about 150 yards to the right and left front.

The density of the *dzots* increases toward the rear. Each is secured by cross fire from its neighbors, and all are connected by communication paths and trenches. In the event of bombardment of the forward defense zone the defenders fall back to the rear.

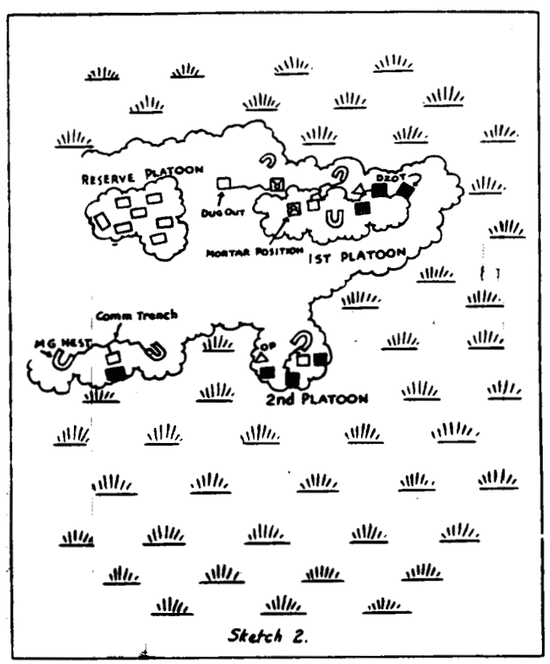
The weakness found in this type of defense is a lack of proper security against flank attacks.

*Brief of an article by Major N. Shandarayev published in *Red Star*, October 4, 1942.

[1]Firing point emplacements. The more elaborate are made of iron or wood.



Sketch 1.



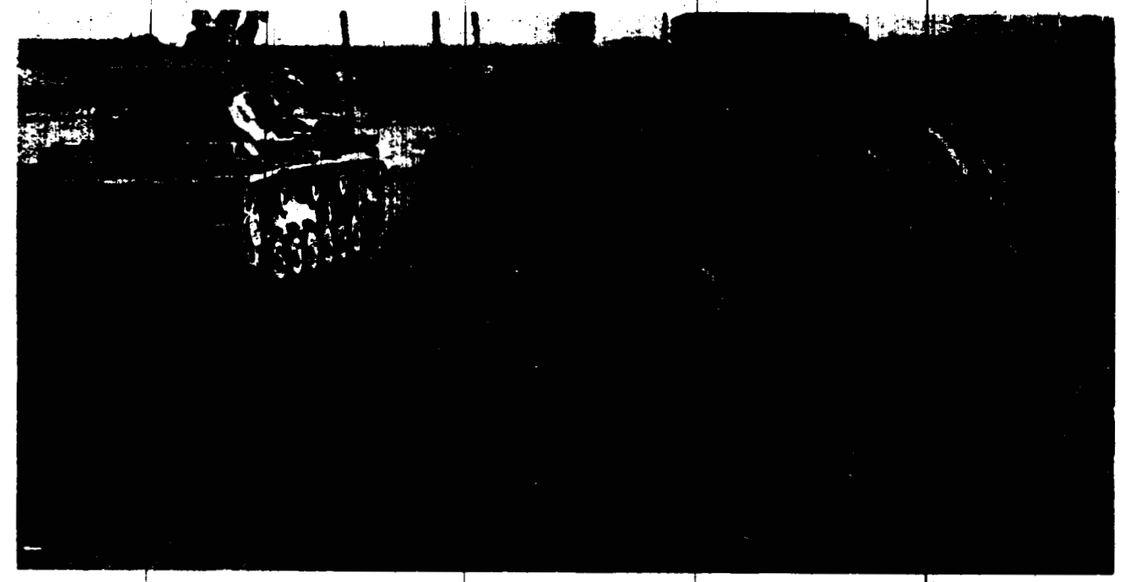
Sketch 2.

In Swamps

Defense in swampy areas is conducted only on the available dry, wooded islands (see sketch). An attempt is made to connect each island, but if this is not possible, then the islands are built up and preparations are made for carrying on independent defenses.

In the accompanying sketch two platoons are defending an area of the front that runs from about 1,200 to 1,400 yards. The reserve platoon is located about 1,000 or 1,500 yards to the rear. Flank security is maintained by appropriately placed machine guns.

The German machine gun nests follow a horseshoe pattern. The bend faces the front 3 or 4 yards wide and 4 or 5 yards long. The nest usually is covered with wood and dirt. Massive all-around *dzots* are rare on the northwest front; the smaller ones with two embrasures are the rule.



The Advance and Attack of German Armored Formations in Libya, 1941-42*

by Colonel H. B. Latham, British Army

Introduction

IN connection with the handling of his armored units, there are four principles from which the Nazi rarely departs:

(1) The primary rôle of the tank is to kill infantry.

(2) The main weapon of the tank is thus the machine gun.

(3) The tank can be successful only if used in conjunction with all arms.

(4) Tanks must be used "en masse."

As a result of these views:

(1) The Nazi will not fight a tank battle if he can avoid it.

(2) The order so constantly given to our armored formations "to seek out and destroy the enemy's armor" has led to almost tragic results.

(3) Nazi tactics are based on armor always moving with other arms in close support in the form of a "box" or moving "defended locality."

Composition of the Box

The "box" is the part of the column which is inside the dotted line in diagram "B." It varies in size, but if a battalion of tanks is moving with it, it might contain the following fighting troops, in addition to the tank "ground crews," reserve petrol, etc.:

One battalion lorried infantry, usually carried in semi-tracked, semi-armored vehicles.

One battery 50mm antitank guns.

One battery 88mm AA guns.

One troop 150mm close support guns sometimes on SP mountings.

One battery field guns.

On the move or in the attack, the artillery with the "box" is disposed of as shown, *i.e.*, the antitank and AA guns guard the flanks and front faces, while the infantry guns and field guns are usually only inside the "box" when it takes up a defensive position. In size it is approximately two miles deep on a frontage of 800 yards. The 88mm, though it has proved a very effective antitank gun, is primarily included in the "box" to protect the "soft skinned" vehicles from air attack.

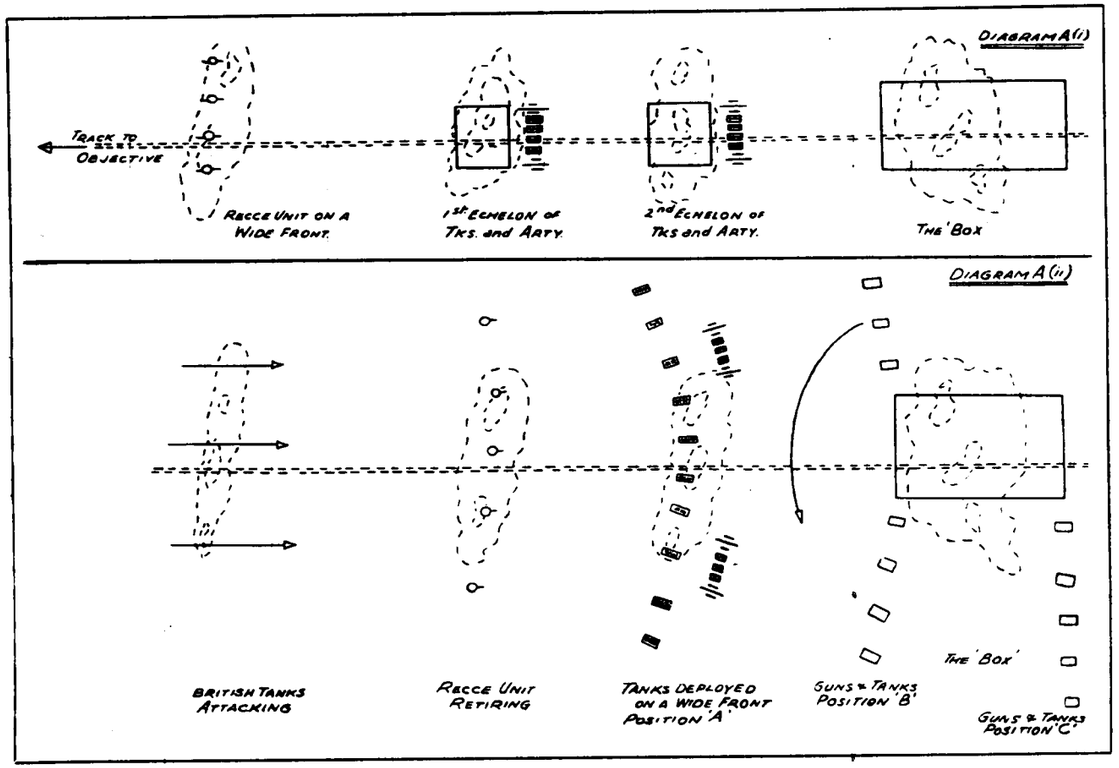
The Method of Advance

The method of advance is shown in diagram "A." On dead flat country the distances between the various portions of his column are approximate.

Between the reconnaissance unit and the leading echelon of tanks, 5-10 miles.

Between the 1st and 2d echelons of tanks, 1 mile.

*Courtesy, *R. A. Journal* (British).



Between the 2d echelon of tanks and the "box," 2 miles.

The whole is directed towards some tactical feature which, if seized, will force us to fight and so engage on ground of the Germans' own choosing.

In normal terrain each portion of the German column moves from high ground to high ground, and the more rearward echelons of the column step up rather like the old cavalry advanced guard. Each echelon of tanks is supported by field artillery, which moves in the rear of them.

Method of Fighting If Attacked On the Move

As soon as our tanks are reported to be advancing, the "box" halts and takes up a position for all-round defense. This can be done very quickly owing to its formation on the move. As our tanks advance, the Nazi reconnaissance unit falls back, and their two echelons of tanks deploy on a wide front, with the flanks thrown forward; position A, diagram A.

If we continue to advance, the Nazis continue the retirement to position B and force us to attempt to break through one flank.

If we imagine that we decide to attack the Nazi left flank, this falls back to position C. Then our tanks, if they pursue, are not only engaged frontally by his Mk. IV tanks but are caught in flank by the antitank and AA guns of the left face of his "box." Finally, the tanks of the hostile right flank swing around and engage our attack in the rear.

The artillery, which moves with the tanks in the advance, may either remain supporting them or enter the "box" to stiffen its antitank layout.

The Attack Led By Tanks Against a Locality (Diagram B.)

In general the Nazi accepts our reconnaissance of the ground and aims at taking one of our localities. He realizes that it is usually impossible for an attack in depth to pass between two localities or to cross the front of one locality to attack another. His attack is launched, therefore, approximately "head on."

Such an attack might thus be carried out in the following way:

Phase 1. He will reinforce his reconnaissance unit with tanks deployed on a wide front and drive in our covering force, until he is approximately 2,500 yards from our "Crust."

Phase 2. A most careful reconnaissance will then be carried out by a senior commander in a tank to decide which locality to attack. In Libya last winter when our localities were not necessarily sited on high ground, a great deal depended on whether the Nazis could get a position about 2,000 yards from our front face on which to deploy his covering force. In diagram "B" it

is assumed that he has found this and is going to attack locality "B."

Phase 3. His covering force now deploys as follows:

Mk. IV tanks take up a hull down position on the ridge and with the fire of their machine guns attempt to pin the defense. They may engage visible antitank guns with their 75mm.

Under cover of their fire 50mm antitank guns, heavy machine guns, and close support 150mm infantry guns are also deployed in an attempt to knock out the antitank guns of the defense or to kill their detachments.

It should be noted that in the British Army, since the Vickers machine gun has been withdrawn, there is no means of engaging the heavy machine guns opposed to us except by the fire of field artillery. The majority of the weapons deployed by the German covering force are dependent on open sight laying and so can be blinded by smoke.

Under cover of the fire of his own covering force, the attack forms in rear thus:

(1) Three rows of tanks about 50 yards apart and each row approximately 150 yards in rear of the one in front.

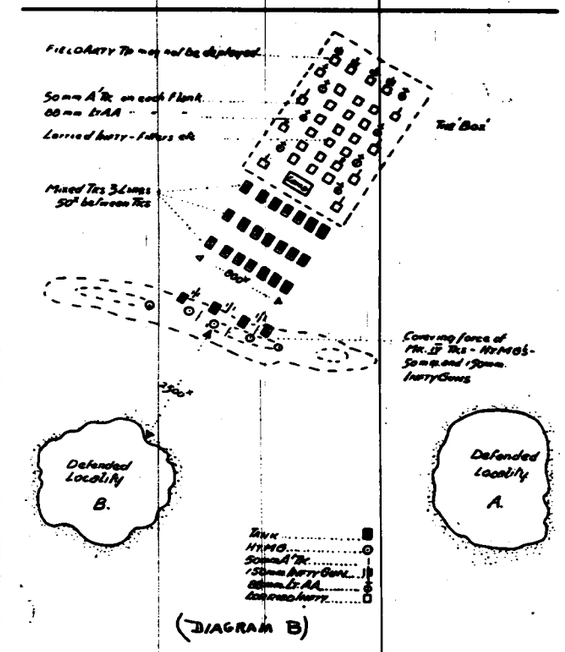
(2) When the tanks are in position, the "box" forms up in rear as shown; the infantry all ride in their trucks.

Phase 4. At zero hour, the whole moves forward at about 15 m.p.h.; the rate of speed depends on the ground. As they pass through their covering force, the tanks begin to fire, not so much with a view to hitting anything but simply to have a psychological effect.

On arrival at locality "B" some tanks drive straight through to the rear face; others assist their infantry to mop up.

The latter do not usually dismount till they arrive in the locality, when they fan out and use tommy guns extensively.

Phase 5. When the attack is successful, the covering force moves forward into the captured locality to stiffen the defense, and the tanks are usually withdrawn and serviced near what has now become the rear face of his locality.



Generally

(a) It takes two or three hours to prepare and stage such an attack.

(b) If successful, no minor counterattack is likely to drive him out. His defense can be organized very rapidly, since all the weapons he requires are immediately available.

(c) As a result of such tactics, our localities have had to be sited on higher ground, and it has been necessary to avoid ground from which they can be overlooked.

(d) Such attacks are now beaten off, and it is apparent that in future they will not succeed without much more artillery support.

(e) The whole form of the attack has been reduced by the Germans to a "Battle Drill."

The Commander

The commander must guess whether, after receiving the initial blows, the core of the opponent's Army is gradually becoming condensed, tempered and strengthened, or, to the contrary, beginning to crumble into dust like a decanter made of Bologna glass whose surface has been cracked. The commander must figure out with precision how much the enemy state will be weakened by the loss of certain sources of supply and by the disconnection of certain arteries. He must foretell without mistake whether the enemy will collapse in pain from the wounds inflicted on him, or hurl himself forward with frenzied might like a wounded and enraged bull.—General Carl von Clausewitz.

Germans Train "Anti-Commandos"

(Recent German Training Instructions)

THE enemy (Allied) commando attack on Heraklion Aerodrome on the night of June 13-14, 1942—an exceptionally dark night during the period of the new moon—demonstrated that the enemy's specially trained sabotage troops are too good for our defenses.

It is essential to standardize and to improve the method of defense against commando raids.

Intelligence sources are unanimous in maintaining that the English and the Fighting French, probably also the Americans and Russians, have formed with their "Commandos" a new sort of troops—even indeed a new arm of the service. It consists ideally of personnel especially suited by their profession (acrobats, boxers, etc.) who have been given a thorough and systematic special training, and armed with special equipment for sabotage and raids. In several instances they have scored successes over our own troops in their present state of training and equipment. The success of the attack on Heraklion Aerodrome is also proof that the instruction of our troops concerning the enemy's methods of attack, and repeated warnings of imminent danger, are not sufficient to ensure a successful defense. In fact, an accumulation of repeated warnings of imminent danger has a detrimental effect.

The methods of attack of these enemy troops are varied and for the most part novel. Examples:

(a) The Italian Siena Division, which is under German command, received the following report through Italian military channels:

"Some time ago English parachutists landed near Prague. When they were held up by the local police, they obeyed the order 'Hands up!' But they carried a special device on their belts, with a pistol, from which cords ran to their hands. The latter fired the pistol. They thus succeeded by a quick and appropriate movement in accounting for the policemen."

(b) During the attack on Fuka Aerodrome (Africa), according to a report from *X Fliegerkorps*, the enemy troops put up distress signals. They succeeded in enticing the sentries away from their posts for a time, and successfully carried out their sabotage.

(c) Before the attack on Heraklion Aerodrome, an aircraft crew noticed six men of a Commando lying close together on the grass. It was already very dark, and the airmen shone a pocket torch on them from one yard's distance. When questioned, they pretended they were soldiers resting. One of them gave a sort of annoyed grunt, a clever and self-possessed indication that he did not want to be disturbed. The trick succeeded.

This special training of the enemy contrasts with the state of training on our side, which is in some ways no longer adequate, and is no longer competent to deal with enemy commando raids.

New *methods and weapons* of attack demand *new forms* of defense. The following are suggestions for such new defense methods. They fall under three headings:

Equipment

The equipment of the troops must be suited to a special degree for *use by night*. First on the list comes the demand for completely silent behavior even in difficult country. Rubber shoes or rubber soles, overshoes, or stockings pulled over, must be developed. Every part of the man's equipment which hinders him physically must be left out. A combination suit is better than a coat, with belt, trousers and jackboots. *Every man* must be equipped with a flashlamp and a Verey pistol. Long-burning Verey cartridges (perhaps with a parachute) are required. At night, a pistol is better than a rifle. Sights for night firing can be improved both on the rifle and the pistol.

The equipment of the guard room with pistols, to be handed out to individual posts and patrols, and the use of mobile assault troops, must also be considered. Camouflage material to prevent the detection of posts in the dark—at least for static sentry posts—should be available. Shining buttons, bright bits of equipment, and white parts of the body betray a soldier quickly.

Training

Training requires considerable changes. These can only be outlined in the following details. It will be necessary to introduce in all Air Force training manuals a special chapter "Defense against Raids." . . . Up till now, training pamphlets have not included the point that *guard duty* is always part of "field service." It is important to formulate this principle. It must be made quite clear that every soldier on guard is not merely a sentry, but is also a *fighter*. It is also worth consideration as to whether the traditional division of training into *individual training, training in close formation, and training in the field*, is still up to date.

It seems nearer the mark to emphasize that there is a "training of the individual" within the scheme of "training in the field." This training of the individual in field fighting is indeed one of the main elements of training as a whole.

In this part of his training, the young soldier must learn and be trained to be an individual fighter. He must learn that kind of conduct in the face of the enemy which he will need if he is to give a good account of himself against superior numbers in the open. Greater importance must be laid on this in training in the future. The necessity that the man on sentry or watch patrol must fight, comes into clearest relief in combatting enemy commando raids.

In the conception of "individual fighter" the emphasis must be laid on the "fighter." Statements like the introduction to the section on battle training in "Principles for Training in War," which enunciates the principle, *"Battle training takes second place to drill,"* seem senseless.

One training manual says, "The sentry post must have a good field of vision, and be concealed from the eyes of the enemy." This is not enough. It is necessary that the soldier be trained to observe acutely for hours—standing motionless behind a tree, like a hunter on the trail.

An extract from another training manual again misses the mark for defense against commandos. There we read: "The sentry will observe the enemy. As soon as he sees anything suspicious, he will report it to his unit headquarters by sending a runner. He will continue to observe." If we acted in the spirit of this, even a double or a triple sentry post would never destroy an enemy night commando attack.

Instruction and training of the individual fighter lie essentially in the sphere of education of the mind and development of the will. The soldier must learn to have all his senses tense for long periods. He must combat the inclination to ease off his watchfulness and readiness if he is alone and without direct supervision and out of touch with his neighbor. He must combat the inclination to regard things carelessly as not suspicious or innocuous. On the other hand, these measures must not be allowed to produce uneasiness and anxiety on the part of the soldier. This must, therefore, be treated very thoroughly during instruction.

As an individual fighter, he must be made a daring one. In close combat, to jump at the enemy's throat is often the best defense. A good kick in the stomach can be more effective than a blow with the rifle. The soldier must be fully accustomed to close combat. The means to overcome the psychological restraint imposed by loneliness can be best learned by the young soldier in regular night training. Both ear and eye must be trained by night. Both sight and hearing by night can be improved materially by practice.

During individual training the instructor (section or gun commander) must know the capacity of every man in this respect. The same holds for the use of weapons. Aiming and shooting in the dark and half-light must be introduced into firing practice. The Air Force Small Arms training manual is to be enlarged on this subject. It holds especially for aiming and firing with a pistol. The proposal to improve sights for night firing has been mentioned above.

As a matter of principle, night training must begin in the recruits' first weeks. Here too, only practice makes perfect. *The holding of training parades at night must be laid down in orders and become the rule.* Silent movement, in particular, must be practiced. Long periods without moving—silent, slow, creeping movements—carrying of arms while doing so—silent whispering—use of the flashlamp—of tracer and signal ammunition, are only a few examples of what forms individual training in the field. The silent changing-over of sentries at night can be practiced easily by detailing an opponent to watch them.

Other parts of the training, such as finding one's way across country by night, use of passwords, knowledge of all signals and alarm equipment, coöperation within a file or patrol at night, require more emphasis than they have had up till now. There is no doubt that by methodical practice in this method of fighting by night (in which enemy commandos have been specially trained for a long time) speedy successes can be won. Even pre-military training must pay much more attention to carrying out night exercises.

In the face of the demands for this type of battle training—at least in war—other training subjects must take second place. "Present Arms" can also be done away with, where it still happens to be practiced. The

These Nazi training instructions, issued by the German Air Ministry, August 2, 1942, indicate a healthy respect for Commando tactics.

section, "Training in Close Formation," can be reduced radically. Experience shows that too much time is spent on it. It is considered profitable to abolish completely all formal movements on the drill square. That belongs to pre-military training for those between 10 and 17 years of age.

The above proposals for training and defense against raids will be introduced especially in courses for N.C.O's, and in recruits' training.

Other Means of Defense

Watchdogs with trained keepers are useful on all exposed airfields: likewise, *bloodhounds* for pursuing retreating enemy. The appropriate employment of such patrols under experienced leaders must be made familiar to the troops.

Methodical floodlighting of vulnerable points and of the ground leading up to them, can be useful. Small searchlights used for AA purposes can be so employed. Verey lights can also be fired. The illumination of the country, however, must be organized to occur at irregular intervals and over a considerable area.

Temporary use of trip-wires or ropes, which are removed by daytime, between individual posts and on tracks, can also be made.

The employment of obstacles with electric charges should also be carefully thought out. It must be possible to organize squads to make obstacles with the required material and means of producing currents, as permanent troops.

Acoustic alarms attached to obstacles are as good as unknown in the normal run of guards and protective patrols. The Chief Engineer of the Crete Garrison is at the moment experimenting with technical appliances of this sort.

The basic point of view for all measures to be taken is this:

To what extent, and with what means, can posts and patrols be improved and linked up by mechanical means of defense?

Even the essence of the above points is unfamiliar to many soldiers. When replacement personnel commence their active service, it is impossible to make up deficiencies in this kind of training because of the other heavy demands on their time, particularly in the case of specialists. The result is uncertain or innocent behavior, which often comes to light only in the first serious test (nervous loosing-off of rounds, pointless shouting in the darkness, "Is anyone there?" inability to grapple with a cunning, confident enemy, disorganized running about when incidents occur).

If better training from the bottom up is introduced, guards will go on duty with greater confidence, will bear themselves with more assurance and decisiveness, and so do more justice to their tasks in battle and on the watch.

"Special training of the enemy (Allies) contrasts with the state of training on our (German) side, which is in some ways no longer adequate, and is no longer competent to deal with enemy commando raids."

Black Star

Military Government

*by Major General Allen W. Gullion**

"MILITARY GOVERNMENT" is that form of government which a belligerent establishes and maintains by force of arms over occupied territory of the enemy and over all the inhabitants of that territory. The military occupation of enemy territory suspends the operation of all enemy government therein, both civil and military. It then becomes necessary for the occupying army to exercise the functions of civil government, both for the protection of its military interests and for the maintenance of public order. This it does by military government.

Military government has two objectives: First, to help bring the war to a successful termination; second, and entirely subordinate to the first consideration, to further the welfare of the people of the occupied territory.

At all times, winning the war or, having apparently won it, keeping it won is the prime objective. The question must be asked with reference to every intended act of the military government, whether it will further or hinder that objective. The administration of military government is subordinate to military necessities involving operations, security, supply, transportation, and housing of troops. If hostilities are suspended by an armistice or otherwise, all military government plans and dispositions must be made so that the troops may resume hostilities under conditions most conducive to a successful termination of the war.

Subject to the primary objective—winning the war and keeping it won—the welfare of the governed must be kept always in mind. Military government should be just, humane, and as mild as practicable. A military occupation marked by harshness, injustice, or oppression leaves lasting resentment against the occupying power in the hearts of the people in occupied territory and sows the seeds of future war; whereas just, considerate, and mild treatment will convert enemies into friends.

The exercise of military government is a command responsibility, and full legislative, executive, and judicial authority is vested in the commanding general of the theater of operations. The commanding general of the theater is, *ipso facto*, the military governor of the occupied territory. His authority is supreme, limited only by the laws and customs of war, and by such instructions as he may receive from higher authority.

It is elementary that command and civil governmental powers be combined in one person—the commanding general of the theater, who is aided in the discharge of his functions as military governor by the section of his staff known as the "Civil Affairs Section."

The question is not merely one of military versus civil government. What matters most is that the commanding general in any field of operations be given as complete control as possible over all the elements that must enter into his calculations. The administration of civil affairs is a vital element. Civil disorder or disobedience, hunger riots, passive resistance, inter-racial strife among the civilian population, profiteering, sabotage or false rumors may at any moment disrupt military movements of men and supplies or disturb the military timetable. This is the reason why all modern armies, including our own, have come to appreciate the importance of their civil affairs staffs and to regard them as an integral and essential branch of the service. A well-trained civil affairs staff and trained occupational police relieve the combat staff and the combat troops from civil affairs duties and permit them to confine their attention entirely to combat duties.

Military government is divided into two phases. There is the phase in which the Army is temporarily in control. This would be followed usually by a period in which an American or allied civil government replaces government by the Army, after which the occupied area is ordinarily returned to the defeated nation under the terms of a treaty of peace.

When the enemy has been driven back and his territory overrun by the victorious army, the scene is usually one of chaos. Frequently the area has changed hands several times. Towns have been coventried, homes have been destroyed, industry and commerce have been paralyzed, utilities have been ruined, food supplies are non-existent, famine and pestilence are imminent. The local government has either fled or become powerless. Should such conditions prevail, even in our own country, either in time of peace because of earthquake or other natural disaster, or in time of war following the ejectment of an enemy, martial law, which is military government at home, would have to be set up.

Under these circumstances, the Army must assume control and restore stability and order. This must be done, partly because the civilian population of the occupied territory would otherwise lapse into anarchy. If, however, economic dislocation and civilian distress were the sole considerations, a civil government might possibly serve. But, above everything else, the Army's lines of communication must be kept open and the military situation preserved. Yet the forces of the defeated army may be in the next province, or even just over the next mountain range, preparing to resume the struggle. The civilian population may be contemplating all sorts of

*Provost Marshal General, United States Army.

sabotage or attempting to give aid to their own defeated forces.

Military necessity, therefore, demands that the conquering army be in complete control. The control that it thus assumes is what we know as "military government." It is one of those inescapable incidents of warfare, completely sanctioned by international law, that no victorious army can avoid even if it would.

Summarizing, the purposes of military government are first, to safeguard the Army and to maintain a favorable military situation; and second, to preserve law and order among the civilian population. It must lay the groundwork for the eventual restoration of the area and, in the meanwhile, render assistance to its people in such matters as food, medical supplies, and sanitation.

How long should it continue? Unless we invite disaster, it must continue so long as military necessity exists. No rule of thumb can fix its termination.

When military necessity no longer exists, the Army must lay aside the reins of government and hand them over to an American or allied civil government which, in turn, will govern until a treaty of peace is made. For example, in the occupation of our part of the Rhineland after the last war, American military government lasted from December, 1918, until January, 1920, when the Army turned the government over to the Inter-Allied High Commission, a civilian agency, which continued in authority until the area was returned to German control.

When the Army gives up its temporary control, the duties then to be assumed by the succeeding civilian agency will be on a much greater scale and probably of much longer duration. For it is then that civil authority must take on the burden of helping the crushed peoples re-create their world or, we hope, a better one.

The preparation for occupation, however, whether it be the temporary control by the Army or the more permanent régime of the succeeding civilian agency, must be substantially the same.

It is the duty of the occupying authority, whether military or civilian, to preserve, so far as possible, the local institutions, laws, and customs of the occupied region. Military government and the succeeding civilian authority are, therefore, in a sense, superimposed upon the existing local structure and seek to shape the latter to the military and political exigencies of the occupation. Hence, if the job is to be well done, those charged with its execution must have a knowledge of the institutions, customs, economy, and psychology of the occupied area and also must be prepared to supervise or to function throughout the field of public administration. This is a most complicated undertaking, that calls for a large number of professional skills.

Engineers of all types must assist in reëstablishing public works and utilities. Sanitationists must restore and protect the public health. Emergency relief workers must assist in feeding, clothing, and housing the destitute. The tangled fiscal affairs and the disrupted economy of the occupied country must be readjusted. The experts, to perform these missions, must also be indoctrinated in the backgrounds of the special areas in which they may operate.

The time is almost here when our armed forces will occupy important and extensive territories in widely scattered regions. When that time comes, we should be fully prepared to carry on those initial tasks of government that will fall to our victorious armies. At the same time we should shape our program so as to make the transition from the temporary control of military government to the more permanent civilian control as easy as possible.

Last May the Army established at the University of Virginia a School of Military Government where the top administrative personnel for military governments is being trained—not to be governors but to be administrative assistants to governors.

The school has a present authorized student body of 150 officers. Problems include not only studies of the laws, customs, economy and psychology of definite areas now in hostile hands but involve especially the preparation of definite plans for the taking over of those areas. For example, if we should occupy Hamburg, the commanding general of the theater (who will, of course, be the military governor), will have available a plan for its government, and will have officer graduates of the school who have prepared the plan. Moreover, not only will the top administrators have been especially trained and made available for the commanding general in his government of Hamburg, but the subordinate and technical personnel will also be on hand.

We are planning for the training of only 6,000 officers and men. In Poland alone, Germany has 7,000 engaged in occupational work as distinguished from combat duty.

At Fort Custer, Michigan, two schools have been opened for the training of junior commissioned officers and occupational military police. These junior commissioned officers will fill subordinate positions in the military government set-up, where their knowledge of languages will be helpful. At the same time, a large pool of expert technical and professional personnel has been created to supplement the efforts of those other groups.

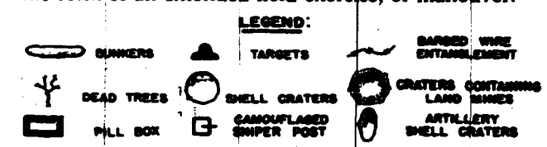
The task of the Army in any military government is primarily an administrative one. Most of its larger policies, those that will carry over into the civilian government, will be determined by agencies other than the War Department or the Army. For these purposes, it will require, in addition to any administrative personnel, a large technical and professional personnel. These are now being selected from nominations made by civilian agencies of the government which will have an immediate or ultimate policy interest in any occupied territory.

In this manner the Army hopes to be fully prepared for military government in any occupied region.

Individual Assault Training*

ASSAULT training outlined herein is designed (1) to develop within the Armored Force officer and enlisted personnel a high degree of self-confidence, courage, and aggressiveness in battle, (2) to train in the tactics of close combat, so that, even after his own principal weapon, vehicle, and supplies have been lost or destroyed in battle, the individual may still be capable of continuing as a potent threat to the enemy, (3) to coordinate and exploit mental and physical conditioning concurrently, and (4) to acquaint unit commanders with a reliable means whereby they may gain insight of the individual training, qualifications and capabilities of their officers and men under simulated battle conditions.

In general, assault training should be conducted in the form of an extended field exercise, or maneuver.



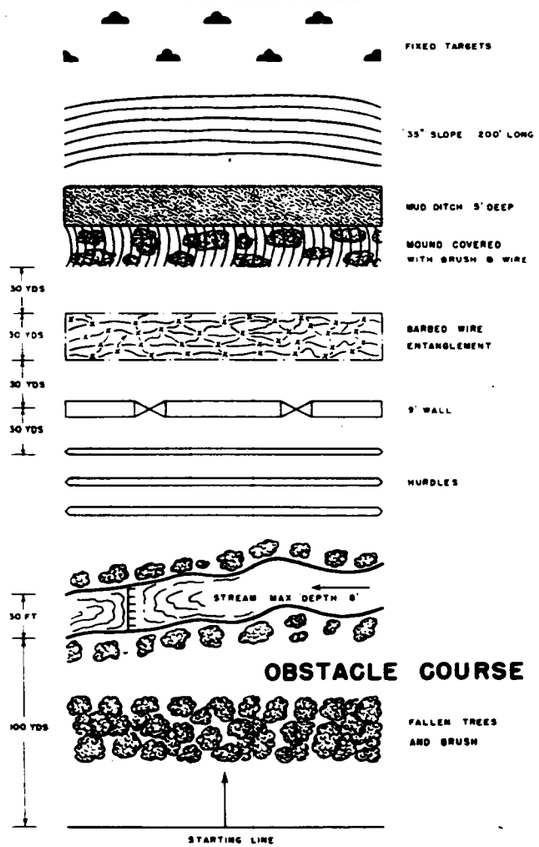
*Headquarters Armored Force, Fort Knox, Kentucky.

Close Combat

This training instills confidence, ruthlessness, aggressiveness in the soldiers, teaches them coördination of hands and body, and trains them in the methods of employing the bare hands, knife, or stick to destroy the enemy at close quarters. Also stressed are general theories and principles of balance and the application of strength against weakness, use of kicks and blows and their counters, wrist and hip throws, stick fighting, pistol disarmament, and "come alongs."

For instruction, the soldiers are paired according to size, and each pair practices the holds and methods as explained and demonstrated by the instructor from his platform.

Obstacle Course



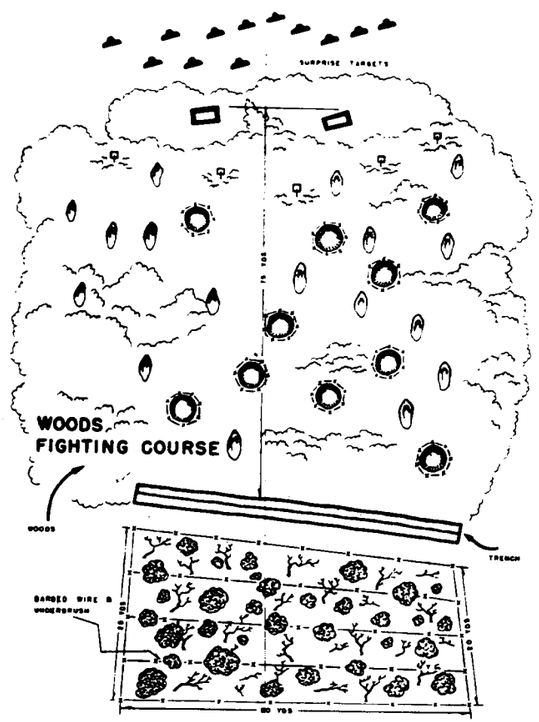
This phase is designed to develop endurance, physical fitness, coördination and agility, to introduce fatigue and mental strain prior to participating in assault training, and to teach the soldier to handle his small arms under adverse conditions.

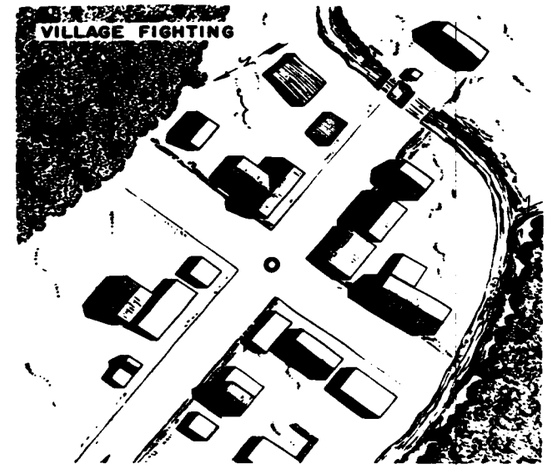
In the course, the soldier runs through soft terrain, indiscriminately strewn with fallen trees; swims a small stream; negotiates a platform 8 feet high and a series of hurdles of log construction 3 feet to 5 feet in height; scales a 7 foot smooth wall; crawls through 30 yards of barbed wire entanglement exposed to smoke and explosions; crosses, in succession, a wire mesh covered earthmount 7 feet high and an antitank ditch 5 feet wide, and climbs a hill at a 35 degree slope 200 feet long.

Woods Fighting

In this phase men are taught to advance rapidly and silently through woods, use natural cover and concealment and to handle small arms properly, using aimed or battle fire shots as required by the exposure of targets at various distances and time intervals.

Three groups of three men each under a leader are formed. These groups work forward through woods in a triangular formation, the three groups forming a triangle with the apex to the rear. Each group of three men uses the same formation as they move toward an objective. The leader, who is in the center of the large triangle, directs his men in the capture or destruction of snipers' posts and pill boxes as encountered, and gives the signal for the final assault on the objective. Ambush of mounted and dismounted patrols is one variation of woods fighting taught. Advantages and disadvantages of woods fighting should be stressed during this training.

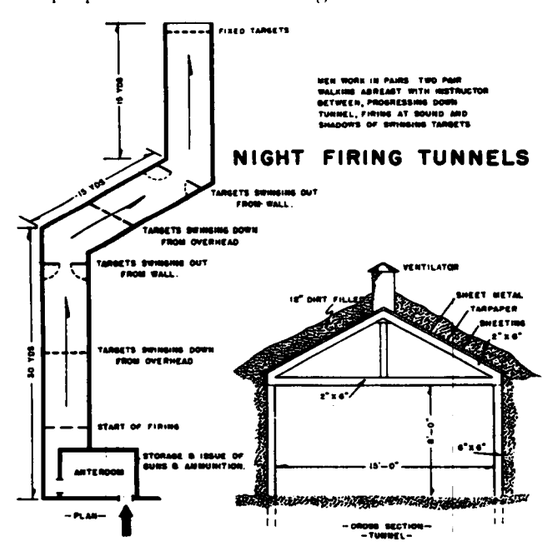




Village-Street Fighting

This instruction trains the soldiers in street reconnaissance, introduces them to booby traps, and teaches them to handle loaded weapons in the presence of other men. Soldiers, closely supervised by instructors, are required to move through the village for reconnaissance purposes.

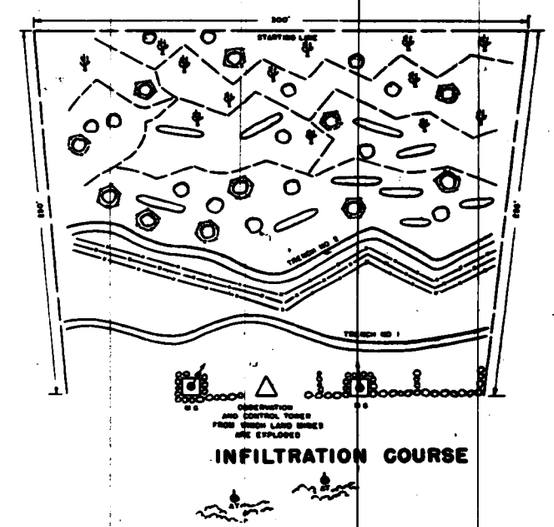
At the discretion of the instructor, targets are exposed at varying firing distances. Booby traps are exploded by the careless soldier who fails to perform proper observations during his advance. Grenades are employed in reducing strong points, clearing buildings, and for general noise-making purposes, as desired by the instructors. Movement in the village is rapid when the troops are exposed. Men progress by a series of bounds from cover to cover where they are halted momentarily for the purpose of observation, reorganization, and control.



Infiltration Course

Here the men are acquainted with gun and shell fire and explosions as they will experience them on the battlefield, and are taught the correct methods of negotiating battlefield obstacles under gun and shell fire. Machine guns are fired to adjust grazing fire 30 inches high before men are placed in position.

To begin this phase, the men starting at the far end of the course, drop to the ground upon signal and advance toward machine guns. As they advance they encounter trenches with parapets on the side toward the machine guns, slit trenches, barbed wire 18 inches high, shell holes and fallen trees. As men crawl near mine positions, mines, consisting of one pound TNT, or dynamite, are exploded electrically by an operator in the control tower. Machine guns maintain intermittent fire until the men reach the last trench. As soon as all the men are in the last trench, they charge over the last parapet and assault simulated antitank guns located in the rear of the machine guns.



Scouting and Patrolling—Ambush

This training is designed to familiarize troops in the practical use of the map and compass and to teach them the art of ambushing armored vehicles, mounted and dismounted patrols, attacking bivouacs, command posts, and assembly areas.

Instruction should include the following: plotting locations, measuring distances, marginal information, use of declination information, contours, orientation, use of compass, dead reckoning, day and night, simple sketches, route sketching, estimation of distances, observation, ambush of mounted and dismounted patrols, ambush of vehicles, use of mines and mine fields, attack of command posts, bivouacs, and assembly areas.

Eyes, Ears and Nose of the Army*

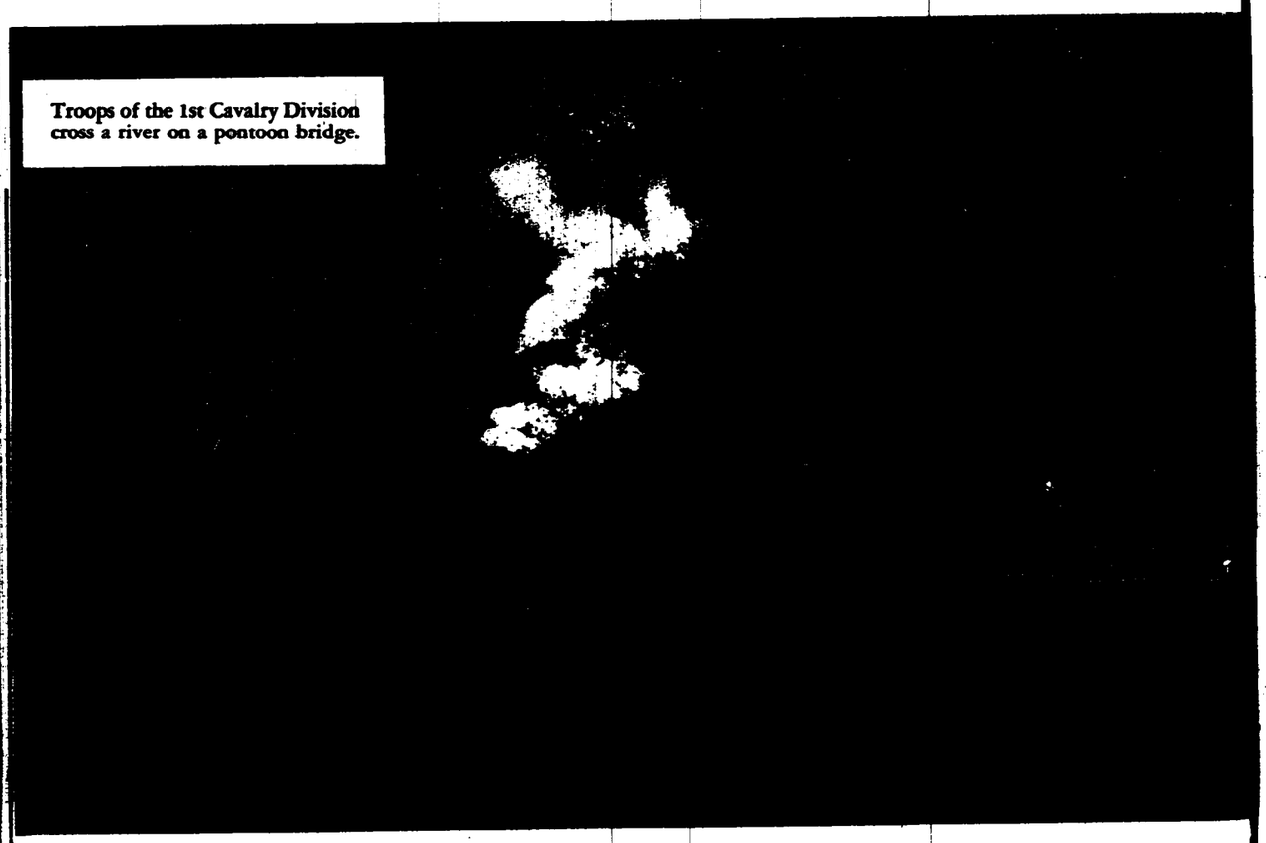
- - - by Stuart Rose

IF you want to cut yourself a slice of board, you use a saw; but you don't use a saw to bore a hole or to weld a joint. Or, anyhow, if you do you'll never rate 110 or better in an Army classification test. An army is a weapon, of course, yet, paradoxically enough, it is a weapon made up of a multiplicity of tools, each of them designed to do a specific job in the hands of men who understand its characteristics and its limitations. For example, a heavy tank is a tool designed, among other things, for attack on the ground as part of a striking force. That is a characteristic. You would not attempt to fly a heavy tank to Tokyo in the hope of dropping a few bombs on Hirohito. That is a limitation. Yet, I have it on good authority—history—that people who have not understood the uses of cavalry—and this includes general officers who have led otherwise blameless, if not highly intellectual lives—have employed it with an equal degree of absurdity. . . .

An American cavalryman must know everything an infantryman knows and must be proficient in the use of infantry weapons, including rifles, automatic rifles, machine guns, light and heavy, carbines, pistols, tommy guns, grenades and even bayonets. He must be something of an artillerist, for he is armed with antitank and assault cannon and with mortars. He must be a bit of a motor mechanic, a good tank and armored-car driver, a motorcyclist, to mention but a few of his mechanical functions. He must understand signal and radio communications. Beyond all this, he must know how to care for and feed a horse, to love and to cherish it in sickness and in health, till death does them part. Also, he must be able to ride the creature. . . .

The cavalry is an eye, an ear, even a nose, at times, for the Army commander. The cavalry seeks out, ferrets out, smells out information the way a good bird dog finds game. By day or by night, in jungle or on mountain trail, along the roads, afoot or ahorse, in jeep or combat car, in a light tank or on a motorcycle, the cavalry covers the ground—feeling out the enemy, establishing contact, penetrating, infiltrating, securing identifications, taking prisoners, encircling the flanks of Tojo or of Fritz.

*Reprinted by courtesy of *The Saturday Evening Post*, from issue of February 13, 1943.



Troops of the 1st Cavalry Division cross a river on a pontoon bridge.

And always paramount in the cavalryman's mind, be he colonel or corporal, is information—get the information and send it back in time for the boss to act.

The cavalry works closely with air. The planes go out on strategical reconnaissance, pointing out and informing cavalry of the general locations of hostile forces, observing and photographing large concentrations of troops in rear areas, ration and ammunition dumps, main routes of communication and supply. But a plane can photograph a wood and return with a picture of a wood. Whether, concealed among the trees, there are twenty thousand or one thousand or no thousand men, neither the observer nor his camera can tell.

Daily, for weeks, the Jap planes flew over the jungles of Bataan. They had complete air supremacy and with Nipponese thoroughness they snapped, snapped, snapped their shutters, and secured for the archives of Tokyo what is undoubtedly the most elaborate record of what a jungle looks like from the air ever compiled by man. What happened when their troops attempted to advance on this innocent-appearing tree growth is too well known to warrant repetition here.

The able Army commander, then, knows how to use the tools in his hands. Having secured his long-range information from the air force, he passes it along to his cavalry and sends it off on a tactical reconnaissance mission. Tactical reconnaissance is merely a military euphemism for a close-up. What the general wants is detailed information as exact as it is humanly possible to obtain. Where is the enemy? How many troops has he? How are they armed? Are they fresh or weary, aggressive or supine? Are their flanks secure or in the air? Are there any soft spots in their line, suitable for infiltration? What are the routes? Can all combat troops and their loads use them? Where must they be strengthened or repaired? All this the cavalry will find out and report.

If the general is fortunate he will find himself supplied with both kinds of cavalry, horse and mechanized, and, understanding his tools, will employ them intelligently. In rough, heavily wooded or mountainous country he will use his horse troops; for with all our mechanical ingenuity we have not yet contrived to produce a machine that can go where a horse and a man can go. Faster than infantry, fresher—for mount and pack horse carry the weapons—the cavalry slips silent through the trees, scouts out, flankers to right and left. When the point draws fire or otherwise establishes contact, it quickly dismounts, sends its led horses to cover in the rear, and disposes its riflemen and machine gunners to establish a base of fire. Then, maneuvering on one flank or another, the main body brings its weapons into play and presses the attack home with M1—Garand—rifles, light and heavy machine guns and, possibly, light artillery and mortars. Here no lance pennon flutters bravely, no saber glints in the sun. The good cavalryman knows the use of ground and cover, skulks like the redskin and strikes with all the fury of his heavily concentrated fire power. If prisoners are to be taken, he'll stalk them and go in with bayonet, pistol or grenade.

In open country, well supplied with roads, the general will use his mechanized cavalry. Armored combat cars mounting assault guns, machine guns and mortar-laden jeeps, will fan out on the road net, exploring to right and left, pushing ever forward to seek out an antagonist. Swifter than horsemen on this type of terrain, the mechanized patrols cover a lot of ground, pack a heavy wallop. Their speed permits relatively great distance between vehicles and they are not a profitable target from the air. Somewhere, hard behind, hurry the swift, light cavalry tanks to push home any attack that may be developed. Each mechanized cavalry troop carries its own pioneer and demolition section with it. On an advance, the pioneers can repair or strengthen bridges, construct rafts with which to cross unfordable streams, exercise their engineering ingenuity in countless helpful ways. If a withdrawal becomes necessary, the demolition experts will see to it that no bridge remains in the path of an enemy advance.

Road bound to a certain degree, mechanized cavalry, like the other military tools, should be used within its limitations in order to be most effective. Each army corps is supplied with a mechanized regiment, each motorized infantry division and each armored division with a mechanized squadron and each foot or mountain division with a mechanized or horse troop.

Horse or mechanized, the tactical tasks of cavalry are basically the same. They are, in brief, to reconnoiter in front of the army corps in order to determine the location, strength, composition and disposition of the enemy; to report on suitable routes of advance and important terrain features; to operate on exposed flanks of our own troops and to protect them; to use its mobility to encircle or infiltrate the enemy force; to attack his flanks or rear and disrupt his routes of supply and communications; to push rapidly forward to seize and hold important terrain features, pending the arrival of our own slower-moving main body; to prevent enemy reconnaissance units from advancing; to fight delaying

A machine-gun troop gallops forward to a firing position.

actions to cover a retreat, and to move rapidly to meet a paratroop or airborne-troop threat.

The late General Sir John French stated that in 1914 a brigade of cavalry saved the British Army. The delaying action fought day after bitter day by this single brigade of exhausted but indomitable horsemen enabled the Old Contemptibles to withdraw from Mons more or less intact.

Early last winter the highly trained and numerically powerful Russian cavalry so harassed the Germans on Russia's snowbound plains that the *Reichswehr* has since combed conquered Europe for suitable cavalry mounts. In spite of the fact that it has always been cavalry-minded, the German Army permitted itself to be caught with only 50,000 mounted men in the face of some 900,000 Russians, and its mechanized units had been rendered impotent by the weather.

In December of 1941, the 26th United States Cavalry (Philippine Scouts) fought the brilliant delaying action which enabled General MacArthur to bring together on Bataan his two widely separated forces. Had the 26th not been present to retard the Japanese advance, it is probable that our armies would have been beaten in detail within a few days.

So much for what modern cavalry can do. What manner of man is it, then, who can accomplish these prodigies of endurance and valor? Perhaps the simplest way in which to make him understandable to the layman is to describe him as a horse-riding member of a commando unit. Never a long-range fighter, even with his heavy fire power, he is constantly in contact with the enemy, running the ends, slipping off tackle and playing hell with the backfield. In order to accomplish this, he must be tough, he must be intelligent, he must have great initiative, and he must be proud. . . .

Clearly it takes time to train cavalrymen, and time is what we have none too much of. Your infantry recruit, if he's of good material, can put up a pretty good show in three months, and in six should make a soldier capable of going into action. This is not true of the mounted arm, whether the mount be a horse or a motor-powered assault gun; there are just too many things to be learned. In from nine months to a year, the average healthy American boy can be shaped into a cavalryman capable of understanding the complex duties of his arm and of carrying out the highly individualized missions upon which in all probability he will be sent. Anything short of that and the high command would be guilty of sending a boy on a man's errand.

Ranking cavalry officers are well aware of this and are putting all their thought on intensified training. Our cavalry is none too numerous at the moment, but when we need them—and we're going to need them bad—it will not be the cavalry's fault if a sufficient force of trained men is not available.

Of course, our General Staff is up against the great problem of building an army virtually from scratch with which to meet the hundreds of veteran divisions of our antagonists. We must have infantry and artillery, we must have an armored force, and we must have the most powerful air force in the world. Granting all that, it is still true that an army not properly balanced is in no condition to perform its function in modern war with maximum efficiency, and without the maximum this is going to be a tough one to win. Informed sources report that the Staff is well aware of this and other technical deficiencies in our fighting forces and that it is taking rapid measures to rectify them.

The British General Sir Harold Alexander complained bitterly that he might have held Burma indefinitely had he been equipped with anything save mechanized troops. Pinned to the one decent available road, *he was helpless in the face of a Japanese Army that swarmed over him from all sides, on foot, on horses and in horse-drawn carts*. In this connection, it is interesting to note that the Japs, formidable fighters that they are, have plenty of tanks but not a single armored division. An American officer who served on our intelligence staff in the Philippines two or three years ago told me that, in the course of his work, he was supplied with the Japanese tables of organization. These tables very intelligently divided troops not into the conventional corps and field armies but into task forces, each one carefully designed to do a specific job, with full knowledge of the country in which it was to operate. It was a cinch, he said, to single out the Philippine invasion army, for its guns and supplies were horse and cart drawn and it was provided with two brigades of horse cavalry. The Japs had not colonized the Philippines for nothing.

CAVALRY PATROLS*

by Captain Enrique Sandoval Castarrico, Mexican Army

IN the cavalry branch of the Mexican army, a patrol is a small detachment of troops which, placed under the orders of an officer or noncommissioned officer, is sent out from HQS of the forces to accomplish a definite mission.

Generally the patrol is made up of soldiers picked as much for their horsemanship as for their discernment and ability to carry out this kind of operation. From the chief of the patrol down to the horses, all are picked. The number in the patrol is varied according to the mission, as is the number of reports it must send unless it has means of transmission which eliminate the use of messengers. It may consist of only three individuals but, if necessary, its effective may go as high as a platoon.

When it is headed by an NCO, the patrol generally is small, but even if it is of small size, a commissioned officer may be its commander. When this happens, the mission of the patrol is more important and, according to Mexican regulations, is called "official reconnaissance." All must be brave men—active, wide-awake, observing, and able to make quick decisions, as well as competent to fulfill their mission.

The main reason that the effective of a patrol is small is that a small group is quicker, more disciplined, and more maneuverable than a large one, which is also more easily discovered. In addition, the task which is entrusted to it does not require a greater effective nor are its elements destined to fight.

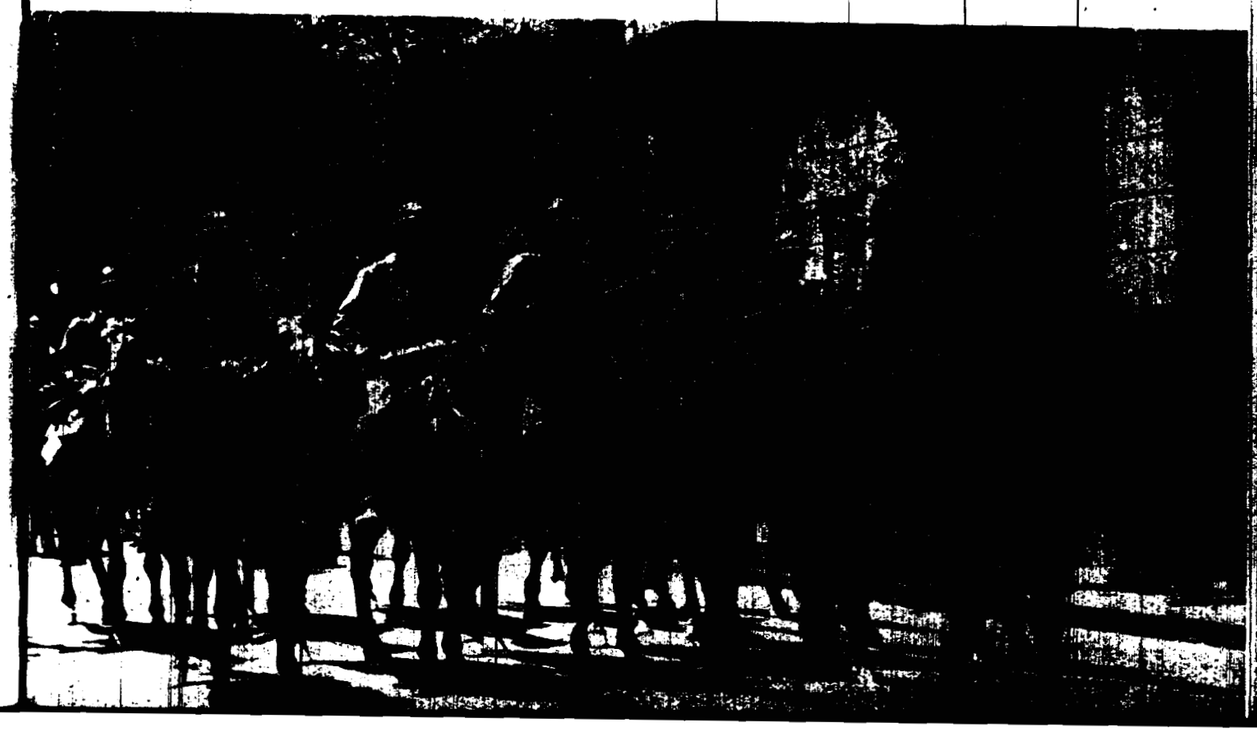
The missions which may be entrusted to one of these small groups are, in general, scouting and reconnaissance.

Let us make some general remarks, first, on why it is commonly said that cavalry patrols *explore* or *scout* because they go out looking for the enemy; then on why, even if this is the case, they really do nothing but *reconnoiter*. In addition, in their job of reconnaissance, on discovering the enemy and telling that he is advancing, they carry out a function of the intelligence branch for the forces of which they are a part, and for which reason they are designated "reconnaissance" or "intelligence" patrols, as the case may be.

At times, the particular situation in which cavalry patrols find themselves is fixed in its nature. For instance, a patrol which is operating for the security of a flank of a column is commonly called a "flank patrol," and one which works in a reconnaissance echelon of a vanguard may be called an "apex patrol."

*Extract from *El Soldado* (Mexico), April, 1942.

Mexico steps up the Hemisphere defense. Here a troop of Cavalry undergoes inspection.



There are operations so closely related to scouting that they become confused with it and which, because of their nature, use patrols not only to reconnoiter but also to hinder the enemy from discovering our forces. These patrols have been called "counterreconnaissance" patrols and differ from other patrols in that they form part of a screen, can be backed up by forces posted for this purpose behind the screen, and are of a greater number since their mission is to repel the enemy patrols.

There are various other missions which fall to patrols, such as those of reconnoitering a road to verify its existence and determining the direction it follows, the state it is in, the possibility of its use, the condition of its defenses, and the facilities which in general are found for its utilization in the operations.

On other occasions patrols are sent out with the object of getting information about the character or nature of the terrain, simply to know what it is like. However that may be, the activities of patrols in general are of a reconnoitering nature.

Whatever the number of missions that may be assigned them, we are interested here only in the functions of an isolated patrol, which are the following:

To discover the enemy and give information regarding his activities, arms, nature, and strength.

To inform whether, in a determined point or zone, the enemy is present.

The designated commander—in the light of the orders that he receives, which in general contain information about the enemy and enemy forces, useful knowledge as to what these latter will do, what information is desired, the points to where he must send this information, the limits or zone where the patrol must work, and the probable duration of its service—takes the following measures:

Selects men and horses—the men, those indispensable, especially when the return is within a short time; and the horses, those in good physical condition and well shod.

Determines the route to follow—a study of the situation when the route has not been marked.

Fixes the hour for departure and keeps in mind the distance to be covered—the nature of the terrain, and the urgency of the information.

Takes steps to obtain the necessary objects, such as shears, field glasses, maps, etc., for the best fulfillment of the mission.

Tests, by means of an inspection before leaving, to see that everything is there and ready.

Makes known to his immediate subordinates the orders received so that if the leader is missing, the next in line may carry them out and at the same time makes known the meeting place in case the patrol is obliged to scatter completely.

Informs Intelligence of friendly forces of the probable route for return so that they will not be fired on by mistake.

Whatever may be the mission of the patrol, its commander must bear in mind that if it does not acquire the information which interests the command that sent it out, the mission has not been fulfilled.

Mexican Cavalry played an active part in recent army maneuvers.

The patrol must report whether the enemy is present or not. First, it must indicate clearly *where, how,* and *when,* and it must mark the armed branch and constitution of the enemy. The armed branches are well known —infantry, cavalry, artillery; the type—motorized or armored; ordinary infantry or motorized infantry; horse-drawn, towed, or self-propelled artillery.

To be able to inform as to *where,* it is necessary to observe precisely the location of the enemy and to see if they are bivouacked, on the march, or simply halted; in formation or not. In any case, it is necessary also to estimate their numbers by direct observations. Thus one can tell *how.* To tell *when,* one will note the day and hour.

Information can also be gathered from news, signs and footprints.

The information furnished by the inhabitants ought not be taken seriously, at least not until the same information is obtained from various sources—a great number if the operations are in enemy territory. In any event, in the report, it must be stated that certain *versions* were gathered, so that this information can be accepted at its true worth.

Comments and footprints are not very reliable; many times they are deceptive, but they are useful. Above all, the footprints show whether the forces are in small or large numbers, to what armed branch they belong, and in what direction they are marching. They show also where they have stopped.

Among signs are classed also clouds of dust or smoke, and abandoned equipment. From them can be deduced the branch of service, the make-up, and sometimes the conditions in which the enemy is moving; but then one cannot be sure of this information, and it should be reported as "probably" of the infantry or cavalry—or a unit in possession of vehicles.

The documents which are received from civilians, from post offices, or from prisoners, contain very valuable information. The mails or press and military documentation found is very useful. Particularly this last gives data of great importance. When it falls into our hands, it must be utilized to orient our search, and sent immediately to the superior authority.

Information should be sought in this manner. It should never be a question of obtaining it by force; the patrol works by *cunning,* never by force. This last means is used, indeed, but only by detachments that operate in the open and attack in order to succeed in getting, by means of combat, the information which patrols could not get by means of cunning.

However that may be, every report ought to include what is observed or ascertained, without deductions or commentary.

Categorically speaking, there are no rules laid down for a patrol in movement. One can only say that it should secure for itself control, dissimulation, and liberty in its movements. All of these are gained by means of dispersed formations which reduce its visibility and

Cadets at the Mexican Cavalry School spend three hours each day at the training ground. Here they are taking the horses over and down an 80 foot cliff.

vulnerability. With its chief at the head, and in these formations, the patrol will be able to advance rapidly, to elude obstacles, and to reach hiding places. At most, one or two individuals should be sent out to observe in directions of interest. Care must be taken that they do not go too far away—the reduced numbers of the patrol do not allow the creation of a small vanguard. Almost always the necessities of concealment and the characteristics of the terrain determine the action of the patrol and the very elementary means of security already mentioned. A great part of the security depends on concealment. At night, when territory controlled by the enemy must be traversed, the patrol must seek hidden places to pass the night; and if they fear being discovered, they must even change hiding places several times.

The conduct of the patrol during the carrying out of its mission may be summed up in these words:

To see without being seen.

Not to attempt to make contact with the enemy as its mission is not a combat one.

To fight only when attacked and there remains nothing else to do, and to do so *mounted.*

To advance cleverly, evade the vigilance of the enemy, and advance by jumps.

In case of attack the patrol or the individuals who are left, *must* deliver the report.

Once the enemy is located, to continue observation without losing sight and, when there are no orders to the contrary, to report each time that the enemy changes direction or shows distinct positions.

To see without being seen calls for much cunning and concealment. To this end, in moving from hiding

place to hiding place, the patrol must pass very rapidly by exposed sites, avoid having any shining arms or equipment or making clouds of dust and noises. At the same time, it should avoid passing by inhabited places and roads when it is not interested in reconnoitering there.

The successive occupation of hiding places and points appropriate for observation is the manner of carrying out operations.

First, it is necessary to observe from hiding, whether the enemy is present or not in the place of interest. If the enemy is not visible, the patrol must reconnoiter thoroughly and advance on the place with precaution.

If it is a house in question, and the scout is alone, he must reach the spot rapidly, before its occupants can drive him back. If there are two or more individuals, they should advance from different directions, and while some enter, the rest remain outside, ready to fight. Another group will remain in the distance, ready to fire.

Similar precautions are to be taken when it is a question of a town; but when traversing it, the patrol must be ready to fire on windows and doors.

The patrol proceeds in the same way in woods. If it is noted that their habitual calm is altered, it is a sign that the enemy is there. However this may be, to observe and listen is the first thing.

To scout in enemy camps calls for bravery. It is not enough to see them, it is necessary to know their make-up, and this requires coming in close to observe the stores, fires, mines, and other details which may reveal to us their arms and total effectives.

If the enemy is on the march, the observation must be minute, well-timed, and note taken of how they march. Special care must be taken not to be discovered by enemy scouts.

A height is of good use in this work.

On reaching a river or a bridge, the patrol must take the precautions previously mentioned. In addition, all noise must be avoided.

If the objective of a patrol is to reconnoiter a bridge, it must note the length, the width of the banks of the river, and the conditions of stability.

Patrols are not destined to fight, but if they are unexpectedly attacked they must defend themselves by fighting while mounted or else by scattering.

If enemy patrols have been discovered, and they are not aware of the patrol's presence, the patrol should make a note of the fact, continue observation and try to pass by in order to complete its observations and give the respective report.

If the opportunity to take a prisoner definitely presents itself, the patrol should never let it pass, unless the outcome of the mission is compromised thereby.

When there is no other recourse, as in the case of an unexpected encounter with an enemy patrol, the patrol should attack mounted, rush on the enemy without hesitation, and prevent the enemy scouts from firing. In this way the initiative is taken, and this is the only way to gain the advantage without losing the mobility so useful in such a situation.

If the work of the patrol is continuous, reports are always useful, even if they say only that "the enemy is not present." The failure to report is the cause of frequent abuses in the use of patrols; this is the reason why, from a practical point of view, it is not possible to determine when a mission has been accomplished.

Nevertheless, any commanding officer who knows his needs ought to know how to determine what information he needs for his operations. Hence it is possible to state even the time limit within which the information should be delivered, and, since this is the case, there is no difficulty in indicating to these small detachments when or how their mission should end.

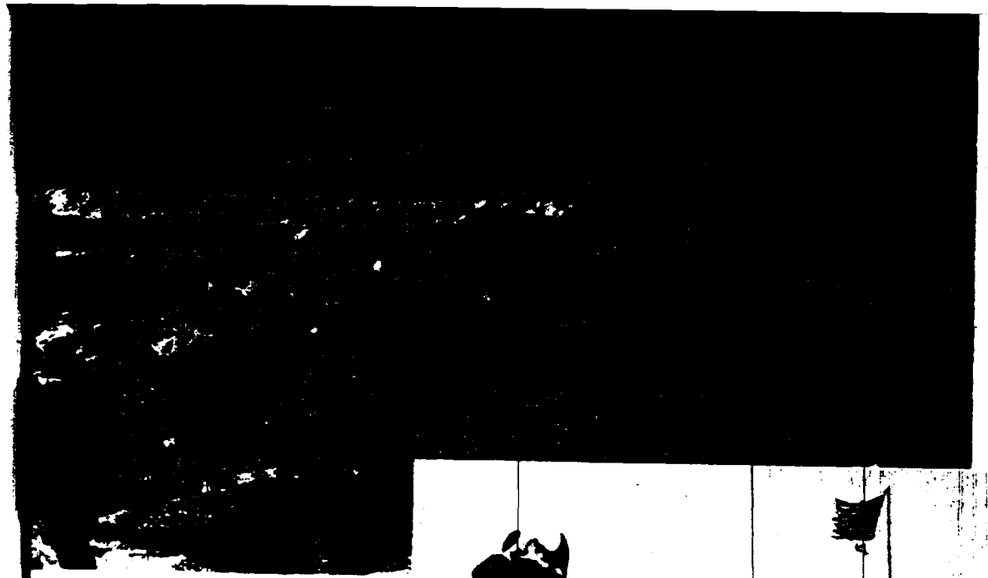
In such cases, the mission is completed when the requested information is delivered. Then the patrol can return; if the opposite is true, it should continue its work.

At times, however, certain facts observed and considered of interest are an inducement to continue. At these times, it would be an error not to take notes, report, and continue.

Really, a great deal of judgment is necessary to determine the course to be followed in these cases, but only an indifferent person would consider returning. In spite of everything, however, there comes a time when even though there is still physical resistance present, it is no longer possible to continue. There are no more men to serve as couriers because each report sent has meant one man less; the couriers have not yet returned. The limit will have been reached. The leader will return alone after he has accomplished his mission.

Reconnaissance and Protection

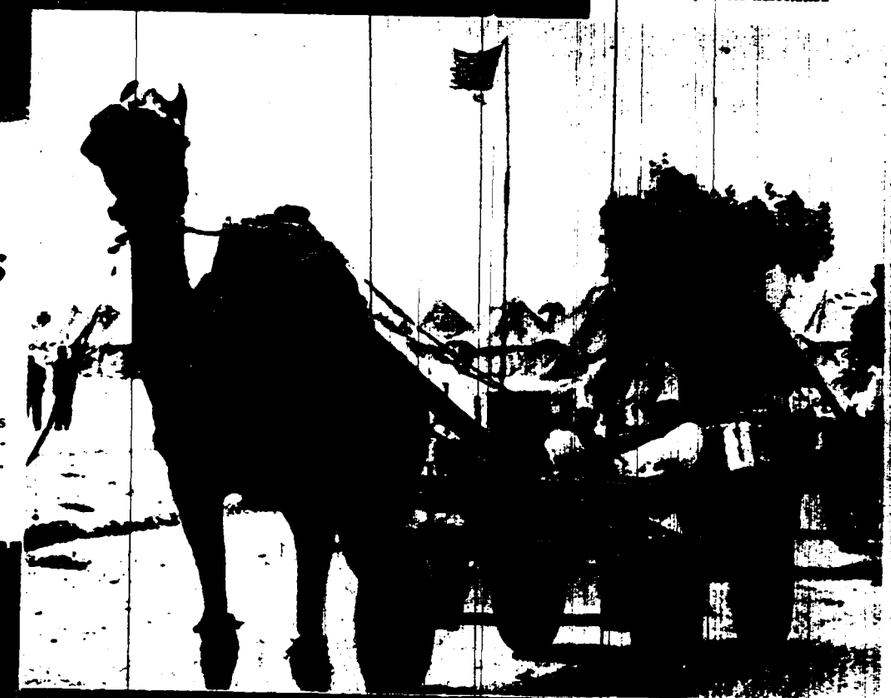
". . . It cannot be too clearly impressed upon all authorities issuing orders that these two rôles are incompatible, owing to the fact that different tactics are required for their execution. *Reconnaissance means dispersion; whereas, Protection means concentration of force.* The authority issuing the orders must decide upon the relative importance of these two services at the moment and must then allot his available troops in the required proportion."—MAJOR GENERAL SIR EDMUND IRONSIDE—*The Lessons of the East Prussian Campaign* (World War I).



Naga Hill natives carry supplies to U. S. soldiers in remote outposts near the upper Burma border in India. A U. S. soldier leads the way across this rapid, shallow stream.

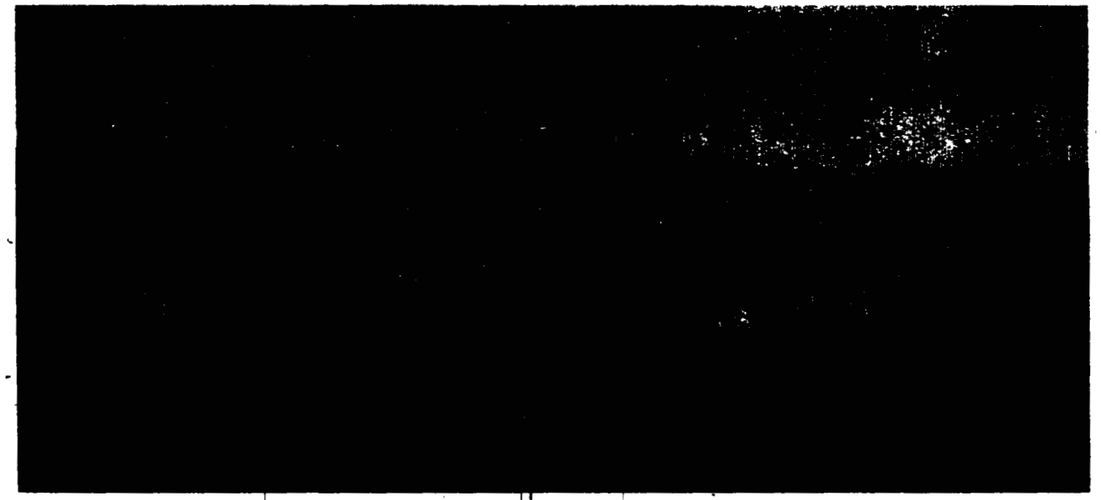
Photos by Press Association

Supplying U. S. Troops in India



Two proud-looking camels haul supplies in a rubber-tired wagon to an airfield.

Elephants are used to transport supplies to the interior. These two U. S. soldiers supervise the loading at a supply base.



*by Lieutenant Colonel James W. Wallace**

TODAY, as always, the individual soldier with the basic weapons of his arm, continues to represent the margin of victory. No battle is won until the soldier, armed with his weapon, is able to advance, close with the enemy, defeat him and occupy the strategic positions—and no individual soldier is able to do that job until he knows how to use his weapons. Since our early ancestors threw their first crude spear, the emphasis has been on hitting the target. The bullet must strike its mark.

With this principle in mind the Weapons Department of the Cavalry Replacement Training Center was formed with the mission of training the basic soldier in the use of his weapons—training him so that when he pulls the trigger there is a reasonable chance of some Jap, Nazi, or Italian dropping.

All of the department's training is given out-of-doors. The ranges are not only ranges—they are classrooms. "Drive—Drive—Drive" has been the watchword in an effort to make every minute of the all-too-short days of training give the trainee another bit of information that someday might save his life.

The trainees have been a varied group during these two years. But when guns are loaded and locked and the flag dives down behind the butts and the targets come flying up 200 yards in front of their nose, they are all in there—holding and squeezing and muttering a soldier's prayer for those pin-wheel fives.

Training programs include instruction in the M-1 rifle, the caliber .45 pistol and the caliber .30 machine guns, light and heavy. While these three weapons consume a big percentage of the training hours, instruction is also given on the Thompson submachine gun, the caliber .50 machine gun, the 81mm mortar and the 37mm antitank gun.

*Chief of Weapons Department, CRTC.

The Firing Line

The "heart" of the Weapons Department instructional system is "The Line"—the eight or nine instructional groups (depending on the size of the increment) that get the full weapons course. The Line is divided into two sections, each in charge of a section chief. These sections are then divided into instructional groups.

The most important job of the instructor is to perfect his organization so that full use is made, not only of his own assistants and cadre, but also of all troop officers and noncommissioned officers. This calls for teamwork.

Two years of experience has proven that the number of men who really grasp the instruction and the number of men who qualify depends more on the soundness of organization than on any other factor. Trainees must have personal attention. A study of scoreboards during rifle firing is convincing evidence of the importance of individual instruction. On a great many boards it will be found that the "bolos" are bunched. One or two firing points are responsible for most of the men who fail to qualify. These men received the same general training. It seems logical that their failure lies in the lack of personal instruction. To give this personal attention to every member of a large instructional group, sound organization is required.

Recent experience during "range week" has shown the importance of having experienced officers supervise the pits. This has paid big dividends. Studies of firing lines have shown that the quiet firing lines usually are the ones with the high scores.

Keeping down noise does not mean keeping down enthusiasm, however. Instructors are expected to use all reasonable devices to encourage competition and resulting enthusiasm. For example, instructors have

found that competition within squads and within platoons to determine the "fastest loader" is about the most effective way of teaching in a very few minutes the loading of clips into the M-1 rifle.

In addition to the regular lessons on the basic weapons and firing on known-distance ranges, each increment is given instruction in firing on moving vehicles and moving aircraft targets. This firing is done with caliber .22 rifles. One period is given to firing the machine gun at moving targets, and one lesson to machine gun field firing. Trainees are also given "back-of-the-line" instruction on such topics as technique of fire, fire orders, range estimation, use of field glasses and elementary gun drill.

Special Activities

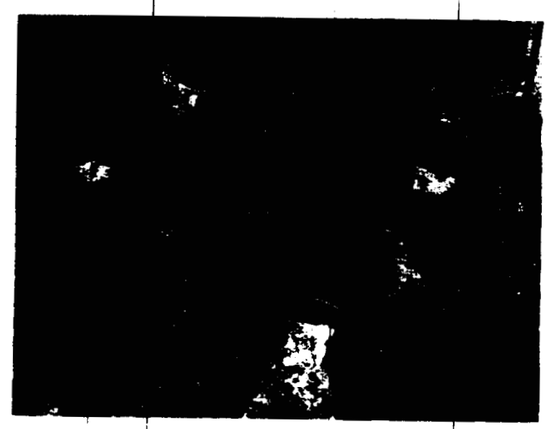
In addition to the main job of the department on the Line, there are three special activities.

The first of these is a Pool Officers Course—a special weapons refresher course for officers in the Cavalry Replacement Pool.

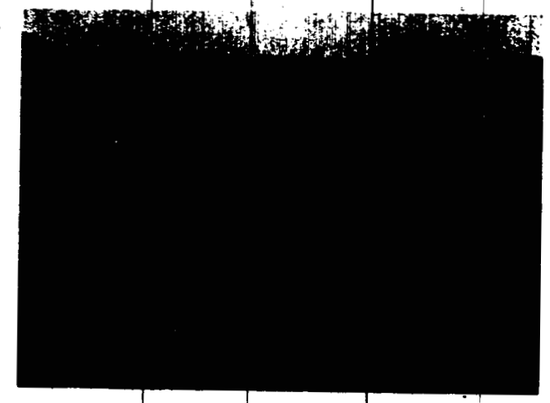
Recently added to the Weapons Department was an Armorer's School—to train troop specialists in weapons repair and maintenance.

Possibly the most interesting of the special activities is the weapons instruction of the Special Training Squadron. An important angle is the problem of men who have not mastered the English language. Usually the largest group is made up of trainees who speak Spanish. There have been also a number of Chinese, Italian and French speaking trainees. In a recent gas drill, given by the squadron, commands were given in seven languages. Nomenclature of weapons and parts must be learned in English. So to the recruit's normal difficulty of learning names, there is added the task of learning them in a foreign tongue. Most trainees have been able to do it.

In any instructional department of this kind a great deal of "behind the scene" work must be done.



A squad leader shows recruits how to strip and assemble the M-1 rifle.



A major share of the training responsibility must fall on the shoulders of the coaches.

The Range

The work of the range section includes keeping the ranges and targets in such condition that instructional groups can use the ranges when needed without a thought of the work that makes this casual use possible. Twelve men spend all their time on range maintenance, and ten men have the big job of preparing and distributing targets. This section must handle a rifle range with 225 firing points, five groups of pistol targets with 30 targets per group, a standard miniature antiaircraft range, 10 landscape target groups, a 1000-inch machine gun range with 128 firing points and a field range. In addition, the department has access to a 1000-inch moving target range with 36 moving targets.

A feature of the Pistol Range is a permanent post at every firing point on the 25-yard line. This post has a shelf for ammunition and a permanent "clearing-block" for the pistol. This safety feature is soon to be installed on the 15-yard line.

Matériel and Replacement

Among the duties of the Matériel Section is the "live storage," care, maintenance and repair of all department weapons. An officer and four men are kept busy maintaining weapons for accurate firing despite constant use.

Ammunition supply is no little problem. Some idea of its magnitude can be gained from the fact that 54,000 rounds may be fired in an afternoon on the machine gun ranges or 48,000 rounds fired in a few hours on the rifle ranges.

The Matériel Section has been able to gather valuable information concerning the ability of weapons to stand up under constant use. Any weak spots soon make themselves apparent under the thousands of rounds that are fired. Some of this information might prove valuable to troop commanders and other officers interested in weapons maintenance.

For example the department has 671 M-1 rifles. Since the modified firing pin has been in use during the past year only six pins have been replaced. Before the new firing pin was installed it was not unusual to replace as high as 100 firing pins in one week. Eighty guns were replaced during the first 20 months of the department's existence. These rifles had each been fired from 10,000 to 12,000 rounds.

Biggest parts replacement in the M-1 rifle now is the extractor or extractor spring and plunger. During the past 20 months approximately 800 have been replaced. An excessive amount of breakage has been noted after the guns were used in preliminary exercises during dry, dusty periods. The trouble generally could be traced to DIRTY CHAMBERS.

There are 360 caliber .45 pistols in regular use by the instructional groups. In the past year approximately 1000 front sights have been replaced. They are held by one small pin and during constant firing become loose and are lost.

One procedure has been developed on the Thompson submachine gun which has reduced part replacements to almost zero. Shortly after the department opened, the full-length recoil spring was used in mechanical training. With the guns being torn down so frequently by recruits, there was a great deal of bending and kicking of recoil springs. Slightly shortened springs were placed in the guns for mechanical training and the longer spring used during actual firing. That ended the difficulty.

The life of machine gun barrels is from 10,000 to 12,000 rounds. It is believed that excessive headspace has been one factor that has caused barrels to wear out after this amount of firing. In 20 months, however, only 48 have had to be replaced. Other parts of the machine guns have proven very durable. Only six bolts have been worn out by the 140 guns in use by the department.

The CRTC Weapons Department will continue to give recruits basic training in their arms, but every effort is being made to keep pace with battle developments and new methods of training.

There is no feeling that the department is sending out to units in the field the finished rifleman, the real machine gun technician, or the pistol expert. But it is believed that when these men go out from Fort Riley they have an excellent foundation on which to build. They are men whose troop training will soon make them "ready on the firing line."

Motorcycle Training

*by Lieutenant L. C. Alexander**

THE general impression is that anyone with long legs can ride a motorcycle, but experience at the Cavalry Replacement Training Center has shown that it takes much more than that. It is not always enough to be able to use the controls properly. Many times it is necessary to "man-handle" the machine and this requires a well built, strong physique.

As the incoming soldiers arrive at the C.R.T.C., the classification section assigns all experienced motorcycle riders and all potential riders (those with the proper requirements) to one certain troop for three weeks basic training, after which they are given nine weeks instruction in the Motors Department.

The Preliminary Phase

Following an introductory tour of the various buildings, trainees are taught the functioning and nomenclature of the major assemblies of the motorcycle, fire prevention and control, safety precautions, road rules and traffic regulations, inspections, and the use of the various controls.

These lectures are given by the commanding officer of the Motorcycle Division, and every possible visual aid and technique of instruction is used to make them interesting. Wall charts, cutaway models, and stripped machines are used, and the student is shown how the various units of the machine are fitted together.

Training films on riding come next. After having been told how to ride and then shown how, the great day arrives when the trainees try it themselves. A period is spent on starting the engine, and during the latter

Trainees receive an introduction to cross-country riding.

*Motorcycle Department, CRTC.

part of the period, the machines are put on the center stands to permit the trainee to practice gear shifting and to get the feel of the throttle and clutch. Finally, the machines are placed in column on a large circle and the command comes to crank up.

After riding in all gears on the circle, the trainees then are taught to ride in column over fairly simple terrain. Individuals who do not progress as rapidly as the rest of the group are segregated and given special instruction.

One constant task faced by the officers and cadre of this division is the problem of overcoming "original fear" of the motorcycle, common with many men. The only way to do this is to make the man ride. The more he practices starting, stopping, shifting gears and turning circles, the more familiar he becomes with his machine, and the sooner self-confidence is acquired.

While the mounted group is learning to coördinate clutch, acceleration, balance, and proper gear selection, the dismounted group reviews the basic subjects of functioning and nomenclature, arm signals, road rules and traffic regulations, and inspections. Students are also taught such subjects as block control, convoy operation, first echelon maintenance, the use of the driver's accident report and driver's trip ticket.

The Advanced Phase

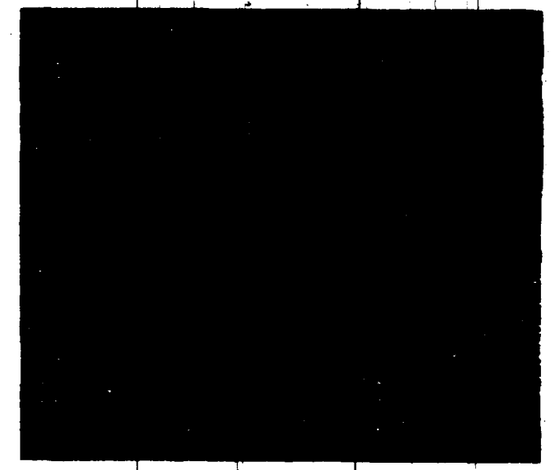
The advanced phase consists of 30 lessons in the second three weeks of the course. The trainee is taught to ride over more difficult terrain such as hills, sand, ruts, mud, snow, and ice. Individual performance is stressed, and every effort is made to permit each man to choose his own route cross-country and to use his knowledge of map reading, scouting, and patrolling.

In the lecture room the dismounted groups are taught such subjects as map reading, bridge and road reconnaissance, scouting and patrolling, camouflage, demolitions, security of small parties, selection of bivouac areas, occupation of bivouac areas, and block control. These subjects are then demonstrated in the field. Problems are planned to permit the trainees to use initiative and judgment in applying all the knowledge gained from the classroom.

First echelon maintenance is stressed throughout all phases of training. Once each week this is performed on all motorcycles by the trainees, and an accurate record kept. Each motorcycle is checked by a cadreman before the conclusion of the maintenance period. Field maintenance periods are scheduled so that the soldier can have experience in the maintaining of his machine under combat conditions.

The Tactical Phase

The last three weeks of instruction are spent in field exercises, all-day problems, and maneuvers. In this phase the actual "riding training" is considered completed, and instruction now bears down on the rider's tactical use of his vehicle. The all-day problems usually



Trainees start out on cross-country march at 15° below.

deal with one subject: *i.e.*, a map-reading problem, or a bridge and road reconnaissance problem.

The field exercises are a practical combination of all tactical subjects taught in the classroom. Usually the Motorcycle Division joins with another division and works out a tactical field problem. Here again, the individual learns the part he must play in a group.

The final week of the tactical phase is devoted to a four day extended march and bivouac. The various sections of the Motors Department combine to form a provisional reconnaissance squadron, usually composed of 100 vehicles and 500 trainees. With the officers of the Motors Department in command, the trainees move out into the field.

In the tactical situation that follows, some of the trainees form an enemy group, while the main group sets up a bivouac after an all-day march and puts out its security elements. This march and bivouac are actually the "graduation test" for all the training divisions. The second night out a forced night march is made and a new bivouac set up under combat conditions. Members of the enemy detail and members of the Cavalry Replacement Training Center S-3 Department attempt to infiltrate through the outguards.

Each basic subject taught in this division is reviewed at least three times. Safety precautions are reviewed each week with excellent results. The accident rate is low and mechanical breakdowns are infrequent. The training mission is accomplished if the men learn nothing more than how to ride and take care of their machines; however, they also learn many more things about application to situations.

(Editor's Note: *The Commanding General of the Cavalry Replacement Training Center would appreciate any comment from commanders who receive motorcyclists from this camp.*)

Training Mechanics at C.R.T.C.

by Captain H. J. Crase, Cavalry

WHEN the first officers and men reported at the C.R.T.C. Motors Mechanics School, the first undertaking was the collection of all sorts of salvage material from reclamation yards. At that time nothing definite had been published on shelter, type of course, number of students, schedule, or date of opening. The problem had to be attacked from all sides as the situation unfolded. Salvage material included wrecks, I & I'd vehicles of available late models, units, unit assemblies, old beds, steel fence posts, old bakery racks, bread-mixing troughs, casters, and even baby bath tubs, which made fine parts-washing pans.

Since "a picture is worth a thousand words," work was begun on instructional aids such as cut-away and exploded models, display boards, and charts. Instructors had little experience in this type of work. A few tools were borrowed from the Motors Department, a power wood saw was purchased and a power hack saw, resurrected from salvage, was rebuilt to eliminate many hours of tedious hand labor.

Balanced stands were designed to support the dead engines. These welded steel stands were mounted on casters, as were the stands for heavy chassis units. By the use of stands mounted on casters, available space was used for a number of functions with a minimum of heavy lifting. This proved to be a practical idea in view of the experimental nature of the first class. All available room was used, and space planning eliminated interference between noisy and quieter classes.

Live engines were mounted on welded steel stands. Radiators and fuel systems were mounted individually. An overhead duct with outriggers was run the length of the engine room. (Each engine exhausts through a flexible tube leading to the duct, and gases are blown out by means of a fan set in the wall. Additional fans take care of any leaks that might develop in the overhead system.)

Training

Fortunately, representatives of the Replacement and School Command Motor Training Council met and discussed training facilities about this time. They made a study of the driver and mechanic training problem and offered recommendations, which the C.R.T.C. Motors Mechanics School followed closely.

The schedule included three weeks of Basic and Weapons instruction and then ten weeks of daily training in learning how to be troop mechanics. Interspersed in the schedule of technical training were periods set aside for physical training which ranged from close combat fighting to close order drill.

Many schedules were written, discussed, and altered. *Experience and practice dictated many necessary changes.* This ten weeks of instructions was broken down into the Engine, Chassis, and Operation Phases. These phases started from scratch with few tools, fewer units, and a heaven-sent pile of scrap.

The first class entered the school on October 5, 1942, with subsequent groups beginning at three week intervals. This staggered system provides a steady flow of men in all stages of training without overburdening facilities and instructors. Instruction is divided into three phases:

Engine

The engine phase is divided into three sections, with a total of 112 hours for conferences and practical work. The first section takes up the operation and construction of internal combustion engines. Dead engines mounted on balanced stands are provided for the use of the trainees in practical work of disassembly and assembly of engines. All related adjustments to the engines are made first on the dead engines and later on live engines mounted on steel stands.

Basic electricity and motor vehicle electrical systems are studied in the second section. Cutaway and exploded models together with motion pictures, film strips and charts are widely employed to supplement conferences and practical exercises. Electrical hook-up boards are used by the trainees in practical work.

The third section of the engine phase takes up the fuel system. Again demonstration boards and cut-away models are widely employed, and conferences are supplemented by film strips and charts. In all phases, particular emphasis is placed on practical work with conferences held to a minimum.

Chassis

The chassis phase is divided into two sections.

The power train section is allotted forty-five hours for conferences and practical work on clutches, transmissions, transfer and axle assemblies. Enlarged models of all power train units, as well as cutaway models, are available. These are used in conjunction with disassembly and assembly units. Such units as transmissions and transfer cases are mounted on bench racks, while axle assemblies are mounted on caster equipped stands.

The brake and steering section has thirty-nine hours allotted to cover the types of brake systems, springs, shackles, shock absorbers, wheel alignment and steering geometry. Live vehicles are used in most of the work in this section to augment charts and cut-away models.

Operation

One hundred and fifty-one hours are given to the operations phase of the course. Of prime importance in this phase is the practical application of principles learned in the foregoing phases. This practical applicaton is accomplished through the medium of 1000 and 6000-mile maintenance inspections.

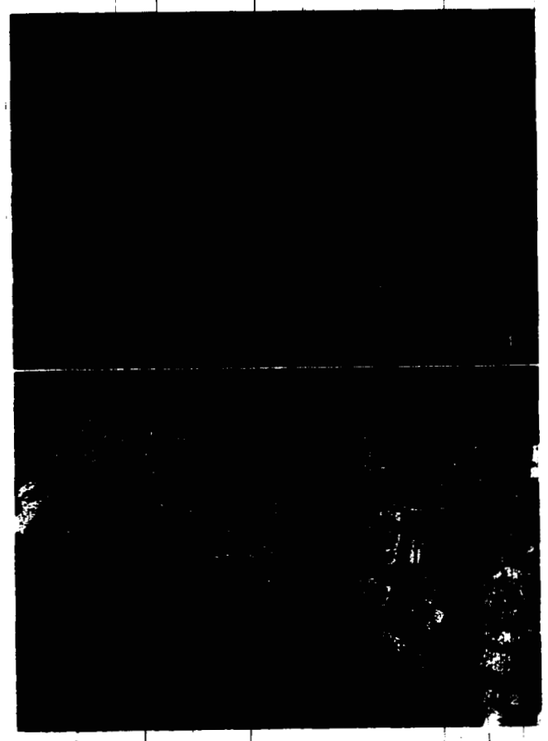
Also of widespread interest and of the utmost importance to field organizations is the selection and training of drivers as well as instruction in 1st echelon maintenance. Thirty hours is allotted to this particular part of the phase.

Additional time is devoted to such subjects as march maintenance, methods of instruction, operation in cold and desert countries, loading and lashing, movement by rail and water, new vehicle service, and field expedients.

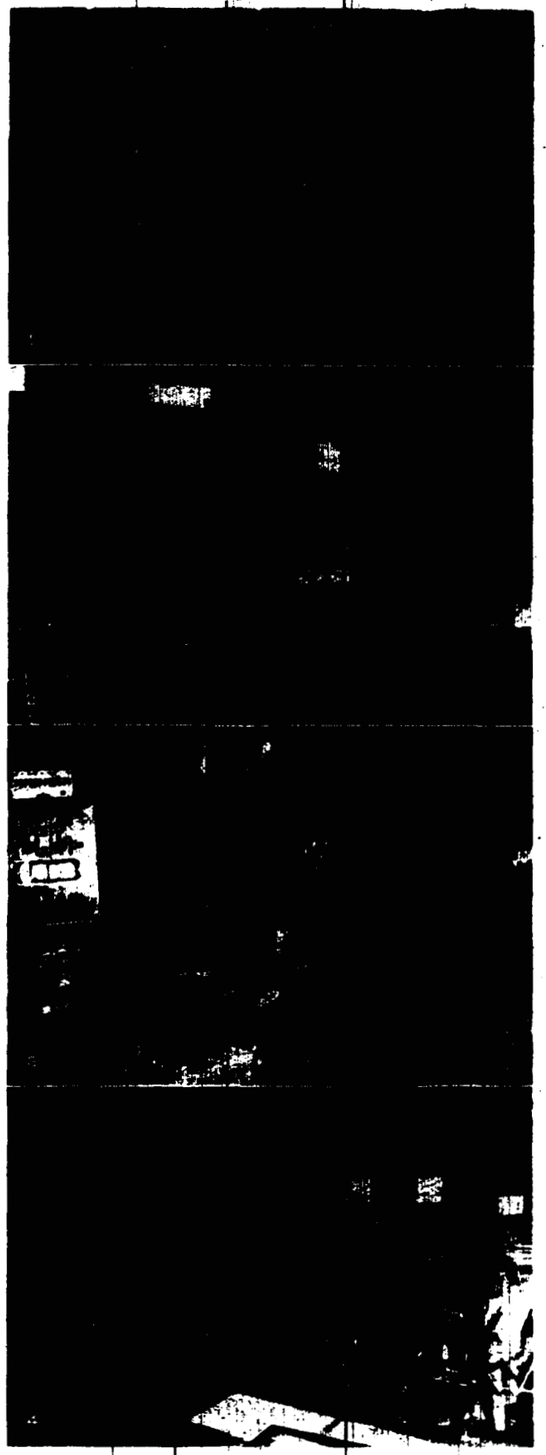
The maintenance of "field ranges" is given considerable time—which brings to mind the old saying, "An army travels on its stomach"—and may furnish a clue as to why some field organization commanders delegate the post of cook's helper to a second echelon mechanic.

Throughout the course, emphasis is placed on the fact that the trainees have to be made into soldiers as well as mechanics. Tactical principles covered in the basic training must be gone over time and time again to bring home the stark fact that a dead mechanic is no good to any organization.

*Cavalry Replacement Training School.



1—6,000-mile maintenance check. 2—Vehicles undergo 1,000-mile maintenance check.



1—Trouble shooting on stationary engines. 2—Air brake demonstration board-chassis phase. 3—Study of dead engines. 4—Study of live front axles—chassis phase.

Training Military Instructors

by Major Curnel S. Hampton, Cavalry*

TEACHING is the art of making men learn. Learning is the process of acquiring experience.

The test: Ability to perform as taught.

Objective: Capable soldiers.

Soldiers are required to listen to their officers. Since most officers spend about eighty-five per cent of their time teaching, this requires a lot of listening by the soldiers. Therefore, an officer must appreciate the difference between "having something to say" and "having to say something." In these times, untrained men are quick to detect, and even resent, time wasted. Drivel and aimlessness on the part of an instructor bore and antagonize soldiers.

Observers who have recently returned from the fighting fronts point out the value of teaching fundamentals to the soldiers. Those fundamentals of weapons, motors, tactics, and communications must be taught by officers thoroughly schooled in the fundamentals of teaching.

The late Knute Rockne said it. "We beat them with fundamentals. My boys simply ran harder, blocked harder, tackled harder. They held onto the ball. That's important. Razzle-dazzle makes winning a matter of luck."

Instruction in fundamentals is as thorough and interesting as competent instructors can make it: A capable instructor has two jobs to do. He must teach the essentials of the subject matter and at the same time, teach his *students* how to teach.

At The Cavalry School, the officers of the Staff and Faculty, the student officers, and even the candidates for commission, are required to attend a course on the fundamental technique of instructing.

All students have the opportunity to develop further the leadership ability which they possess, so that they should go back to their organizations with a better understanding of what makes instructing effective. They learn by actual experience, ideas, and methods to overcome the effects of fatigue, resistance to learning, and the common training area inertia among their men.

The course, Technique of Instructing, provides preliminary instruction, constructive criticism and assistance, and a limited but valuable amount of actual experience in preparing and presenting military lessons. Each student performs individually twice and benefits from the personal attention given him by his classmates and the faculty member in charge. The number of hours allotted varies with the type of class, in order that emphasis can be placed on appropriate aspects. For squadron commanders and staff officers, monitoring procedure and the supervision of instruction are stressed. For Basic Officer and Officer Candidate Classes, the preparation and presentation angles receive the major emphasis.

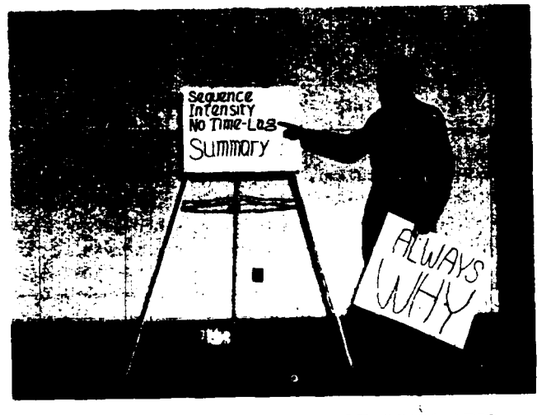
The Personal Factor

Teaching precedes combat leadership. It is a brain-to-brain process that produces hand-ability. It requires a special ability which can be developed.

The *sequence* of saying and doing things, more than anything else, makes the teaching process. Common sense and strong personal qualities are more essential to it than refined facilities.

One of the first things an officer must understand and believe in is the difference between an expert and a good instructor. An expert is one who is able to do something superlatively well himself. An instructor must be able to transmit his understanding and proficiency to other men. Essentially then, a good instructor is an expert with a *strong sense of communication*. He must know and *believe* in what he is talking about, make sure that his men know and believe in what he is talking about, and say only those things that are worth saying. He must give his men not only the *what* and the *why*, but the *how*. He should teach with the spirit and zeal of an evangelist. If his men perform satisfactorily, he is successful. If they do not, he fails. There is no better way to judge the effectiveness of instruction.

For example, down in North Carolina, a man by the name of Buford acquired a considerable reputation as a rabbit hunter. Every time he went afield, Buford came back with his game bag full. Others, failing, came to him for advice. He had something they wanted and needed—a perfect set-up for instruction. Buford gave them a great mass of topographical information which included going down to Van Ocker's place (and with Van Ocker's permission), turning right around the barn, proceeding so many yards along the creek and across country to the remains of the rail fence. It was there, he told them, they should sit down and wait until dusk began to settle. "Then," he said, "make a noise like a turnip. The rabbits will come to you. Jest hit 'em over the haid and put 'em in the bag." *But* . . . he could not tell them *how* to make that certain noise—the very thing they needed most to know. Buford was an *expert*, but he failed as an *instructor*.



CHARACTERISTICS OF GOOD MILITARY INSTRUCTION

Key-word card aids establish "Thrust Lines" for a period of instruction.

The factors which insure a good sense of communication are: Voice, Language, Body, and Eye Contact. Together they compose *attitude*.

Voice. Voice is the instrument of instruction and command. A lazy voice has no place in military training. The speech of instructing is that of sincere animated conversation. A voice of fine quality is desirable but not essential. Clarity and power are what is needed. The voice must be projected. Every word must be understood.

Any normal individual can develop the kind of voice that an officer should have. The "chest" voice, as distinguished from the "head" voice, is best. It is cultivated by relaxing the muscles of the chest, neck, and those that control the larynx. This allows more air to be pushed up through the windpipe to the vocal cords by action of the diaphragm, commonly called the "belly muscle." Certain exercises are recommended in FM 21-20 (Physical Training). Words must be sounded distinctly. The tongue, teeth and lips are parts of the voice mechanism. Each should be used deliberately to "shape" words. *BITE LEATHER!*

Language. The purpose of language (words) is to enable men to understand each other. The best word, therefore, is the simplest word that will do the job. Good words make good pictures, and color both conversation and instruction. They gain attention, create and hold interest, and seldom are misunderstood. A military instructor calls a spade a spade. Correct nomenclature is stressed. There is a professional manner of speaking. The instructor should name things correctly but use his "*color*" words to put instruction across to his men. If an instructor's "color" words are peculiar to a section of the country, whenever necessary to complete understanding, he should define them. Thereafter they contribute much towards making his instruction lively and interesting.

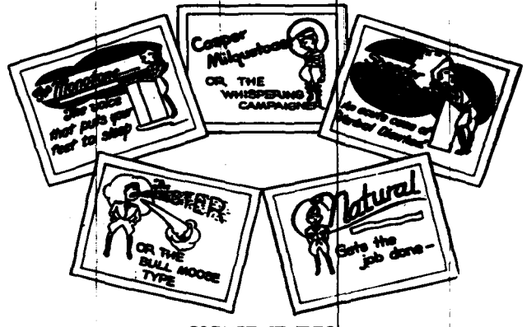
The object is not so much to impress soldiers with fifty-cent words and long compound sentences, as to give them the things that they need to know in "nickel" words. The good instructor uses the language of football, baseball, hunting, and other common experience activities with which he has determined that his men are familiar. From these he draws his analogies, incidents and examples. One such analogy is drawn from one of the most common experiences of all. The instructor says:

"You all have had the experience of being in bed on a hot night and trying to make yourself comfortable. After hours of tossing and rolling around you finally dozed off to sleep. Just about that time you were annoyed by the buzz of a pesky mosquito. You tried to disregard it, but he bit you on the arm. You made a wild slap, not knowing whether or not you had killed the little devil. The itch made you scratch; then you itched in several places. More scratching until you were wide awake. You got up and turned on the light and looked for the mosquito. You didn't find him. Back to bed you went, scratching and restless. Out of nowhere, came the mosquito to dive and drill you; this time in the chest. You wondered whether the same one had moved from one location to another, or whether there was a swarm of several thousand of them. Of one thing you were certain. That mosquito certainly had *mobility, fire power*, and *shock*."

This is an indelible picture based on an assumption of a common experience. The analogy makes its point. The mosquito can be visualized maneuvering, arousing, angering, and confusing its victim, and seizing opportunities to harass and attack suddenly at any point on the perimeter—the characteristics of cavalry.

Body. The body talks. What it says must confirm the spoken word. The way an instructor stands, moves, and holds himself suggests either muscle tone or the lack of it, confidence or doubt. The body can, and many times does, contradict what is said, and thus depreciates the total attitude. Poor posture (slumping, humping, and sagging), meaningless movement, awkward wind-milling of the arms, weight shifting, quick, jerky mannerisms, all distract from the idea being expressed. Undesirable body habits indicate a lack of control and a failure of mind over matter.

Attitude. An instructor's interest is contagious. His voice, words, body, and eye contact convey it. Involved



VOICE TYPES

Shown by colored glass Balopticon slides supplemented by voice recordings. The natural voice is that of animated conversation. Change of pace and clarity are essential.

*Department of General Instruction, The Cavalry School.

in an interested attitude is a quality arbitrarily called force. It is one of the "Imponderables." In common language, force is "guts and gumption." The good instructor avoids the following negative mental attitudes:

"Off-the-cliff"—"I guess you can tell I'm on the spot, I've got to do my chore and you've got to listen, so here goes."

"Cookie-pusher"—"You be considerate of me during the lesson, and I'll be considerate of you during the performance test. I may not know my stuff, but I'm a good guy."

"Saturday-afternoon"—"This is just one of those things. It's a bit irregular and I can't see why it was included in your training. Take it or leave it, and we'll be off to the races—and quick like. The old man will never know the difference."

"Tired old man"—"I had a hard night last night—I've worked hard all morning and the end is not in sight. It's obvious that I can hardly move, so don't expect very much. You know I've done this many times and really know my stuff, but I'm somewhat cold on the idea. Bear with me. I don't expect very much. Doesn't time go slowly? Perhaps we'd better call the whole thing off."

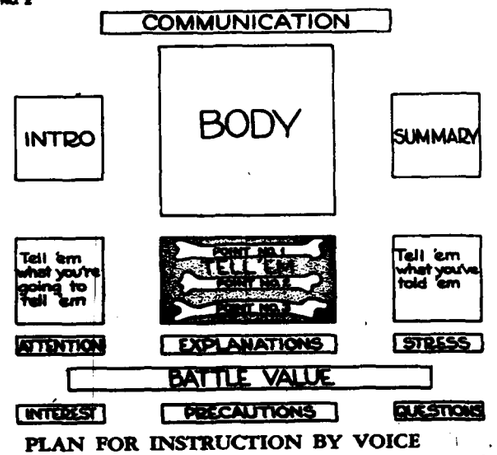
Laws of Learning

The instructor should be familiar with the three simple Laws of Learning. They govern the teaching process. While admittedly there are many ways to teach, there is only one way to learn. The laws are *Readiness*, *Exercise*, and *Effect*.

In substance, these laws say that if men are to learn they must:

1. Be made ready to learn. Attention, interest, and desire must be stimulated and maintained. An instructor must realize that truth and make use of it.

TECHNIQUE OF INSTRUCTING MANUAL
PLATE NO. 2



PLAN FOR INSTRUCTION BY VOICE
Appropriate for a single explanation or an entire phase of instruction.

2. Understand in detail what is required of them. The instructor's sense of communication is essential. He must give his men the *what*, *why*, and *how* of each movement and procedure to be learned.

3. Be given adequate time for "trial and error" experience.

The instructor must be quick to detect errors and correct them. Incorrect performance, if repeated several times, becomes habit which is difficult to break. However, the instructor who expects everything right the first few times a unit of learning is applied, is a wishful thinker. Early blunders are only signs of learning. The instructor must exercise *common sense*, *patience*, and *energy*. Violation of any *one* of the laws is fatal to the teaching process.

Mechanism of Instructing and the Lesson Plan

How does a good instructor prepare himself to teach, and actually teach a lesson? Normally, he takes the six (6) steps included in the "Mechanism of Instructing." Refer to FM 21-5 (Military Training). The process should be understood and mastered.

Preparation. There is a *WHY* back of each prescribed procedure in the service. You have often heard it said facetiously that there are two ways of doing a thing—the right way and the Army way. The instructor should rid his mind of that fallacy. The procedures of the service are the results of sound thinking and long experience. To teach prescribed methods is to sell belief in their adequacy and rightness.

Preparation obligates the instructor to anticipate questions his men may ask. This practice insures thoroughness in preparation. The service is wealthy with training literature. There are Field Manuals, Technical Manuals, Army Regulations, and War Department Training Circulars wherein he finds exact information. He makes full use of them in his teaching and leadership.

The first step involves more than finding the appropriate Field Manual, Training Manual, or Technical Regulation, reading a few somewhat pertinent paragraphs, and then preaching a hodge-podge of ideas. First, the instructor appraises his material. It consists of facts, ideas, reasons, some relevant and some irrelevant, some absolutely essential, and others only desirable. It is the *LESSON PLAN* that determines what portion of all available material will be used. With his objective clearly in mind, he evaluates and selects the "bone" points of his phase of instruction. He discards ideas that do not fit. Next he arranges selected material around two or three fundamental ideas. It is important that the number of these fundamental ideas be kept to the minimum.

Explanation.—The instructor should tell the student *WHAT* he is to learn and *WHY* he is to learn it. The explanation should be *complete* in detail, *i.e.*, exactly how, when, and where the information will be of practical (battle) value.

The instructor prepares the mind of each of his men for the explanation by referring to the *known* before he introduces a single *unknown* item. He explains the thing or things to be learned in terms of his men's own personal experiences and needs. He speaks their language.

What is "new" catches the attention—a new sound, a new movement, a new word on a printed page. But the *"new"* does not *hold* attention unless it is in part familiar, unless it springs from personal experience. It is the new combined with the familiar that grips attention and arouses active curiosity and interest. Such details, facts and illustrations as come most fully within the knowledge and experience of the men, will bring the subject most vividly to their minds. This is known as the *principle of reference to experience*.

Example: An instructor may teach the physiology and the anatomy of a horse by analogy to the human body, its muscles, bones, tissues, and functions; or, in describing the sensations and effects of a sternutator gas, he may say: "A good whiff of Adamsite will choke and poison you. Remember how it used to feel when you were swimming and you got your nose full of water? For a moment it seemed that you were going to strangle—and then even after the sensation passed, you sneezed violently and experienced nose pains?" By using a reference to experience, an instructor makes his men more suggestible; they see, feel, accept, or do the thing desired of their own free will and through their own experience.

An instructor must be capable of supporting any statement he makes. It is unnecessary to support every assertion; some are understood readily and accepted by the learners. To enter upon a detailed explanation of that which is readily apparent, or to waste time in lengthy proof of a self-evident truth, presumes a low degree of intelligence on the part of the men undergoing the instruction, which will tire or disgust them, and reduce the effectiveness of the explanation. The decision as to what assertions will require support and what kind of support they will require is the responsibility of the instructor. Narratives, analogies, comparisons, and contrasts strengthen the explanation.

Demonstration.—A procedure or a sequence of operation is made clear, step by step. A carefully rehearsed demonstration *simplifies* instruction and makes essential points stand out boldly. The instructor, if he chooses to use the demonstration, must be expert. Obviously, the instructor must "know his stuff." The blind cannot lead the blind. Students attach far greater importance than may be thought to their instructor's professional knowledge. If they find weak links in his armor, he loses prestige. The use of an expert assistant or a well-trained group frequently is advisable.

Application.—Normally, an individual cannot be expected to develop skill or perform satisfactorily unless he is given the opportunity to apply the "lesson points" of a phase of instruction several times under patient,

THE WRONG WAY
Instructor who "throws the book" loses the confidence of his men. Reading is *not* teaching.

intelligent supervision. Gradually the mechanics of an operation or movement become *second nature* with him. Each movement is broken down into a series of motions for practice.

The instructor must be quick to detect and correct mechanical errors resulting from merely going through the motions, or ill advised attempts to improve upon prescribed method.

The instructor should be alert to the advantage of stimulating competition among those undergoing training with a view to raising the standard of proficiency of the group. Justness, encouragement, and *quick recognition* of good performance are essential to all-out effort.

Examination.—The purpose of the test or examination is twofold: (a) by it the essentials are reviewed, and (b) by it the instructor can check accurately on the effectiveness of his teaching—that is, he makes a test for understanding.

During mobilization training for combat, there is insufficient time to make the test or examination a formal one. Preferably it should be a performance test—one that encourages the student to strenuous effort.

Real benefit lies in requiring the soldier to apply principle to combat situation.

Discussion.—No lesson is complete until an instructor gives his men an opportunity to clear up any specific points he has failed to understand. *Discussion follows the lesson summary.*

Instructors must prepare beyond immediately needed details. They must be able to give sound reasons in answer to "Why?" questions and little angles on "How" not covered in the book. An analysis of experience and observation is an obligation.

The best thinkers in the military service have created by trial-and-error experience an almost fool-proof method for preparing and presenting a military lesson. The

term "fool-proof" is used advisedly in the sense that the method is simple, and its results are shown to have been highly successful over a long period of time.

Most of us are familiar with the historic sequence of INTRODUCTION, BODY, and SUMMARY. The best cornfield language explanation of that sequence was given by an old chaplain with one of the colored cavalry regiments. It appears that this old gentleman had a very compelling way about him, in that every Sunday his chapel was crowded with troopers eager to listen to him. His sermons were stories and parables. His examples were powerful. His words made pictures. They listened to him and understood him. He spoke *their* language. When asked once how he generated such power, he replied: "Ah has a plan. First, ah tells 'em what ah'm going to tell 'em. Then ah tells 'em. After that, ah tells 'em what ah told 'em."

The practiced and recommended sequence for presenting a military lesson is based on that explanation.

Visual Aids

Major emphasis is placed upon simple, inexpensive devices which can be improvised and used by instructors under field conditions. It is pointed out that instructing officers cannot expect to be provided such facilities and equipment as are now in use at the Cavalry School. It is clearly established, however, that the lack of a Reproduction Section and preferred materials does not provide an alibi for the instructor within a field unit who fails to use his "imagination muscle" to create visual training aids.

It is shown that by careful planning and persistence, all instructors in field units can obtain for their use training films, film strips, maps, charts, and diagrams prepared by the various agencies of the War Department. Rough charts, inexpensively constructed portable blackboards, and simple devices which strengthen teaching by voice and demonstration are explained. Detailed information is given on how to construct such easels from scrap wood and sandtables from assorted waste materials available. Sawdust, powdered chalk, leaves, sticks, small pieces of wood, metal and leather can be used on the sandtable in lieu of decorative foliage and costly prepared miniatures. For example, drum type cheese boxes are good base material for effective large-scale models of compasses, and working models of the reticle and clinometer can be improvised quickly from scrap cardboard.

Aids to be used out-of-doors are stressed. Even the earth's surface, with a little preparation, provides an effective medium for quick diagrams and sketches.

Applicatory Phases

The class, divided into five or six small groups, meets in corrals, on the drill field, and elsewhere out-of-doors. It is The Cavalry School policy to make instructional situations as real as possible. Officers must learn to teach in situations in which distractions are frequent. They must learn to overcome these by *compelling* rather than by *demanding* attention.

Students plan and present two short phases of instruction. They present these lessons not as members of a class to their classmates, but as officers to their men. This is to a good purpose. The student instructor is told to assume he is trying to reach the minds of men who normally know less about a particular phase than he does. In this way, he is reminded to keep his lesson simple, use repetition *interestingly*, and stick to his phase. *He takes nothing for granted.*

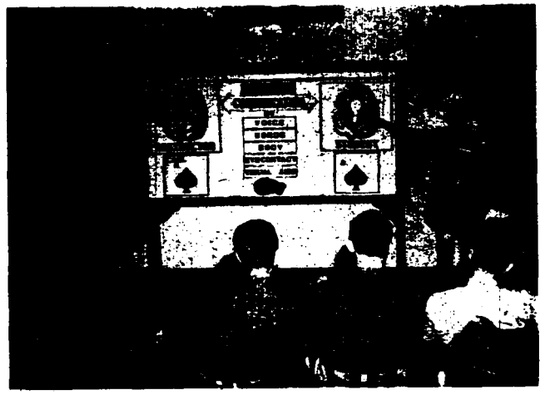
While each student speaks, other members of the group make such notes as enable them to offer sound *constructive criticism*. It is a fundamental upon which repeated stress is placed at the Cavalry School. The error is pointed out, the *exact how* of better performance is given, and the question "Why?" is answered. Example: "That performance (statement, act, manner) was incorrect for these reasons. . . . To improve you should. . . . The reason for this method is that it. . . ."

The following *negative* aspects of criticism are discouraged:

"Throat-cutting." A practice of the bigoted or prejudiced individual who thinks he can make himself "a big shot" by criticizing just to ventilate a personal grievance. He uses sarcasm and ridicule to embarrass an individual on the spot.

"White-washing." An indecisive, loquacious effort by one individual to cover up obvious errors made by another. It is saying something is right when it isn't. The officer who gets into the habit of overlooking weak, slovenly performance to make himself a "good fellow" with his subordinates, is not functioning as an officer.

"Don't-know."—It is an officer's business to know. He must develop a critical eye, a critical ear, and a critical mind. He must observe, evaluate, and express opinions backed up by *"Why's"* and *"How's"* if he is to lead men. Straight thinking and straight speaking marks



COLORFUL PANELS COMPEL ATTENTION
This one "Trade-marks" the first hour of preliminary instruction.

the leader. Failure to criticize or correct constitutes approval in the eyes of the individual performer.

"Bull-moose."—Lots of voice. Lots of words. Shouts and storms. Offers no encouragement. Enlarges upon little things—and misses the big ones.

To make sure that men undergoing the instruction look for and evaluate the right things, they are furnished an "instruction check list." Items included on this check list are:

1. *Appearance and Presence:* (Consider neatness, posture, bearing, facial expression and animation.)
2. *Introduction:* (Consider method and sufficiency—did he "tell 'em what he was going to tell 'em"?)
3. *Battle Importance:* (Consider mention, strength of reference, repetition.)
4. *Body of Lesson:* (Consider "bones and meatiness," logic and sequence—did he "tell 'em"?)
5. *Authority:* (Consider familiarity with subject matter and evident preparation.)
6. *Communication and Group Contact:* (Consider eye contact and language—did he speak *to* them or *at* them?
7. *Precautions and Safety Items:* (Consider mention, strength of reference and repetition.)
8. *Voice and Expression:* (Consider quality, strength, enunciation and fluency.)
9. *Visual Aids:* (Consider quality, use, reference and timing.)
10. *Lesson Summary or Conclusion:* (Sufficient? Apropos?—Did he tell 'em what he had told 'em?)
11. *Attitude:* (Consider interest, enthusiasm, and force.)
12. *General Rating:* (Opinion of the man and his presentation—general.)

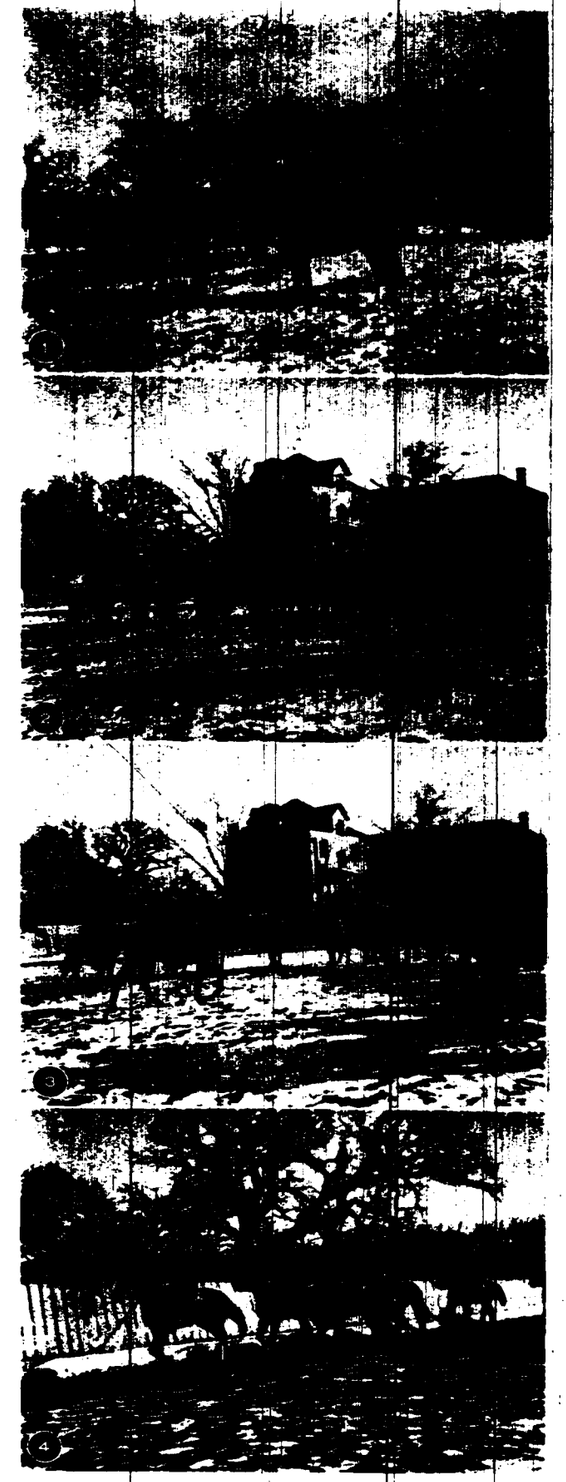
In addition to those points, students are reminded frequently of the four "S's" of good instruction. These are: (1) *Sincerity*; (2) *Soundness*; (3) *Sequence*; (4) *Summary*.

Clinic

Between the first and second applicatory exercises, all groups of the class meet together for a critique on the first assigned phases of instruction. During this period voice recordings are played back for comment. Photographic glass Balopticon slides prompt clinical discussion on attitudes, mannerisms, and visual aids created and used by students.

Conclusion

The foregoing method for teaching how to teach has been found to be productive of good results at The Cavalry School. Comments made by students, former students, and commanders of field units support that statement. It is a method based on an old fact that men learn by doing. Even a little *doing* appears to be more remunerative than a lot of listening.



1—Individual attention strengthens the teaching process. 2—Second Step: Explanation of *what, how,* and *why.* 3—Third Step: Demonstration. 4—Fourth Step: Application. Without interrupting practice, constructive criticism is given.

TESTS IN HEAT AND COLD

*by Lieutenant Robert M. Pollock**

SCIENTIFIC testing of vehicles and armament has long been practiced by ground force organizations of various armies. Ordnance proving grounds have constantly striven for new perfection in machines and weapons. Lt. General Jacob L. Devers, Chief of Armored Force, foresaw the need for going beyond experiments with equipment. Equipment is only as effective as the men who operate it. Accordingly, the Armored Force is now determining reactions of its men to certain climatic and work conditions and ways and means of improving effectiveness of these men.

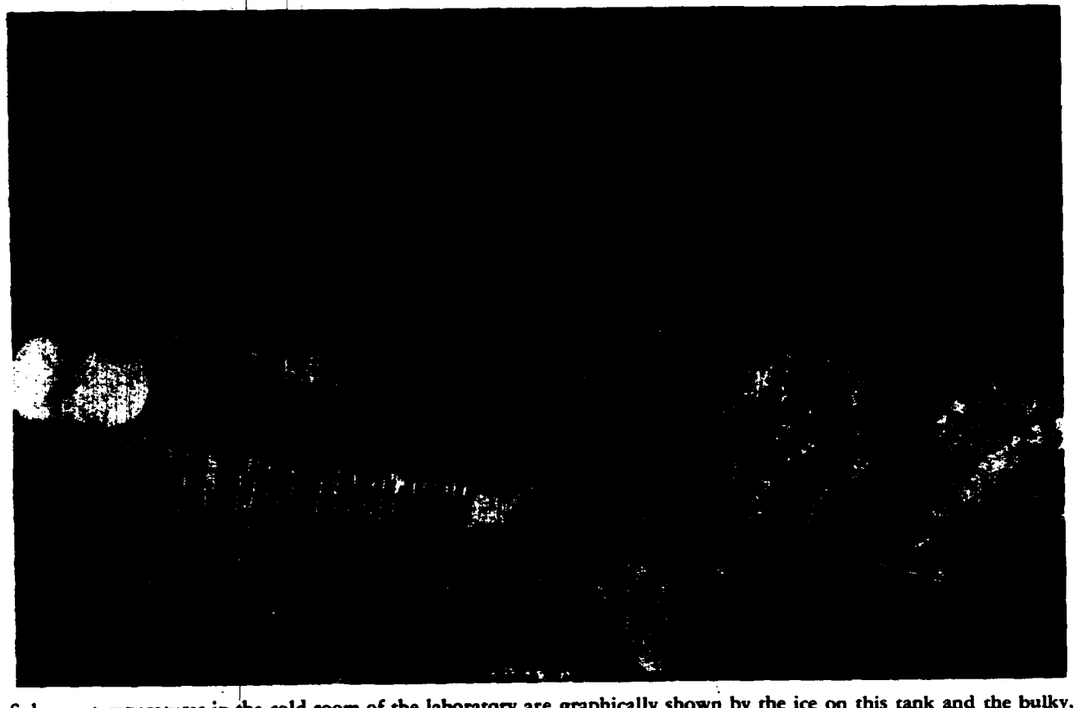
Details of the Armored Force Medical Research Laboratory at Fort Knox were worked out by Brigadier General Albert W. Kenner, former Armored Force surgeon. Funds were furnished by the National Medical Research Council, and on August 15, 1942, work got underway. In a $300,000 glassbrick, concrete building, officers and men of the Medical and Sanitary Corps began their experiments. The building contains, in addition to splendidly equipped chemical and physiological laboratories, two vast rooms for work in extremely high and low temperatures.

Striking features of these rooms are their abilities to simulate the extreme climatic conditions under which Armoraiders may be called upon to fight. The hot-room can be heated to a temperature of 150 degrees Fahrenheit. With the future addition of huge lamps, intended to reproduce the radiant energy of desert sunshine, this temperature may be raised to 175 degrees. Through controlled humidity, either the desert or the jungle may be transplanted to Fort Knox.

In contrast to the intense heat of this room, stands its next-door neighbor, the cold-room. Here, by means of an immense refrigeration unit, room temperature may be lowered to 62 degrees below zero. The process used in cooling the air in the room may be so concentrated that an artificially produced gale of thirty-five miles an hour wind velocity results.

Lt. Col. Willard F. Machle, commanding officer of this Armored Force Research Laboratory, heads a staff of expert technicians. These men, constantly engaged

*Headquarters, The Armored Force.



Sub-zero temperatures in the cold-room of the laboratory are graphically shown by the ice on this tank and the bulky, but comfortable, clothes of the Armoraiders emerging from this M-4 tank. Experiments in this room are usually conducted at 30 degrees below zero.

in seeking new scientific data, regarding reactions of men in the Armored Force to conditions that they may have to face in combat, have developed a series of experiments to gain their ends. Perhaps the most intensive of these at the moment are work experiments within the hot-room. Here, groups of men (the highest number has been 17 at one time) eat, sleep, work and rest under conditions quite different from the Kentucky climate just outside the walls of their laboratory.

In heat that reaches a peak of 120 degrees during the day time and a low level of 75 degrees at night, with humidity similar to that encountered in the desert, these men perform certain work exercises. Their body reactions—that is, temperature, pulse rate, and blood pressure—are constantly checked by staff members on duty in the hot-room.

The previously mentioned 17 men lived inside the hot-room for 26 days, longest experiment yet undertaken. For several days, they performed the exercise routine, rested, ate and slept under normal temperature conditions. Their reactions to the work routine were carefully noted. Then came the extreme temperatures. Again their reactions were tabulated. When the temperatures first rose, the ability of all the men to perform work slumped below their ability at normal temperatures, but when these volunteers became acclimated to the extreme heat, they were able once more to do their duties with a minimum of body reaction. A comparison of their working abilities before and after high temperatures began in the hot-room, gave these laboratory technicians definite information as to the human reaction to desert conditions and length of time necessary to become acclimatized to them..

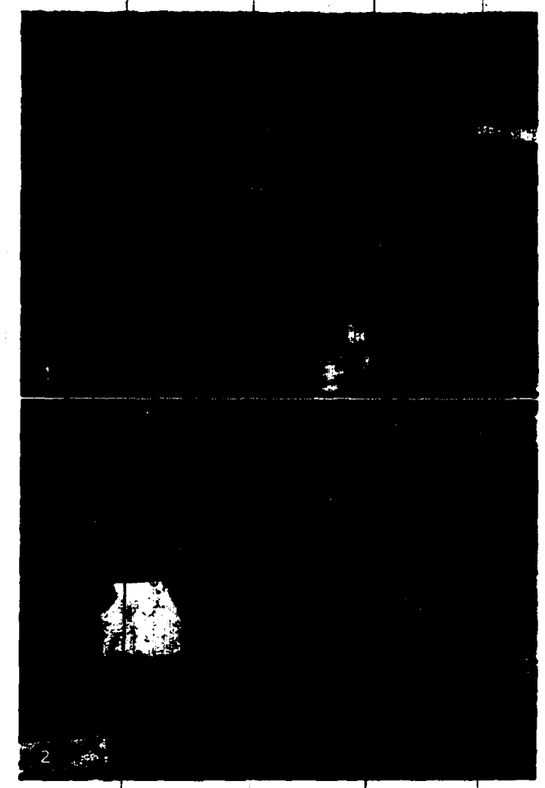
With American Armoraiders already fighting in the African desert, and with the desert perhaps playing an increasingly important part in armored warfare, the results of these Armored Force Medical Research Laboratory experiments may prove an important margin of victory.

Cold-room experiments at the laboratory are limited at the moment to a study of clothing best designed to protect our soldiers from the sub-zero conditions they may encounter in combat. The experiments also include work with various types of food and food containers suitable for Arctic temperatures.

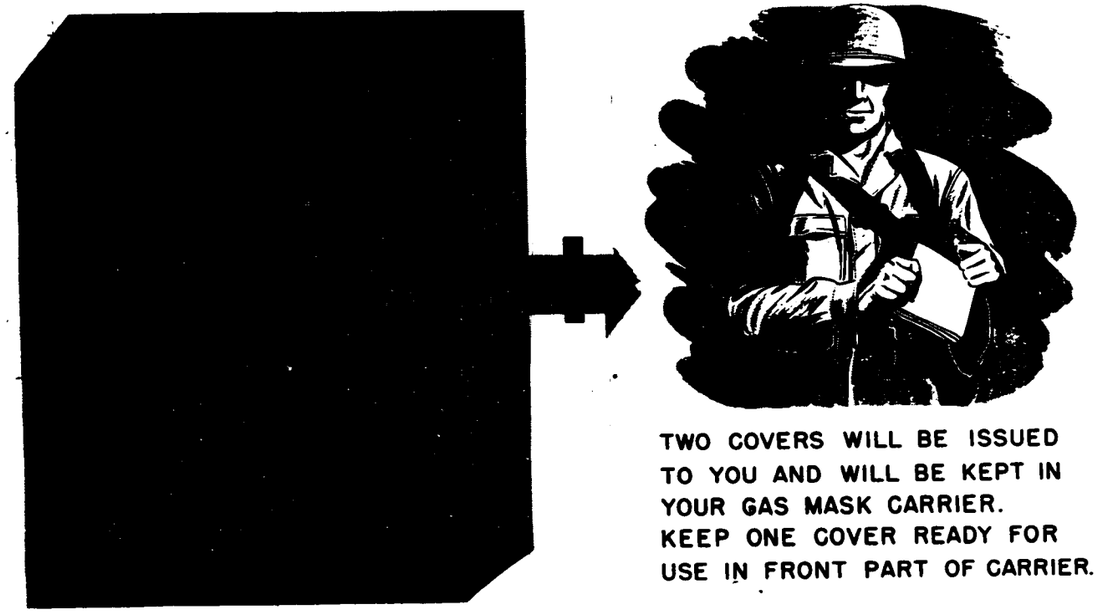
These Armored Force technicians don't stop with testing tanker's reactions to extreme hot and cold. Constantly going on are experiments testing the effects of noise on the nervous system, gun fumes on blood circulation and respiration, visual difficulties on the eyes. Modern laboratories are equipped to study these situations and to take steps to remedy or improve them.

Comprehensive reports on laboratory experiments have been submitted to the proper authorities, and their findings promise to be far-reaching. Already a number of changes in equipment have resulted from these reports. Through experiments wtih the sitting height of the average man and his headspace requirements, sitting room modifications on existing tanks and changes in future tank plans have been made. Provision of adequate water supplies for combat troops has been assured. Generator exhaust at one time contaminated the inside of tanks. Laboratory reports discovered this, and the condition has been remedied. Visual improvements are being considered and mechanical implements within tanks themselves (brakes, gear-shift, etc.) have been changed to simplify operations.

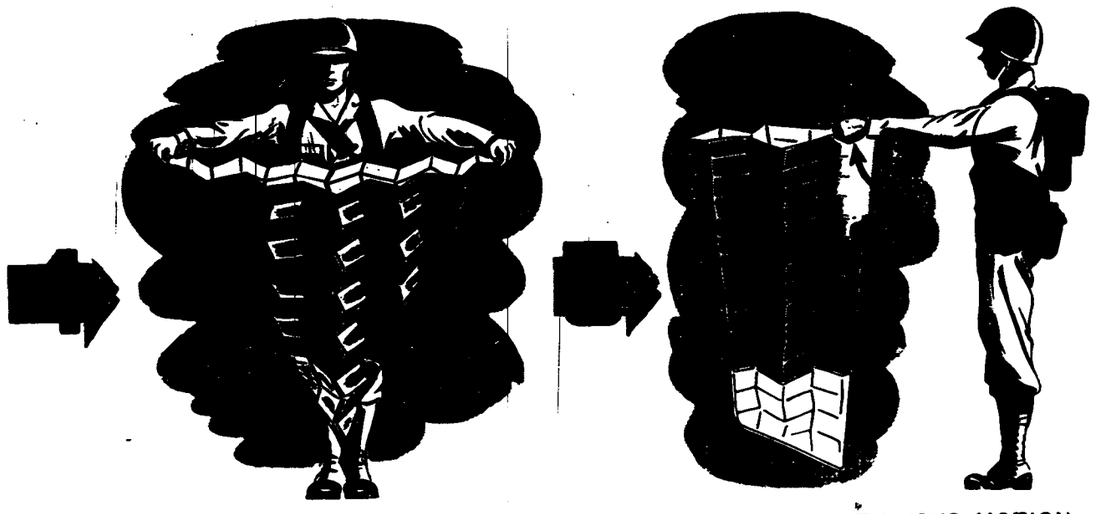
Work continues at Fort Knox in the Armored Force Medical Research Laboratory. Radical work. While machines are being constantly tested and improved in other proving grounds, the men who operate these machines are themselves being tested to improve the fighting efficiency of those on whose shoulders rest the task of winning a war.



1—In important gun-fume tests, gas is pumped through the gun barrel of this 75mm cannon into an M-4 tank. Tests then discover the effectiveness of the tank's ventilation system in removing harmful gas fumes. 2—Several experiments are conducted simultaneously within the hot-room. While three men plod their way around the room with a forty-pound pack, another prepares to mount a stationary bicycle and pedal in place for a ten-minute period.

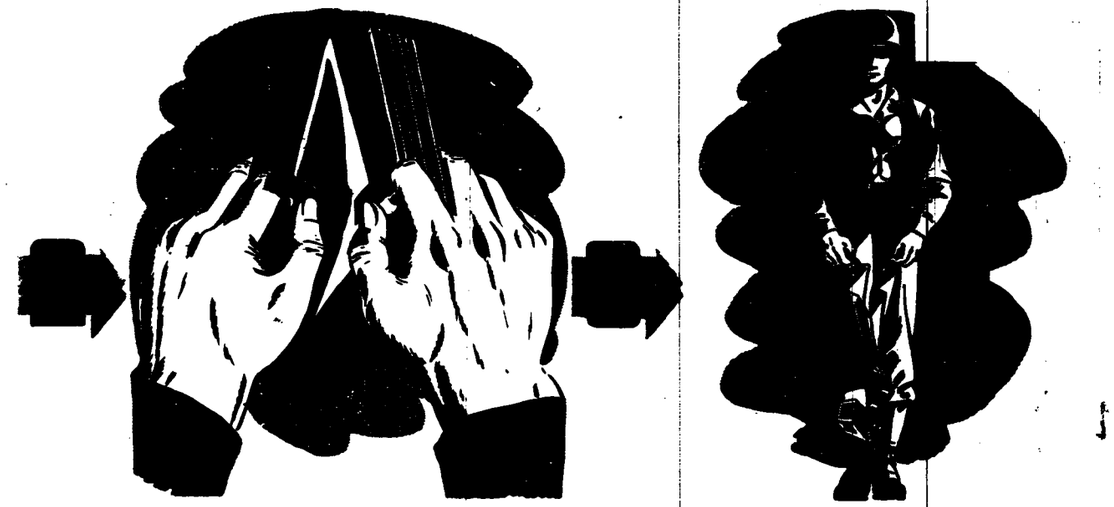


TWO COVERS WILL BE ISSUED TO YOU AND WILL BE KEPT IN YOUR GAS MASK CARRIER. KEEP ONE COVER READY FOR USE IN FRONT PART OF CARRIER.



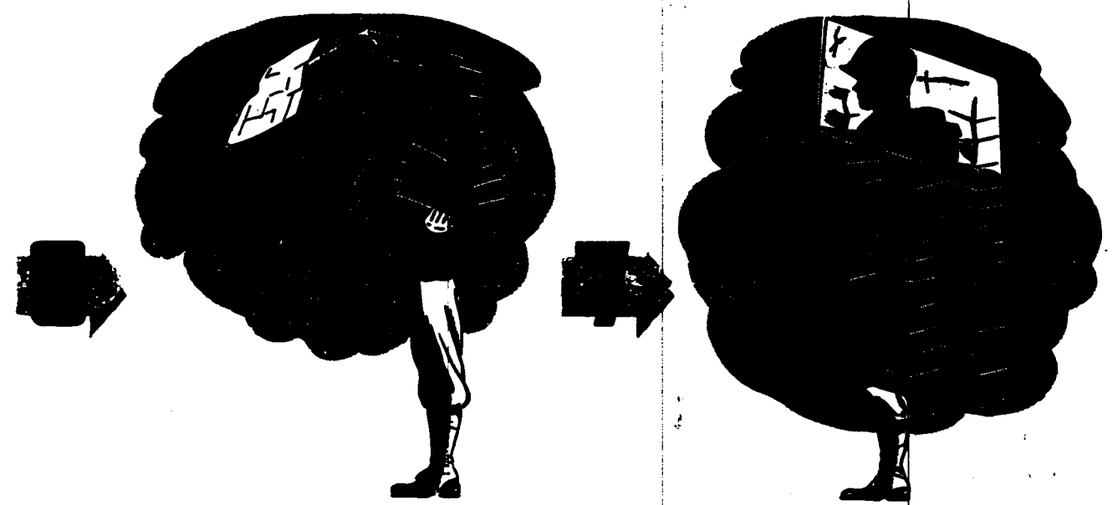
SPREAD COVER OPENING.

WITH ONE CONTINUOUS MOTION, SWEEP COVER OUT AND UPWARD SO THAT AIR OPENS COVER.



GRASP RED TABS BETWEEN THUMBS AND FOREFINGERS.

KEEPING HOLD ON TABS, RELEASE COVER, PERMITTING IT TO UNFOLD.



CONTINUE UPWARD SWING AND PULL COVER OVER HEAD.

PULL COVER DOWN, PROTECTING BODY AND CLOTHING FROM AIR-PLANE SPRAY.

Defense Against Chemical Attack

The Cellophane Cover, of general interest and of particular importance in Chemical Warfare training, is a new Quartermaster item with which the average soldier is still unfamiliar.

Before going into a field of operation, the individual soldier should carefully unfold and refold the cover, which should be kept ready for immediate use. This will soften the folds and increase the speed with which the cover can be put on. When the cover is refolded, care must be used in following the original folds. Making the final "accordion" folds from the top down will release any air trapped in the cover. Good care given the cellophane covers and gas masks will be repaid when a chemical attack is met.

The above illustrations give a detailed description of the prescribed manner for the handling and care of this valuable protective.

Care of Animals in the Jungle*

by Captain Benjamin F. Leach, Veterinary Corps

THE successful use of animals in the jungle requires the utmost care and effort on the part of the officers and men responsible for their welfare. Difficult trails, made more difficult in the rainy season by frequent and heavy showers, make all trails through the jungle, trails of mud. Men and animals must be in excellent condition to withstand an extended jungle maneuver, and the jungle is not the place to condition green, or unconditioned, animals. This training must be accomplished prior to the time that the animal is called upon to perform jungle work.

The training and conditioning of animals requires a systematic series of exercise and work in conjunction with proper feeding and grooming. It is generally agreed that it is not practicable to keep army animals at the high peak of condition, but that they must be maintained in a state of condition which can be brought to a high level in a short period of time. Two hours of exercise daily is considered the minimum necessary to maintain animals in a workable condition. Although it seems obvious that horses and mules cannot be conditioned under stripped saddle and packs, this is one form of exercise that is practiced all too frequently and its final reflection is manifested somewhere on a jungle trail by exhaustion and death. The walk is the best conditioning gait for animals that are to be used in the jungle as it is practically the only gait used on jungle trails. A horse or mule is considered in condition when the body can perform without fatigue or injury the work and services required by the organization of which it is a part.

All animal equipment should be in excellent condition prior to jungle marches, as the rain, mud and difficult trails place a severe strain on the best of equipment. New saddles and riggings should be broken in and any adjustment made, prior to an extended maneuver in the jungle. Every effort must be made to keep saddle blankets and the mohair pads and cinches of the pack saddles free from caked mud and sand.

In camp, saddles and riggings must be kept off the ground either by the use of suitable dunnage or improvised saddle racks. The mohair pads should be folded damp side in after cleaning, and placed on top of the pack saddle. Rawhide latigoes have caused considerable trouble in the past, for when wet, this type of leather stretches, causing the cinches to loosen and the load to slip, which eventually results in severe back injuries. The rear cinch on the Phillips Cargo Pack Saddle should not be drawn tight but left loose enough so that the hand may be inserted between the cinch and the animal's abdomen.

In climbing steep trails, the cargo pack saddle has a tendency to slip to the rear, especially if there is a heavy top load. Some animals make a lunging effort while crossing deep mud holes. In both of these instances, mules may be severely bruised in the stifle region by contact with the rear boot hook. This condition can be corrected partially by having all mule leaders tighten the breast collar strap.

The faster moving animals of an organization should lead the march. This prevents delays at difficult points on the trail and possible accidents which may occur when more rapidly moving animal elements attempt to pass slower moving units. Two or three men should be stationed at the more difficult points of the trail to assist animals that may become bogged down and need help.

As it is nearly always impossible for the veterinary officer to inspect animals on the trail at the halt, it is advisable to select a place by which the column will pass on their departure from camp, and note the fitting of packs and saddles and whether or not the loads on pack mules are balanced. If possible, poorly packed or unbalanced loads should be corrected before the animal leaves camp.

At halts on the trail the rider or the leader should inspect the condition of the animal with regard to the fitting of the saddle and the pack and to the balancing of the load.

Animals should be allowed to graze and, if there is an opportunity to water, should be allowed to drink. The individual soldier who rides a horse or leads a mule should be instructed that he alone is responsible for the care and well-being of his animal on the trail and that he must bring him into camp in good condition.

The picket line should be placed on high ground near a suitable watering site, and sheltered from the sun. The underbrush and jungle growth should be cut off level with the ground, for if snags and stumps are permitted to remain on the picket line many animals will injure themselves when rolling. All vines should be cut away and removed from the immediate vicinity of the picket line; otherwise, a good many animals will suffer from vine burns around the fetlocks and pasterns.

Black palm trees should also be cut and removed to a place where there is no danger of animals coming in contact with the thorns. Areas where the manzanita shrub grows must be avoided. The picket line should be four to five feet from the ground and stretched taut between fairly large trees. A picket-line guard should be posted at all times to watch the animals and prevent injuries from animals casting themselves in their own or another's tie-rope.

Animals on the march should be watered whenever an opportunity occurs. Animals in camp should be watered at least three times during the day. The approach to many jungle streams and watering holes requires leveling before more than one or two animals can be watered at one time. One man should not be required to water more than two animals at the same time. Groups of animals should come to the watering place together and leave together if the nature of the terrain will permit. The watering of animals should be supervised by a commissioned officer.

Hay is fed by breaking up the bales and distributing it along the picket line. It should be fed in small quantities and renewed as needed; if too much is fed at one time it will be wasted by being tramped into the mud or soiled with urine and feces. Grain should not be poured on the ground in front of the animals as a large amount of it is lost and the animal picks up a certain amount of foreign material. The use of feed bags is the approved method of feeding grain in the field. The bag should be adjusted to the individual animal and when removed, turned inside out to dry.

Salt is an indispensable item in the ration of an animal, and a daily allowance of eight-tenths of an ounce is authorized. Under field conditions granular or table salt should be used in preference to rock salt, and fed in the feed bag. One full mess kit spoonful of salt should be mixed with the grain three or four times a week.

It is necessary to protect supplies of grain and hay during the rainy seasons of the year by placing on suitable dunnage and covering with tarpaulins.

Injuries from the pack and saddle constitute the most frequent causes for disabilities among animals. Most saddle and pack injuries are preventable if proper care is taken in the fitting of the saddle and care exercised in packing out and maintaining balanced loads. The two physical causes for pack and saddle injuries are friction and pressure. Friction is aggravated by the accumulation of sand and mud which the saddle blankets and mohair pads pick up going through mud and bog holes. Pressure may be aggravated by extra heavy loads and the period of time that elapses between packing out and unpacking.

Every wound or abrasion, no matter how slight, must be treated or carefully watched to prevent screw-worm infestation. All animals in camp should be inspected at least three times a day for egg deposits on wounds and abrasions. Every man in a mounted organization should be taught to recognize the eggs and larvae of the screw-worm fly and the havoc that the fly can cause.

*Courtesy, *The Veterinary Bulletin*.

Soldiers and army mules, carrying heavy packs, pause at a stream somewhere in the jungles of Panama for a brief rest as the field artillery battery to which they are attached moves up to new positions during war games.

This Royal Artillery Mountain Battery makes its way across a Scottish mountainside, where it is in training.

Animal Transport Companies*

THE LONDON TIMES Special Correspondent with the Army, in a recent message from the Southern Command, deals with the continuing value of horses and mules in the transport of material in every Allied theater of operations. He writes: "When the Highland Division was forward of the Maginot forts on the Saar front, mules were used for transporting material into the outpost line. Later in 1940 it had been planned that the Indian mule transport companies in France should be ready to go to Norway if that country were invaded, but the French undertook to send their own companies. Again, the successful British campaigns in Abyssinia and Eritrea were often dependent on mules and pack horses for transport in the mountainous country, just as were the German divisions that dashed across Greece. And in the Middle East today there is still a useful place for the several animal transport companies—British, Indian, and Cypriot—employed there.

"Here at home, a Transport (Animal) Training Company forms part of the Training Brigade of the Royal Army Service Corps in this Command, and men are posted from it to the animal transport companies at present stationed in the mountains of Scotland. Today the pack horse fulfils the principal function of animal transport, but when a man leaves this training company he has become skilled in most branches of horsemanship. The best recruits for this service are the former drivers of horse artillery, many of whom have volunteered, and next to them might be placed milk roundsmen and men experienced in that type of work. Lads from the superior racing stables seldom take kindly to the inferior task of pack horse transports and farm laborers seem also to have no flair for it, though both are useful for some of the auxiliary work connected with the company.

"At these training quarters, for instance, the excellent condition of the horses and their stables is a sure sign of the type of man selected to look after them. Here the horses in use are a quiet, mixed bunch of hunters, coach horses, chargers, and so on, but for active service mountain ponies from Scotland and Wales are sought. The maximum load of the pack horse is about 240 lb., and in the field the small A.T. cart would be used until pack-loading became necessary, when the cart can be used as a dump.

"It had been thought at first that the very limited number of pack horse companies in the Army could be manned with recruits of comparatively low physique. But it was soon realized that for man, as well as horse, this is very arduous work, demanding strength and stamina. The man, for instance, must be as fit in the feet as any infantry soldier and able to endure long stretches of trudging along mountain paths. He has also to be an alert and resourceful fighting soldier."

*The Veterinary Record (British) Vol. 54—October, 1942—No. 41.

I SAW THE FALL OF THE PHILIPPINES. By Colonel Carlos P. Romulo. Doubleday, Doran & Company, Inc. $3.00.

Colonel Romulo has given the world a magnificent, terrible picture of the bitter, futile struggle to hold the Philippines. He has held up for respect and inspiration the men who took part in that struggle.

Only a Divine Power could have given the strength to hold out as long as they did. "There are no atheists in fox-holes."

It may be trite, but the phrase "written in blood" seems the most applicable one to characterize this book. Its stark tragedy mocks the very freshness of the air we breathe, the food we eat, the luxuries we take for granted.

It is to be hoped that every man and woman blessed with freedom will "read, mark, learn, and inwardly digest" the lessons written here.

THE STORY OF WEAPONS AND TACTICS. By Tom Wintringham. Houghton Mifflin Co. $2.25.

A book by Wintringham is an event worth noting, for he combines the rare attributes of expert knowledge of military history with actual experience in the field. His excellent literary style makes his books not only valuable but enjoyable as well.

"If we are to survive and be victorious, we must learn the ways of change." The changes in methods of warfare and the weapons employed are covered from the seige of Troy to Stalingrad. The author divides the war periods into six classifications: (1) unarmored period—prehistoric to 479 B.C.; (2) the first armored period—479 B.C. to 378 A.D.; (3) the second unarmored period—378 to 774; (4) the second armored period—774 to 1346; (5) the third unarmored period—1346 to 1917; and (6) the third armored period—1917 to ? In each of these periods he selects the most familiar battles—the most prominent historically to the average reader and, using these as illustrations, shows in each the influence of methods on weapons, and weapons on methods.

There is perhaps nothing new here to the student of military history, but there is coördination of facts, and in coördination many features become emphasized that inevitably slip into the background when studied individually.

Mobility of mind as well as mobility of units becomes obvious in this study of change. Each age has had its diehards; and there is cold comfort for them in the history of their ilk.

The lessons in this book are as modern as Spain, Libya, and Stalingrad. Its chief prophecy is based on the need for light, mobile tanks for use in conjunction with infantry.

INTO THE VALLEY. By John Hersey. Alfred A. Knopf. $2.00.

This is not just another book on the Marines in Guadalcanal and the Solomons. It does not start out to be a pretentious story. The author has pictured a single skirmish and one not too successful from the military point of view.

In all events, the men fighting the battle do not see themselves as part of a large pattern but rather the pattern as part of themselves. Thus, the personal angles of situations become important in the same proportion that they fade from prominence in the larger scene. In this, Mr. Hersey has succeeded in giving us more than a mere accounting of a battle with the pictures of a few specific personalities. He has produced a book that is made up of the little things that are of importance to the men concerned at the moment in any area of warfare.

These are real men, not shadowy characters. They may have lost this engagement; they may lose many more, but ultimately the man who can control psychological fear by the tone of his voice and the simple question, "Who gave that order?" must eventually lead his men to ever more frequent successes.

POSTMORTEM ON MALAYA. By Virginia Thompson. The Macmillan Co., 1943. $3.00.

In her books on Thailand and French Indo-China, Miss Thompson has already proved himself to be a penetrating analyst of Far Eastern affairs.

"Postmortem on Malaya" is her latest account of an Asiatic country, once dominated by a European nation and now existing under the heel of Japan. This book is primarily a study of the economic and social factors that made the Malay peninsula an unsound fruit, ready to be shaken from the British imperial tree with very little effort on the part of the Japanese.

Miss Thompson considers the military aspect of the question only as an adjunct to her broad social study, and devotes but one chapter to the military history of the peninsula. She does not subscribe to the theory that "whiskey-swilling" planters were the cause of Malaya's lack of military and psychological preparation for war. She believes that "short-sightedness and gross negligence" are the charges that can more fairly be leveled at the British community and the colonial authorities.

Socially, Malaya was a melting-pot whose ingredients did not melt. A large and transient immigrant population, composed mainly of Chinese and Indians, was necessary to do the manual labor involved in exploiting Malaya's tremendous natural resources of tin and rubber. The heterogeneity of the population made a sound and stable community very difficult to create.--L. B. C.

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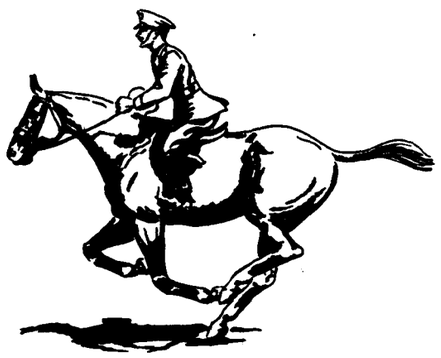

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The Cavalry Journal
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BEHIND THE JAPANESE MASK. By Jesse F. Steiner. Macmillan. $2.00.

Dr. Steiner taught English in North Japan College from 1905 to 1912. He traveled widely over the island both during that period and later when he revisited it in 1935 to study social conditions. He has written a cold estimate of the nature of the Japanese as he has interpreted it from racial customs and personal contacts studied from the viewpoint of the trained sociologist. There is no propaganda here, but a simple problem in addition.

We are reminded that for too many years we have looked scornfully at the Japanese, while they wisely absorbed all that we could teach them. Superficial western knowledge, based on a foundation of semi-barbarism, has produced a wily and vicious enemy. A thorough understanding of the nature of this opponent can be of inestimable value.

One book alone, however, cannot be expected to complete the job of building this understanding. In *Report from Tokyo*, Ambassador Grew gave us the Japanese nature and mind as seen by a statesman. In *Behind the Japanese Mask*, Dr. Steiner goes more deeply into the broad expanse of a people at large—the people with whom we are engaged in battle.

✓ ✓ ✓

I SERVED ON BATAAN. By Lieutenant Juanita Redmond, ANC. J. B. Lippincott Co. $1.75.

Here, in 167 pages, is a story that defies reviewing. It is not a great piece of literature. It has no outstanding character. Despite its obvious defects, however, this book engenders a profound respect for those who endured the siege of Bataan and then repeated their experience in the siege of Corregidor.

To face the unknown is bad enough, but to face the known horrors of slow starvation and depleted drug supplies takes more than average courage. One sentence tells the story: "There was no retreat from Corregidor."

This South Carolina girl has not tried to glorify her profession. It would be impossible, however, to describe the work of the medical units in the Philippines without commanding respect and admiration, not only for their courage, but for their ingenuity and skill.

✓ ✓ ✓

GOING TO OFFICER CANDIDATE SCHOOL! Edited by Major Nelson A. Voorhees, W. O. Martin Goldenring, and Officer Candidate Tino Suarez. Military Service. $1.00.

Here is a comprehensive guide for men considering Officer Candidate School. It answers the questions of most importance to the candidate: What are the requirements? How do you make application? Who fails and why? It outlines the schools and programs of instruction in order that the prospective candidate may have the knowledge on which to base a thoughtful choice.

Unquestionably, this book should be a part of every library and should be available to every man who wishes to be considered for officer's training.

SOUTH OF THE CONGO. By Selwyn James. Random House. $3.00.

At a time when American attention is centered on Africa, this book is of more than timely interest. Most Americans are moderately familiar with the northern part of that continent, but not since the Boer War has much attention been given to the section "South of the Congo."

Selwyn James has gathered his material at first hand and carried his events up to the end of 1942. This adds considerably to the importance of a book that outlines political situations and trends, in a section of the world where conflicts have always existed, not only between native and colonial populations, but between the various groups of European settlers and, in turn, between their religious and political subdivisions. Offering, as it does, such fertile ground for religious and racial antagonism among the people, the situation is one to delight the Fascist propagandist.

This book is definitely recommended reading for those who wish to understand what lies to the south of our armies in Africa, what the Germans in Africa are like, what the Nazis have succeeded in doing among them, wherein their plots have failed, and the present alignment of forces in the Belgian Congo, Tanganyika, the Rhodesias and the British protectorates.

✓ ✓ ✓

VICHY, TWO YEARS OF DECEPTION. By Leon Marchal. Macmillan. $2.50.

Leon Marchal is one of those Frenchmen who collaborated with Vichy for as long as he thought that course to the best interest of France. After Laval's return to power in April, 1942, however, he resigned from the Vichy embassy in Washington and joined the staff of General de Gaulle's Fighting French.

Vichy is a recounting of the actions of the French government from the time of the armistice signed in Compeigne Forest to the landing of the Americans in North Africa. Chapters given to Petain, Laval, Darlan, and Weygand, include their political lives and aspirations. The whole book is unquestionably colored by the fact that the author fought in the last war, saw Hitlerism at close quarters in Munich in 1934, and had ample opportunity to watch the absorption of power by the henchmen of the Nazi regime in conquered France.

To those who believe that Vichy is not only the tool of Hitler, but a willing ally, this book will bring ample justification.

✓ ✓ ✓

DRESS REHEARSAL. By Quentin Reynolds. Random House. $2.00.

This reporter's story of what he saw at Dieppe is the center of a racy picture of many phases of the present war. It is clear to any thoughtful person that for the present at least, material on the Dieppe raid must necessarily remain "off the record." In lieu of what he cannot tell us of the entire action, Mr. Reynolds has filled in with many personalized sketches that make the book intimate rather than impersonal reading.

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The author's defense of these personal detail elements of a big story is given in his foreword—that an eyewitness of such an event sees most closely the individuals involved. This is doubtless quite true and, incidentally, it makes interesting reading. Such writing, however, has little permanent value either from an historical or literary point of view. The reader is left with the feeling that the writer has used too much "sawdust in his bricks."

MILITARY SKI MANUAL. By Frank Harper. Military Service Publishing Co. $2.00.

The past two decades have brought skiing, as a sport, to the attention of the American public. Before the war skiing was beginning to spread beyond the limits of a few wealthy resorts. With the advent of war this sport has become an effective weapon in the far northern climates and, during the winter months, in more temperate zones.

Mr. Harper, a brilliant skier and Alpinist, trained in winter warfare in the last war, has compiled a complete manual on the subject of military skiing. Pictures and diagrams show the sportsman, amateur or professional, and how his footwork can be turned to the best possible advantage. His chapters on tactics of attack and defense include the essential features of rations, equipment and bivouac in the snow.

Several chapters illustrate the actual use of ski troops in the Russo-Finnish war in 1939-40 and the Russo-German conflict in 1941-42. Early use of ski troops in 1914-18 in France, Germany, Austria and Italy is described and contrasted with ski troops in the present war.

Needless to say, this book should prove most useful to officers and men training in far northern posts.

FLYING HEALTH. By Dr. M. Martyn Kafka. Military Service Publishing Co. 248 pp. $2.00.

Dr. Kafka, former U. S. Army Air Corps flight surgeon, has compiled an up-to-date handbook for maintaining flying health. The high physical standards required for both civilian and army aviation are outlined. Sound, reasonable advice is given to enable the aviator to maintain these standards.

This is certainly one of the saner, more balanced books on health. The medical information given is known to every practitioner as fact. There is no effort to preach, no prohibition of habits normal to the average citizen, there is a very reasonable recommendation that moderation be observed.

While this book has been written primarily for airmen it should prove of equal value to all men interested in preserving their health and maintaining a high state of physical efficiency. E. S. D.

THEY CALL IT PACIFIC. By Clark Lee. Viking Press. $3.00.

This graphic account of our war in the Pacific was received too late for review in this issue. It is one of the best descriptions of the war that has appeared, and is highly recommended to our readers.

It is a comprehensive and gripping narrative told by a man who went through it.

Here Are This Months New Books of Current Interest

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JUNGLE FIGHTING

Observations made during three and one-half months of fighting the Japs on Guadalcanal.

by Captain Willard O. Foster, Jr., Cavalry

This article, received by air mail from Guadalcanal, contains invaluable training data for every officer, non-commissioned officer or private who may find himself pitted against the Japs!

THE material that has been issued by the War Department on training for jungle combat is good. There is no doubt about that. Any unit that uses this material, and is well trained, will beat the Japs six hands around. And there is no doubt about that, either!

There are a lot of things, however, that cannot be learned from books. They have to be learned the hard way—and in war the hard way really hurts. It is in an effort to ease this hurt that these notes are written. They are the result of observations made during three and one-half months of active combat against the Japanese in the jungles of Guadalcanal. The original comments were written on the spot as the observations were made. The material itself was written immediately after the combat had ceased in order that the lessons learned would not lose their freshness through the passage of time.

Jungle Reconnaissance

"Another officer lost on patrol today. Patrol straggled in—no decent info. When will they learn!"

Yes, when will they learn that when an officer is conducting a patrol, his position is *not* in the point. Patrols in the jungle are constant. They are the only means that a commander has at his disposal to gain intelligence of the Japs opposing him. In training for jungle combat, the manual, "Scouting and Patrolling," should be placed alongside FM 31-20, "Jungle Warfare," and both should be used as corner-stones upon which to build the training program. A few points on jungle patrols, however, should be stressed.

Reconnaissance Patrols Must Also Fight. When fighting in the jungle, it is difficult to distinguish between "combat" and "reconnaissance" patrols. To restrict a patrol leader to pure reconnaissance (except in isolated instances) is to hamper seriously and even endanger that patrol. Jungle patrols *must* be aggressive when the situation demands. It is often their only true means of defense. A patrol should always seek information, but it likewise should always seek to cause as much discomfort to the enemy as possible. In the jungle, where patrols do 75% of the fighting, a strict "reconnaissance" patrol should seldom be employed.

The Reconnaissance Commander. Patrol leaders must learn proper patrol formations and patrol technique. Errors commonly noted in combat were many. Patrol leaders up with the point—"to see what was going on!" No getaway man! No point! Nobody in the patrol knows its mission except the leader! Put these together and get the story of the patrol that goes out, gets hit, and wanders back in as individuals three or four hours later with garbled stories of what happened and no information as to where, how many, or where the rest of the patrol went.

Some unit commander figured during training that the manual on "Scouting and Patrolling" looked like "kindergarten stuff." The same unit commander now begins to think about such things as *double points* (the Japs use that formation), assembly points along the route, two getaway men, a man in the rear to drop back every few minutes to listen for noises of a tracking enemy, and above all, experienced noncoms as leaders and second-in-commands of small patrols, and steady officers as leaders of larger patrols.

A scouting party of American soldiers come to a sudden stop as the bushes ahead begin to move.

European

Natural Reconnaissance Scouts. It soon becomes apparent in every unit that a certain group of men become well versed in the ways of the jungle and the wiles of the Jap. These are generally men who have grown up in country surroundings, used to hardships, clever in woodcraft. When these individuals show up, an attempt should be made to segregate them, to organize them if possible, into a group that may be used for more difficult patrol missions. As individual "scouts" or in groups as patrols, these men soon prove themselves invaluable. On the difficult "pure reconnaissance" patrols these men will be the only ones capable of slipping through the enemy positions without detection and gaining the information desired. They soon develop a pride in their ability as compared with their fellow soldiers, and the commander who is clever enough to spot and organize such a group can, by their correct employment, raise considerably the patrolling standards of his entire command.

Use of Weapons

"We've got to change a lot of our ideas on how to use our weapons in this type of thing. And don't forget mortars!"

Many of our principles of employment of weapons become worthless when combat in the jungle is undertaken. At the same time, other principles assume an even greater importance. A few of both kinds will be discussed:

Field of Fire. Because of heavy undergrowth, the possibility of obtaining a field of fire optimum to the specific weapon employed is more often than not impossible. Along jungle trails, it may be considered fortunate if a range of 50 yards can be obtained. On the other hand, over open ridges often found in jungle country, or along streams in their upper reaches where they have a straight-a-way run of some distance, fields of fire may be employed properly. In the depths of the jungle, however, the greatest consideration must be placed on the lack of proper ranges, and the fire lines and automatic gun positions must be taken in the most advantageous spot.

The Japanese overcome this lack of proper ranges in many cases by spotting even heavy machine guns in the high branches of jungle trees or in the top of coconut trees in palm groves. By so doing, concealment is enhanced as well.

When the opportunity offers, we should avail ourselves of this Japanese example and emulate it.

Note: Closely allied to fields of fire is the subject of *ambushes and their employment*, as fields of fire, or the lack of them play an important part in their set-up. (See page 6.)

With the lack of proper ranges, it is seldom that sights other than the battle sight are ever employed. An exception to this is the *sniper*. (See page 5.)

Cover and Concealment. Concealment in the jungle is easy to obtain, while cover is often difficult. So few gun positions are available in the limited open terrain that cover must often be sacrificed. Prolific vegetation, however, enables concealment with ease. Care must be taken to make use of natural growth as cut vegetation withers rapidly in the heat. Artificial forms of camouflage are to be avoided if possible, as any disturbance of, or variation from, nature's rich growth stands out like a beacon.

Many jungle islands are coral formed, and often good cover for positions may be found in the rough coral ridges. This same coral, however, makes entrenched gun positions not only difficult, but in most cases, impossible.

Effective Combat Ranges of Weapons. It must be realized that in the jungle, most combat is undertaken at extremely close ranges. Practically all targets are those of opportunity only.

Extensive preparation for so-called "snap shooting" should be employed in the jungle training program. Extreme handiness with weapons is desired. Riflemen are often required to rely upon even "hip shooting," while crews of automatic weapons must be proficient to the *nth* degree in manipulation. Setting-up of jungle target courses in the training program is very desirable.*

Automatic Weapons in Defense. The employment of automatic weapons in defense is not only normal in the jungle, but it is practically the only way in which they can be employed. Machine guns, both light and heavy, should be left on defensive lines; while the attack should be made with the lighter BAR's supporting the riflemen. Attempting to carry the heavier automatic weapons in a humid, hot jungle in an active offensive must be considered impossible. However, when correctly deployed and emplaced on a defensive line in the jungle, automatic weapons prove their worth.

Employment of Mortars. One of the most effective jungle weapons is the mortar. The 81mm may be used both on the defensive and in preparation for an offensive. The 60mm may be used similarly but is furthermore light enough to follow along behind an offensive line. A serious drawback to the employment of this weapon is observation and the resultant sensing.

In the jungle training program, emphasis must be placed on sensing through *sound* rather than visual observation. Range determination likewise must be dependent upon the individual's ears rather than eyes. None-the-less, mortars should be employed to the maximum. Enemy prisoners are strong in their statements concerning the effectiveness of mortar fire. On coral islands, or any formations where steep ravines and high ridges are encountered, mortar fire is more often than not the only means of placing HE on the enemy. Even in level spaces, mortar bursting on contact with upper foliage is heavily destructive over a large area. Mortars must never be underestimated in our jungle combat.

*See article "Quick on the Trigger" in this issue.

Care and Cleaning of Weapons

"Weapons go to pot in no time! Get hold of Jap oil, and use a rag often!"

Heat, humidity, perspiration, and dirt all wreak havoc on weapons in the jungle unless particular care is taken.

Daily Cleaning. It is vitally essential that all weapons be stripped, parts wiped with an oily rag, and fresh oil applied daily. This daily cleaning, which always has been recommended in texts, must become absolutely indoctrinated in troops as a veritable ritual during the time they are in the jungle. It is the *only* way in which weapons in the jungle can be kept in top operating condition at all times.

Oil to Prevent Rust. An oily rag, which when not in use may be wrapped around the stock of a rifle or the grip of a machine gun, should be used for the frequent wiping off of all exposed metal surfaces. Such surfaces may rust in as short a time as six hours if not so protected.

Japanese Gun Oil. It is unfortunate that the type of gun oil now issued U. S. troops is apparently not possessed of sufficient body or viscosity to adhere for any time to metal surfaces under the climatic conditions of and the use put to weapons in the jungle. Japanese gun oil appears far more satisfactory in this respect. It has the consistency of heavy syrup, yet spreads in a thin durable film over the metal without the stickiness that collects dirt and dust. Upon taking Japanese positions, it is worth while to locate and retain for use, all Jap oil found in the flask-type containers attached to rifle belts or in the square brass containers found in automatic gun positions.

Inserted in the front handguard along the barrel of Jap rifles, is a cleaning rod, which will be found to be an excellent supplement in any of our units where only one or two cleaning rods have been issued per squad.

"When correctly deployed and placed on a defensive line in the jungle, automatic weapons prove their worth."

European

"Debunk Jap snipers. And we can work this sniper business two ways."

In combat operations, both offensive and defensive, the use of snipers by Japanese forces is well known. The term "sniper" is, when applied to the Japanese, perhaps misleading. The average Jap sniper is a mere rifleman who has obtained for himself an advantageous position such as a tree-top from which to fire at his enemy. The true Jap sniper, skillfully camouflaged, supplied with concentrated rations and especially armed, accounts for but a small amount of what we presently term "sniper fire."

Value of Snipers. The value of sniper fire has been illustrated in combat. Snipers present a constant problem in both front line and rear areas. During combat operations on Guadalcanal, it was often necessary to employ a patrol with the sole mission of eliminating Jap snipers who had gained positions by infiltration through our lines. There is nothing more disconcerting than to have a battalion, or even a regimental command post, line of supply, or communications, subjected to sporadic fire from a source unknown. Although, in most cases, this fire is extremely inaccurate and causes few casualties, the psychological factor involved is important.

Defense Against Jap Sniper Fire. It has been found that along jungle trails, Jap snipers will seldom fire at parties larger than three or more, because of the fear of detection of their location by the remainder of the group. It has similarly been found that when groups of two or three are searching for snipers by maintaining careful watch or by active patrolling, a similar fear of detection will withhold the sniper's fire. From these two things, we may gain our passive defense lessons. First, individuals or even pairs should never travel along in rear areas where sniper fire may be encountered. Second, an outpost surrounding a headquarters or unit area (even if consisting of but two or three men who give the appearance of and actually do keep a sharp lookout in the direction from which sniper fire is likely to be encountered) will do much towards its prevention.

Both the active defense and the two methods of passive defense will go a long way towards keeping sniper fire at a minimum.

Employment of Sniper Fire By Our Own Troops. The employment of specially armed and equipped riflemen for true "sniper" missions should be adopted when possible.

Weapons for the Sniper. There are two types of weapons that are the most satisfactory for the sniper. The first of these is the Swift or Hornet high-powered .22 caliber with a telescopic sight. This weapon is light but has a high muzzle velocity and is effective at from medium to long range. The model 1903 Springfield, equipped with a telescopic sight, is the other weapon that may be used. Its capabilities are well known and

Acme

"The employment of specially armed and equipped riflemen for true sniper missions should be adopted when possible."

need not be enumerated here. The addition of the telescopic sight enhances its value.

Equipment for the Sniper. The issue "jungle suit" is highly satisfactory, provided the boots and helmet are lightly smeared with yellow paint. The pack, as well, should be streaked with yellow, as all of these items are a green with very high blue content, while jungle vegetation has a heavy yellow tinge. Similarly, metallic surfaces should be daubed to prevent reflection where such daubing does not interfere with the operation of the piece.

A good machete, at least two canteens of water and some emergency ration, type D or K, should be carried. Once in place, the sniper should remain as long as his fire is effective. In some cases, this may be from 24 to 36 hours. A small can of oil, a few patches and a draw string will serve to keep the weapon in top operating condition. A pair of climbing irons may be carried, but careless or too frequent use of them should be avoided, as the marks they leave may reveal a sniper's position.

Location of the Sniper. As the mission of the sniper is as much to provide harassing fire as it is the destruction of the enemy, locations should be chosen where fire upon several different targets may be employed. The most advantageous position is often found in high jungle trees, where fire may be brought upon the enemy's rear installations. High terrain overlooking the enemy may also be used. (Warning to the sniper: Never forget to rectify your aim when you are on a level higher than that of your target.)

In order to avoid detection, the position chosen must be entered carefully. A thorough visual reconnaissance of the exact route to be taken, and of any difficulties to be encountered in assuming the position, should be made during the late afternoon; and the position entered early the following morning in the dim light of

the false dawn that precedes sunrise. Once the position is gained, all precautions must be taken to prevent subsequent exposure. The position should be left only at night in order to avoid detection.

Concealment. Concealment must employ the use of natural growing vegetation, as in the jungle, any cut vegetation withers rapidly. Exceptions to this are the fronds of various species of palm. These maintain their freshness in most cases for two or three days. It would not be wise, however, to use palm for concealment in trees whose natural vegetation is at great variation to the shape and color of the palm.

An attempt must be made to blend the form of the body to the vegetation, for not even the jungle suit eliminates the ever dangerous silhouette. When assuming the position, care must be taken not to reveal by broken or scarred vegetation, the course taken or the tree or spot in which the position has been assumed.

Targets. In targets, we may benefit from the Japanese themselves. Destruction of the enemy may be accomplished by firing at individuals by themselves or groups of two or three. Harassing fire may be employed in larger groups providing they appear sufficiently occupied to be unable to determine from what direction the fire has come. Common sense must be used in determining targets. The prevention of exposure or detection by the enemy is the sole criterion.

Back-Azimuth. One method that has worked in the detection of snipers on several specific occasions is worth noting here. When a member of a patrol is struck by sniper fire, careful determination of the position and attitude of the victim when he was struck and a back azimuth taken along the direction of the wound, may more often than not expose the approximate area from which the shot was fired. A careful search of this estimated area will often lead to the discovery of the sniper.

Ambushes

"A good ambush needed here. Ambushes are OK—if you don't get your tail caught in your own trap!"

In the jungle, where concealment is so easily obtained and where movement is so closely restricted, ambushes may be employed easily and with good effect in either defensive or offensive operations. A correctly organized ambush must take several factors into consideration: location, concealment, depth, field of fire, and route of withdrawal may be mentioned.

Location. Unless the enemy comes freely into the ambush where he may be trapped, the most carefully organized and set up ambush may be worthless. Therefore, reconnaissance of enemy trails, supply routes, etc., must be carried out carefully in order to determine the place where the ambush may be employed most successfully.

Suggested ambush locations are twisting trails, water points or "water holes," enemy defensive positions occupied only when the area defended is threatened (a favorite Jap tactic), supply routes used by carriers, and jungle stream trails. In any one of these locations it is often possible to ambush large enemy parties, patrols, or supply carriers. Consideration of location must be combined with the other factors listed above and discussed below.

Concealment. Concealment is highly necessary in ambush operations as any suspicious appearance will foil all ambush attempts. Movement, once the enemy becomes visible, is a dead give-away, as you may be sure he will be keeping careful observation at all times.

The use of supporting riflemen concealed in trees must not be revealed by the scratching of bark or breaking of surrounding vines when the riflemen assume their position. Cigarette butts, paper scraps, ration tins, footprints, and bruised or broken vegetation are positive indications to keen enemy eyes that all is not well.

The use of one or two native guides to assist in the concealment and to remove all traces after the occupation of the position is desirable when possible, as they have great natural ability along this line.

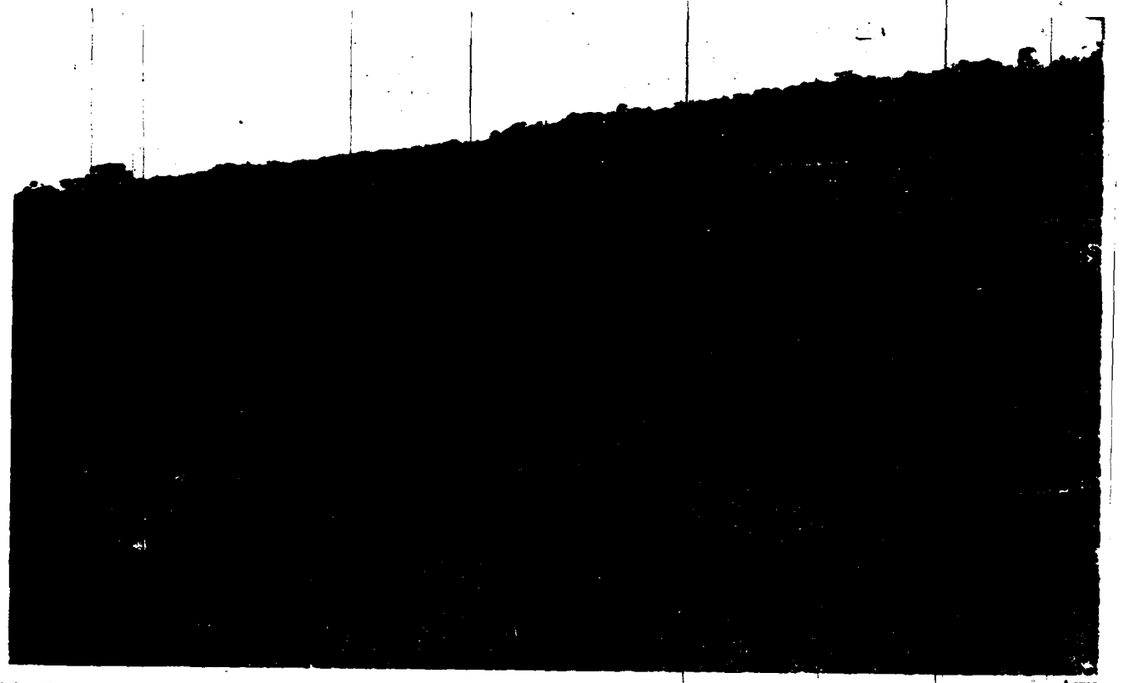
The glint of metal surfaces is often a sure give-away of otherwise perfectly concealed positions. The use of lusterless paint on bright metal, when not impeding the function of the weapon, overcomes this problem. The use of green paints with high yellow content should be used for daubing of weapons, clothing, and equipment. Green paint in which the blue content is high must be avoided, as it is an unnatural jungle color.

Depth. By depth of ambush is meant the distance which the enemy may penetrate into the position before his leading element passes out of the line of fire. This depth depends upon the size of the enemy party that is to be trapped. When the enemy is fully in the position, there must be fire both in front and behind him to prevent his escape from either direction. The depth will depend, as well, upon the location of the ambush and its type.

It must be remembered that the principle of ambush is the annihilation of the entire enemy group, and depth must be governed accordingly.

Field of Fire. It is seldom possible to so place weapons in an ambush as to make use of the optimum field of fire for each. No attempt should be made to place weapons in such a way as to maintain the so-called correct range. Instead, the weapon should be brought closely into the ambush in order to bring point-blank fire to bear on the enemy if possible. It is certain that the bullet is just as effective, and the attendant roar of weapons adds to the confusion of the enemy who more often than not gives up the idea of escape as a result.

Route of Withdrawal. A successful ambush is sure to cause an attempted enemy reprisal—especially, if one or more of the party escapes and can give accurate location of the ambush. Consideration, therefore, must be given to the easiest and swiftest means of withdrawal directly after the operation, or a return ambush by the



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The Guadalcanal natives are eager to help U. S. troops. Here is one serving as a guide, while others assist with supplies.

enemy may result. This is of even greater importance if the ambush is behind enemy forward lines or in an enemy area, as it often is. If possible, two or three routes of withdrawal (none of which is the route of entry) should be reconnoitered carefully prior to going into position. Care must be taken in conducting this reconnaissance, as the enemy may well back-track and ambush your very route of withdrawal. Here again, native scouts or guides should be used to cover tracks and search for the best routes.

Assembly Point. Even the most careful preparation and planning of an ambush operation may be frustrated by an active and clever enemy; and, as often occurs in jungle combat, the tables may be turned with startling suddenness. When this takes place, groups or even individuals may find themselves cut off and forced to retire. If care has been taken to designate an assembly point, with the positive assurance that all know its exact location, a reorganization may be effected quickly enough to insure rapid aid to those caught behind, or even another turning of the tables that will result in the destruction of the enemy.

Protection Against Ambushes. The Japs are active in back-tracking enemy patrol routes through the jungle and often place ambushes pending the patrol's return. In light of this, it is mandatory that tracks be concealed, insofar as possible, by eliminating unnecessary footsteps, prohibiting smoking or reëntry into our lines by a different trail.

The use of native scouts as points for patrols along trails where ambushes may be anticipated, more often than not, will disclose such ambushes (through the scout's inherent keen eyesight) in time to prevent the patrols from falling into the trap. The use of native scouts in patrol operations, when they are available, cannot be too strongly stressed.

Patience

"Patience is not only a virtue—it's the mother of all virtues in this kind of job!"

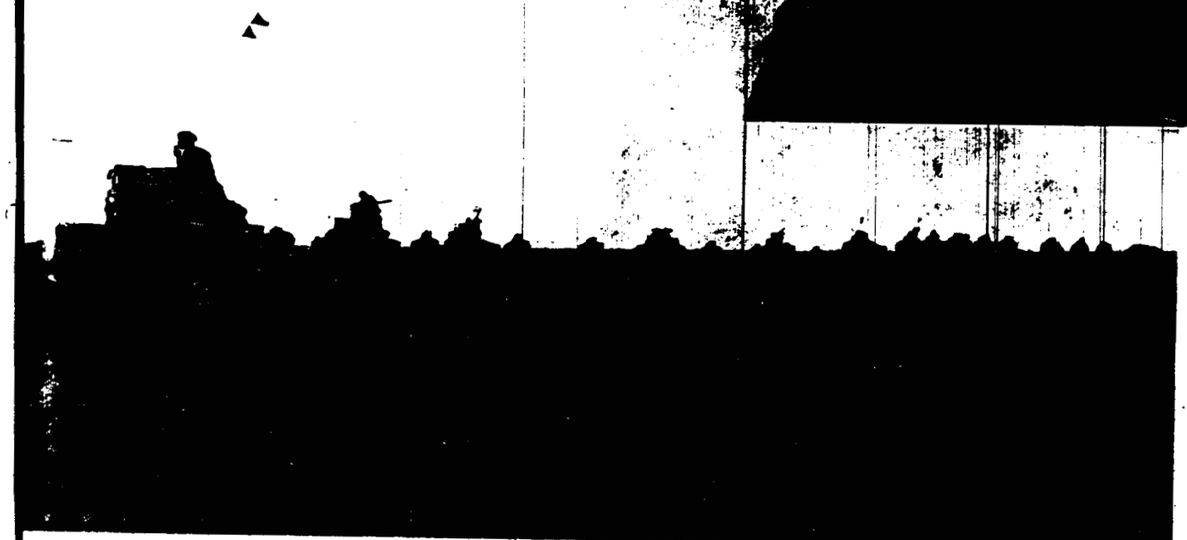
Not much can be said on *how* to inculcate patience in troops operating in the jungle. Much, however, can be said on *why*. A lot has been heard about the ability of the Jap to remain motionless in one spot for long periods of time while waiting for a suitable target to appear. The soldier, fighting in the jungle, must also develop that same ability.

"Haste leads to waste" of life in jungle fighting. The patrol that crashes its way along, intent on making speed is just hurrying into trouble. The noise alone is bad enough. The patrol that moves slowly but steadily, advancing with stealth, with eyes probing each foot of ground covered, ready in an instant to fade into the bush or to take decisive action if the occasion arises—that is the patrol that will gain the most information or do the most damage. The man in the ambush group that must peek around the bush to see how far the enemy has entered the trap—that is the man who gives everything away and causes the death or injury of some of his companions. A good hunter must have patience, and in jungle combat the soldier is a "hunter" in the strictest sense of the word.

ARMORED TACTICS IN NORTH AFRICA

by Major C. B. Ormerod
Royal Artillery, Retired

General Sir Bernard L. Montgomery, Commander of the British Eighth Army during its successful "Third Phase" has chased Rommel across 1700 miles of the Western Desert.



A column of U.S. General Stuarts (M-3), mounting 37mm guns, advances during the "Second Phase."

TANK WARFARE in the Western Desert, extending from the Nile Delta in Egypt across Libya to Tripoli, has passed through three phases. During these phases, the tactics employed by the British Army have been modified as the tactics and equipment of the enemy have changed or developed.

First Phase—Tanks Against Infantry
December, 1940-March, 1941

When General Wavell attacked Marshal Graziani and his Italian Army on December 9, 1940, he had a handful of out-of-date British Cruiser tanks, and a new infantry tank called the Matilda, which was a slow, heavily armored vehicle that carried a two-pounder gun. The Italian tanks, judged by modern standards, were poorly equipped and badly manned. The new British Matilda was really the deciding factor in the campaign, for the Italians had no first class antitank guns to bring against it, and no good tanks; and in the part of the desert where the fighting took place, tanks were absolutely vital.

The great flat spaces of the Western Desert give plenty of room for enterprise in maneuver. There is no position that cannot be outflanked by tanks. The British heavy armor over-ran the Italian fortified lines, while their lighter units, operating around the desert flank, were able to get to the "soft-skinned" vehicles and burst in among the transport convoys like wolves among a flock of sheep.

The climax of Wavell's campaign came when the 1st Battalion of the Royal Tank Regiment, with detachments of the 7th Armored Division, cut across the desert from Makili to Beda Fomm, a distance of nearly 150 miles, and intercepted the head of the Italian column retreating southwards from Bengasi.

By this time, the long distances and bad going had reduced the number of tanks available, and the battalion's armor consisted of only 8 Cruisers, and a few lighter tanks.

The enemy started the battle 20,000 strong, with 2,000 lorries and 148 tanks. Part of the British battalion, with the 8 tanks, took on the 40 tanks that formed the Italian vanguard, and by nightfall had disposed of every one of them without loss to themselves. This success seemed to paralyze the enemy, and it was not until the next morning that he pulled himself together sufficiently to come forward again. The British force, by this time, had been reduced by the mechanical failure of 2 tanks, but the remaining 6 tanks confidently set about the Italians, and after an hour's fight drove them from the field.

Soon after this, British reinforcements arrived, and the whole Italian column was compelled to surrender. This marked the end of the first phase in the development of British tank tactics, which may be described roughly as "tanks against infantry," for the inferior quality of the Italian tanks had rendered them almost negligible. But the campaign was not over.

During the "First Phase" on the Western Desert, British guards move up protected by a smoke screen and Matilda tanks. The Matilda was an infantry tank mounting a 40mm gun.

Superior German Fire Power Dominates British Armor

German assistance for the Italians was pouring into Tripoli, and in March 1941, Rommel and his *Afrika Korps*, which included 2 panzer divisions armed with Mark III and Mark IV tanks, were in the field.

These tanks were far superior to any that the British had produced up to that time. The Mark III mounted a 50mm gun and the Mark IV a 75mm gun. Both of these guns were effective up to a range of 1,500 yards, and these well armed tanks were supported by a gun, which for a time seemed likely to prove a decisive factor in the desert. This was the German 88mm, dual-purpose gun that now appeared in Libya for the first time.

In the face of this new development, the British, with wornout armor and at the end of a long line of communication, were forced to withdraw. They were vigorously pursued, but managed to reëstablish a defensive line just inside the Egyptian frontier. This left the closely invested port of Tobruk in a precarious position, 90 miles behind the enemy lines.

For the next five or six months, during the heat of the Egyptian summer, nothing spectacular occurred. Both sides made extensive preparations for a renewal of the battle, and Tobruk still held out firmly, but at a not inconsiderable cost.

Second Phase — Tanks Against Tanks
November 18, 1941-December 25, 1941

The next phase opened at dawn on November 18, 1941, when General Sir Claude Auchinleck, who had replaced Sir Archibald Wavell as the British commander in the Middle East, attacked in force.

Before the attack opened, the enemy force in Cyrenaica is believed to have comprised the German *Afrika Korps* (the 15th and 21st Armored Divisions, and the Italian 55th *Savona Infantry*), located roughly in the area Bardia—Sollum—Sidi Omar; the Italian 21st Corps (3 infantry divisions) with a stiffening of German infantry, located in and around Tobruk; the Italian 10th Corps (the *Ariete* Armored Division and 2 motor divisions) in reserve in the area of El Adem—El Gobi—Bir Hacheim, to the south of Tobruk. In all, it was estimated that the Axis had 387 tanks, apart from old models and very light tanks.

The Axis air forces in Cyrenaica were believed to amount to 150 German and 200 Italian aircraft, to which must be added about 100 aircraft in Tripolitania, and 200 in Greece and the Aegean that might be called on to intervene in the fighting.

Details of the composition of Auchinleck's force are not available, but it is assumed that the strengths of the opposing armies were about equal, though the British seem to have had a slight superiority in the air.

The British also had some new weapons. Large numbers of U. S. Stuart tanks had arrived, and in addition to the original Matildas, there were Valentines

and Crusaders. Each of these mounted a two-pounder gun, effective up to about 800 yards, and excellent at short ranges. Supporting these tanks were quantities of two-pounder antitank guns mounted on lorries, and 25-pounder field guns, which were first class weapons but not suitable for use as true antitank guns.

As soon as General Auchinleck launched his attack, his tank commanders realized that they were outgunned. The German guns were hitting them before they could get close enough to make any reply. The only possible course of action for the British, therefore, was to charge and close the distance to 800 yards, or less, at which range their two-pounder guns could reach the enemy. These tactics proved effective, but costly.

After ten days of desperate fighting, the remnants of the Axis armor finally made off across the desert, and left the garrisons of Halfaya Pass and Bardia to their fate. Tobruk was relieved, and on Christmas Day the British once more were in possession of Bengasi. Rommel and his panzers meanwhile had established themselves at El Agheila on the Gulf of Sirte.

In this first great battle of tank against tank, the battle ground was a tactician's paradise in which neither side had any permanent or definite advantage of terrain. Territorial gains, save for reasons of immediate military strategy, were unimportant, and the commanders of the opposing armies had one object only: to batter out of existence the armored forces of the enemy.

The massed forces approached each other like two fleets at sea, with their attendant escorts of armored cars and with supply and repair vehicles in close attendance. They closed, fought, broke away, and went into *laager* for the night, often in sight of each other.

Every advantage was taken of folds of the ground, dust clouds, smoke screens, and of the rising and setting sun. The lighter British tanks, fighting often on the move, tried to close the range; while the heavier Axis vehicles backed slowly away or maneuvered to a flank in an effort to maintain the distance which gave the advantage to their longer range guns.

The enemy killed and wounded in the first part of this campaign were given by Mr. Churchill as 24,500, but this figure included the infantry casualties in the fighting around Halfaya Pass and Bardia. Prisoners numbered 36,000, while British losses were put at 18,000. But the campaign was not yet over.

MONTGOMERY'S SPECTACULAR ADVANCE ACROSS WESTERN DESERT — THIRD PHASE

1. October 23-November 4. General Montgomery coördinates aerial and artillery barrage with infantry and tanks to crack Rommel's El Alamein line in 12 days.
2. November 4-November 21. Rommel runs, abandons Italian troops. Montgomery follows him 700 miles nonstop into Agedabia, wiping out all rearguard stands.
3. November 21-December 12. First lull. Montgomery halts Eighth Army to regroup, bring up heavy guns and armor against expected Axis stand at El Agheila.
4. December 12-January 2. Montgomery strikes, cracks Rommel's surprisingly light defenses. Desert Fox flees, to Miserata. Huntsman Montgomery hounds his trail.
5. January 2-January 16. Second lull while Montgomery hurries his big guns to the new front before Wadi Zem-Zem, where Rommel seems to be ready to fight.
6. January 16-January 25. Rommel chooses to run for cover behind the Mareth Line in Tunisia. General LeClerc's Fighting French column joins the British Eighth Army.
7. January 25-March 18. Third lull. Montgomery rests his army before Mareth Line while weather, French politics clear. Yanks and First Army push deep into Tunisia.
8. March 18-May 8. The final push. Eighth Army flanks and cracks Mareth Line. Anderson, Patton and Montgomery join forces for the big squeeze.
9. May 12-. Final surrender of Axis troops in North Africa.

Churchill tanks, fitted with 6 pounder guns, were another surprise for Rommel during "Third Phase" in North Africa. Here are some of them moving forward to the battle area.

Loss of Tanks Precedes Withdrawal to El Alamein

The British, in preparation for a further advance towards Tripoli, had established large forward dumps at points southeast of Bengasi. Before the British were able to prepare an adequate defense in this region, however, Rommel, who had been reinforced with both men and tanks, struck again in March 1942. By this surprise move, he captured or destroyed all supply dumps, retook Bengasi, and drove the British back to the line El Gazala—Bir Hacheim, where the position became stabilized for some months.

The British position was a strong one, about 45 miles long with one flank resting on the sea, and the other at Bir Hacheim in the waterless desert. It was protected by an extensive minefield, which played an important part in the battle that took place in this area in June of 1942.

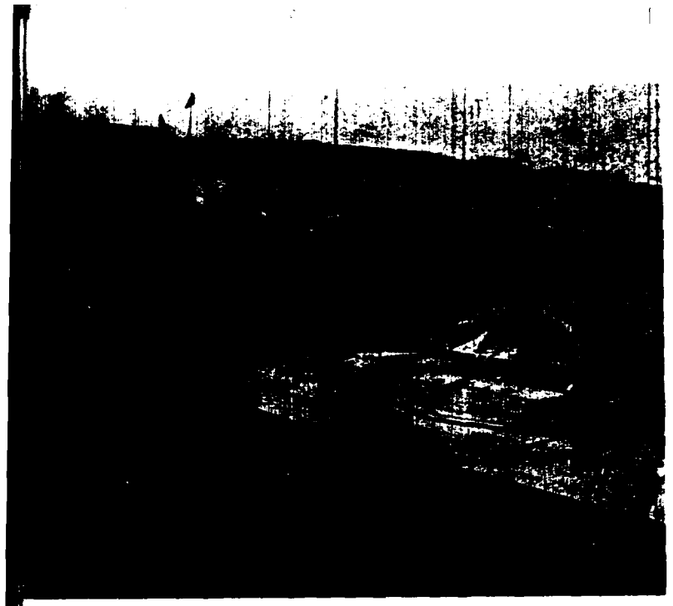
Rommel attacked on May 26, 1942. He sent the bulk of his armor in a wide sweep around the desert flank and then had it turn northwards behind the British minefield. The force was to cut across the lines of communication, disorganize the rear areas, and possibly take Tobruk.

Again the fighting was very furious and costly, but it was now less a matter of tank against tank than a case of tank against infantry and artillery. At one time, it seemed as if Rommel's armor would be pinned against the back of the British minefield and destroyed. But after nearly three weeks of bitter fighting, it was the British armor that was overthrown. The Eighth Army was forced to retreat, and Tobruk was captured.

It is impossible to say exactly how many British tanks were lost in this battle, but it was stated in the House of Commons on September 8, 1942, that the Eighth Army lost 200 tanks between the 12th and 18th of June. No army has yet been able to stand in the desert once its armor is gone. The infantry must retire, and the quicker the better. Once this point is appreciated, then the rout and retreat of every army in the desert—Italian, German or British—is explained.

With one exception, there is no defensive position in the Western Desert, because every position can be outflanked. The exception is the El Alamein line, which is unique because it is securely based on the sea at its northern end, and on the quick-sands and broken country of the Qattara Depression in the south. It was to this line that the British Eighth Army, with depleted and weary forces, retired from El Gazala, when their tanks were gone.

This may be regarded as the end of the second phase, where tanks had fought chiefly against tanks.



A Crusader, mounting a 6 pounder gun, and two U. S. General Sherman tanks (M-4) shown entering Mersa Matruh during the early part of the "Third Phase."

Third Phase—Antitank Guns Spearhead Attack; Armor Exploits, August, 1942-April, 1943

When the third, and final, phase of the fighting began in August 1942, the British Eighth Army had been reëquipped, and, to a great extent, rearmed. The U. S. Sherman tanks with their 75mm guns were now a match in range and armor for the best tanks that Rommel could muster, while the British six-pounder antitank gun in the hands of the infantry, and also mounted on the new Crusader tanks, had reached the front in large numbers. It was no longer safe for tanks to try to over-run unbroken infantry.

The battles from this point onward show the infantry as the spearhead of the attack, with the armor, like cavalry, held back and waiting to exploit any success. The factors that led chiefly to this change were the employment of good antitank guns by the infantry, the increased use of landmines, and the power and accuracy of the field artillery.

Rommel does not seem to have realized these changed conditions when he attacked the El Alamein position with his armor on August 31, 1942. He ran into a heavy concentration of antitank and field artillery fire, and after being bombed all night and shelled all day for three days, he broke off the engagement and retired again behind his own minefields.

In this action, the Nazis had produced nothing new in the way of either equipment or tactics. It remained for the British Eighth Army, under its new leader, General Montgomery, to show how the new methods, which had been evolved, could break the deadlock that had apparently developed at El Alamein.

Artillery, engineers, and infantry fought their way through the enemy minefield, which was very extensive and of extreme complexity. Rommel knew what was coming and expected that Montgomery would attack his center, which was the weakest part of his line. He divided his armor, therefore, and placed it behind both his northern and southern flanks, so that when the British armored spearhead came through, he planned to crush it by converging attacks. This decision proved to be his most costly error, for Montgomery, instead of attacking the weakest part of the line, sent his infantry against the strongest northern flank. When a breach had been made, the British armor poured through the gap and met and almost annihilated the Axis panzer divisions in a great tank battle at El Aqqair on November 2nd, when about 260 German and Italian tanks were destroyed.

But for a break in the weather, it is probable that not a single Nazi tank would have escaped. The pursuit was pressed without a pause, while the air forces kept up a continuous bombing attack on the retreating columns. Rain, however, rendered parts of the desert impassable, and the Nazi rearguards sowed minefields thickly along the roads as they retired.

The difficult terrain prevented the British from pursuing the Germans along lines parallel to their retreat. Rommel was able, therefore, to escape encirclement during his long 1,700 mile trek from El Alamein to northern Tunisia. But whenever he halted for any time, the British armor was always able to work around his desert flank and force him to continue his "withdrawal according to plan." Finally, with his back to the sea, eventual surrender is inevitable.

The Royal Armored Corps

The evolution of tank tactics from brute force to skilful maneuver and expert gunnery has been interesting. The British Royal Armored Corps has combined the old British cavalry regiments, now mechanized, with the Royal Tank Regiment. To these must be added the territorial cavalry regiments, or Yeomanry, which have also been mechanized (some as mobile artillery), and now form a part of the Royal Armored Corps.

The Royal Armored Corps is organized on a cavalry basis, into troops, squadrons and regiments. Various types of tanks, armored cars, and Bren-gun carriers, are included in each regiment. An essential part of the training is done with small, highly mobile columns, which, in addition to the tanks, include artillery, engineers, antiaircraft and antitank guns, and motorized infantry. Such columns have their own coöperating aircraft assigned to them. When operating independently, these small combined forces are always commanded by the senior officer of the armored units, even though some of the infantry, artillery or engineer officers may be of higher rank.

The open desert has developed its own type of tank warfare. It remains to be seen how far the strategy and the tactics evolved in Libya will apply in the more complex terrain of Europe.

Fighting French at Battle for Gabes*

WHEN, at dawn on March 29th, the New Zealanders under General Freyberg started their successful drive in the valley from El Hamma to Gabès, the hilltops and the hillsides suddenly became alive. From their concealed positions, the Fighting Frenchmen under General Leclerc arose to take their part in the decisive battle of southern Tunisia.

In the valley three hundred yards below, two dozen heavy and middleweight tanks—Crusaders, Shermans and Grants—were moving forward in the midst of a sandstorm, which at times concealed the operation. Through the clouds of dust, one could see the flashes from the guns. Groups of Kittyhawks hedge-hopped over the enemy lines, and overhead, squadrons of Spitfires protected the battlefield from the intrusion of enemy fighters and bombers. The troops of General Leclerc were on the march, protecting the flank of the New Zealanders.

In the general plan of the operations (which were to lead to the victory of El Hamma), the objective given to the Fighting French troops was to dislodge all of the enemy posts and batteries from their positions on the hillcrests of Djebel Melab and Djebel Tebaga, from where they could stop the allied tanks progressing in the valley.

These desert troops, which had come from Chad and conquered Fezzan after long-distance treks, were now asked to progress across chains of mountains cut by deep ravines. There was no question of using trucks to carry field pieces; every one of them had to be placed in position by manpower.

Along this ancient invasion route, the Axis defenses were fastened to a wall dating from the days of the Romans. Their positions seemed almost invulnerable; but after a furious three-day assault by the volunteers of General Leclerc, the Italians gave up and it was surprising to find that among the prisoners were men of the same units that had previously been routed at Ugh El Kebir and at Um El Araneb. The French artillery concentrated its fire in the valley on German tanks trying to impede the New Zealanders' attack. At night, Junkers 88's repeatedly attacked the French positions, and three planes were brought down by antiaircraft units.

The next morning, Axis troops made a desperate effort to reoccupy their former positions, and Rommel sent forward Italians and some of his best German shock troops for this purpose. After a violent artillery preparation, they made the assault, and soon the fight became a hand-to-hand combat. From all the French outposts, men could be seen counterattacking with grenades or throwing back the enemy with bayonets into the ravines below.

Many enemy dead were left on the ground. All the prisoners taken were young men of twenty, already veterans in this war. They had come from Russia, where they took part in the winter campaign, and had arrived in North Africa only a few weeks before. All of them were surprised to discover that they were captured by Frenchmen. One of them summed up their surprise in these words: "Ever since 1940 we have kept French prisoners in Germany thinking that we had liquidated France. And today, two and a half years afterwards, we in turn are made prisoners by Frenchmen. This war will never end."

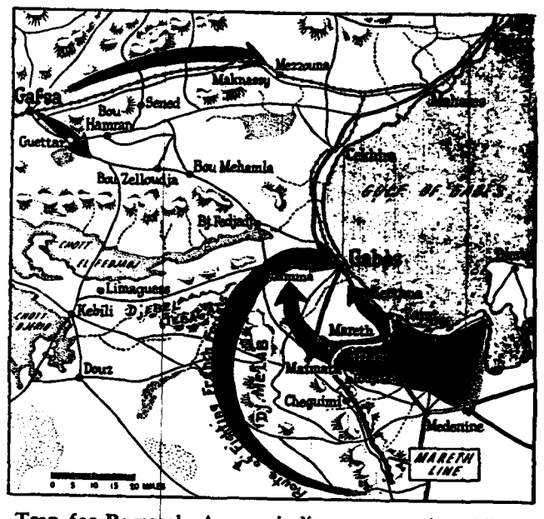
Later, the Fighting French motorized units of General Leclerc paraded through Gabès side by side with the victorious troops of General Freyberg.

At Gabès a group of Frenchmen received General Leclerc, and several officers from his unit. On the floor of the room, whose windows were without glass and whose ceiling was cracked, mimosa flowers made a Cross of Lorraine; the same symbol had been embroidered in red on the flag of the Veterans' Association of Gabès, carefully concealed and kept since 1940 and today flying once more.

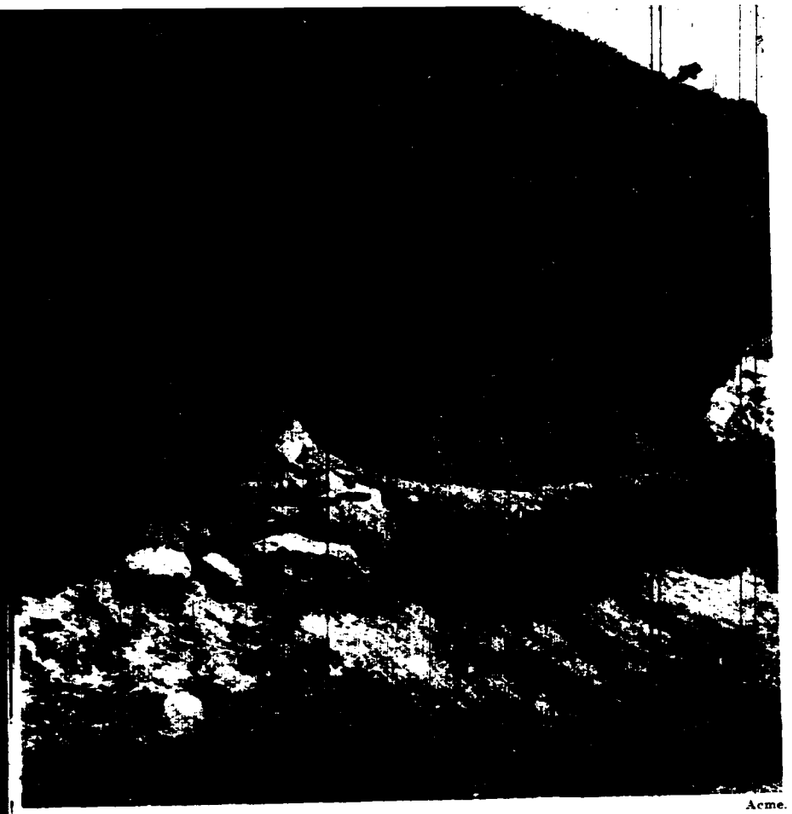
The Mayor of the township welcomed the General: "Perhaps we have suffered less than you," he said, "but we offered our sacrifice in the same spirit as yours."

In his reply General Leclerc emphasized the joy felt by the Fighting French Forces when they entered Tunisian territory. "From Chad and French Equatorial Africa," he said, "we counted the steps. First, North Africa, then France as far as Strasbourg; when we reached here, we felt that we had taken the first step."

*By wireless from Tunisia to the Fighting French Delegation in Washington. Under General Leclerc, the Fighting French forces recently came up from Chad and are now in operations with the British Eighth Army.



Trap for Rommel: Arrows indicate converging Allied attacks in Tunisia.



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"Foxhole" in Tunisia. These three men from a tank destroyer take cover in the bank of a hill while waiting for action at El Guettar Valley. When the order is given they will dash out to their machine for a crack at enemy tanks.

U. S. Soldiers Help Sweep Axis from Tunisia

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"Sweating out" enemy snipers, a patrol of U. S. soldiers advances cautiously through the streets of Maknassy. The 19 men took the town, from which the enemy had fled.

An American sapper is shown holding an Axis mine, which he has just dug from the sand near Gafsa. It was necessary to draw these Axis "fangs" to permit the advance of U. S. forces.

With the bare brown hills of Tunisia serving as a somber backdrop, American medium tanks move up to the front in El Guettar Valley. Fighting for Bir Marbott Pass, the Americans forced the Nazis into rapid retreat up the road toward Gabes.

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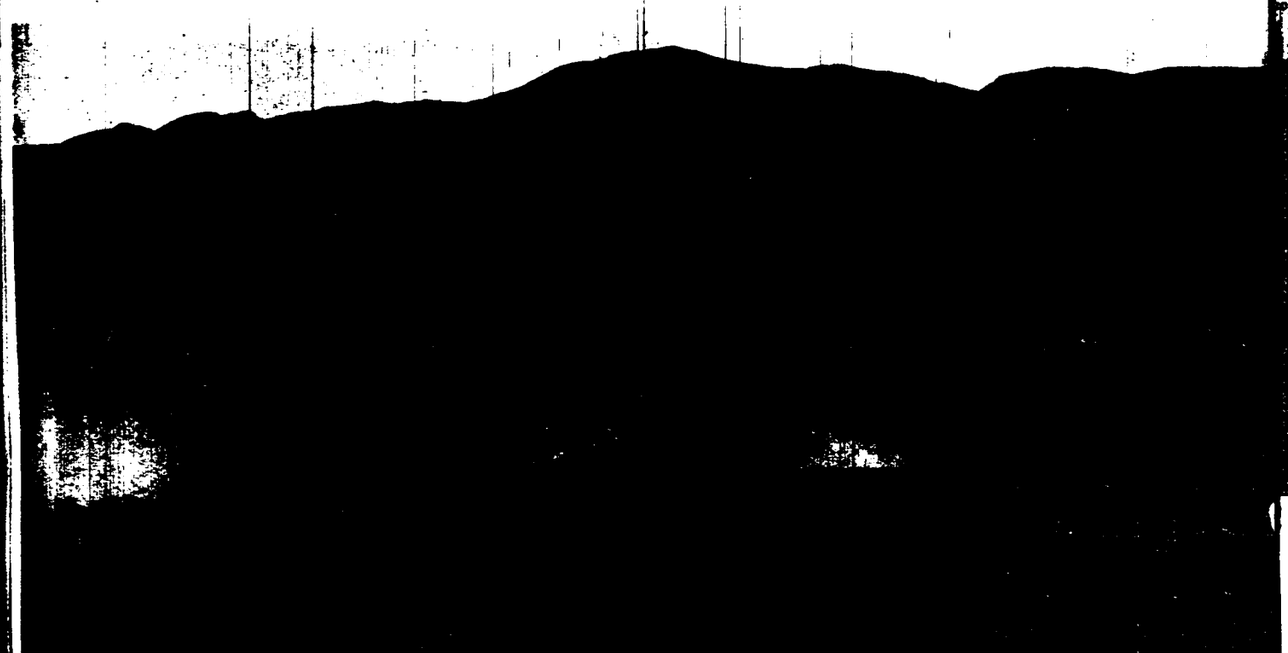

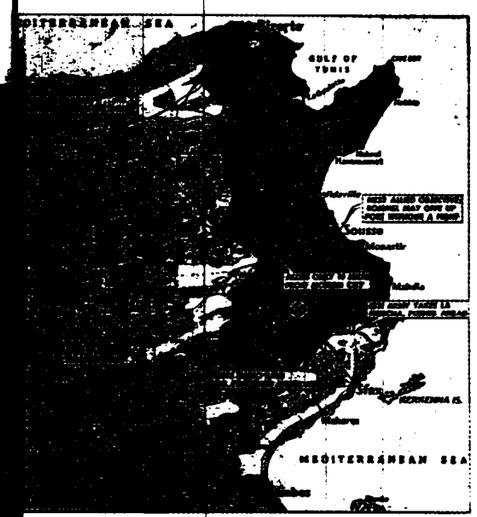

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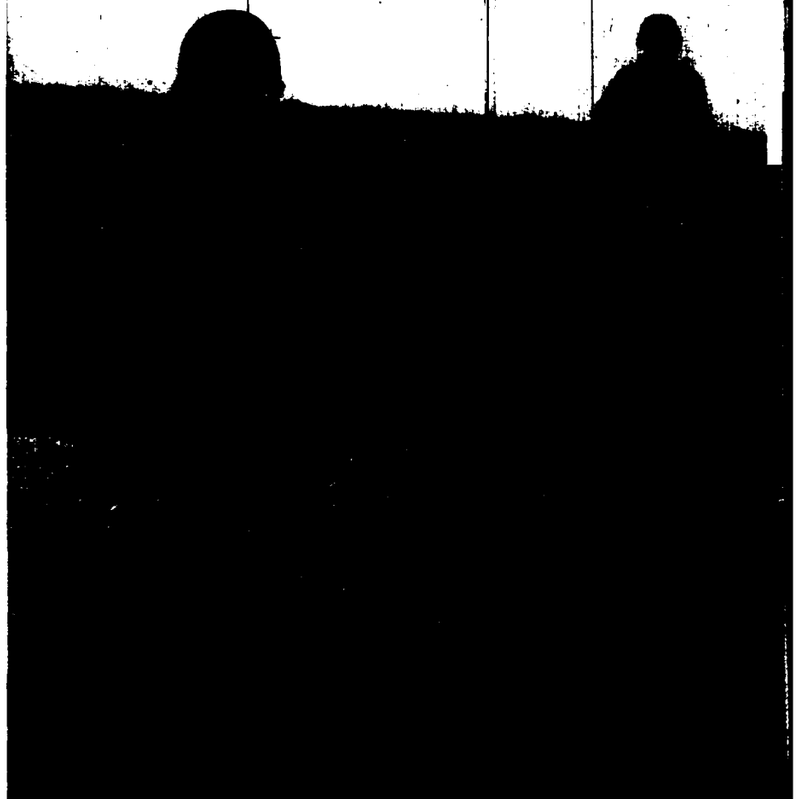

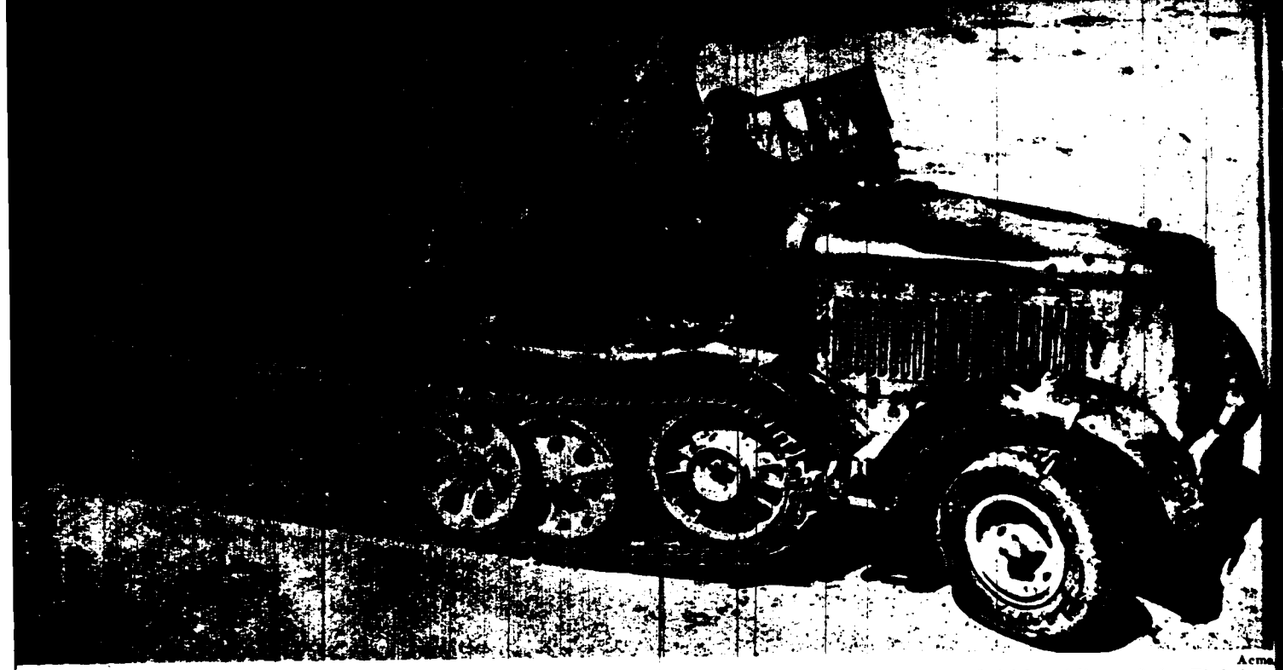

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This German Mercedes-Benz half-track troop carrier and prime mover was captured by British soldiers of the Eighth Army.

A U.S. star has been painted on this captured German tank destroyer and it is now being used against the enemy. This fast armored vehicle is equipped with a 75mm gun from the Mark IV tank and has dual controls for operation forwards or backwards. The tank was taken in a battle with the 10th Panzer Division in Central Tunisia.

Captured German Matériel

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European.

This German 88mm (FLAK 18/36), shown in ambush, can also fire from wheels. In the above picture, the front wheels, placed in gap in revetment, are ready to be run towards gun and hitched on. The tripod-like travelling lock in place indicates that the gun was preparing to run. White rings on barrel represent number of planes and tanks knocked out. Soldier in foreground is examining gun shield. Ammunition is stored to right. Beneath the empty gun cases can be seen the remnants of tarpaulin and net used for camouflage. Sand bags on the tarpaulin served both to hold down the sand and to keep the tarpaulin from blowing away when the gun fired over it.

This German He 111K night bomber, captured intact, is being examined by American soldiers. No explanation is given for the lettering. "D (Deutschland)—ACLO" represents a commercial license. Machine gun is fitted in nose, and beneath the right propeller blade can be seen the "blinders" for black-out flying.

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Fuselages of damaged Italian monoplane fighters were left in this Eucalyptus grove near Tripoli. Wings and motors had been removed, probably for use in other planes.

Photograph at left shows two American sergeants examining an Italian gun captured during the successful American counterattack at Kasserine Pass in Tunisia, February 22nd-23rd. It is a 20mm AA-AT gun.

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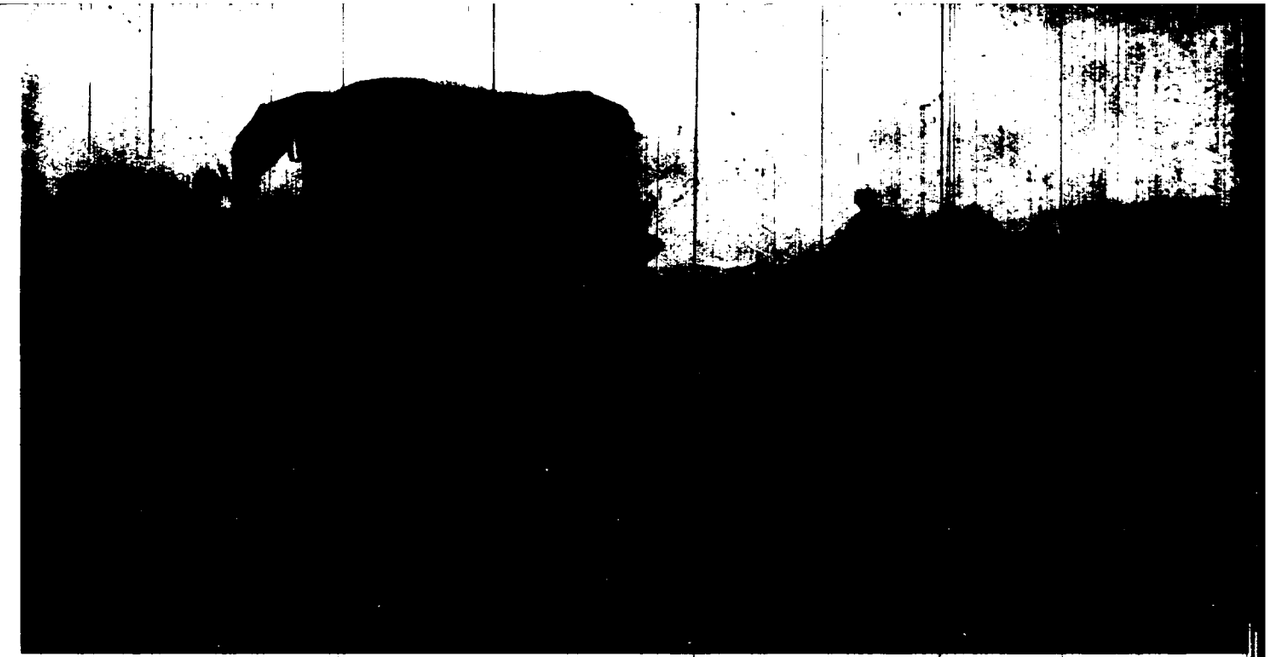

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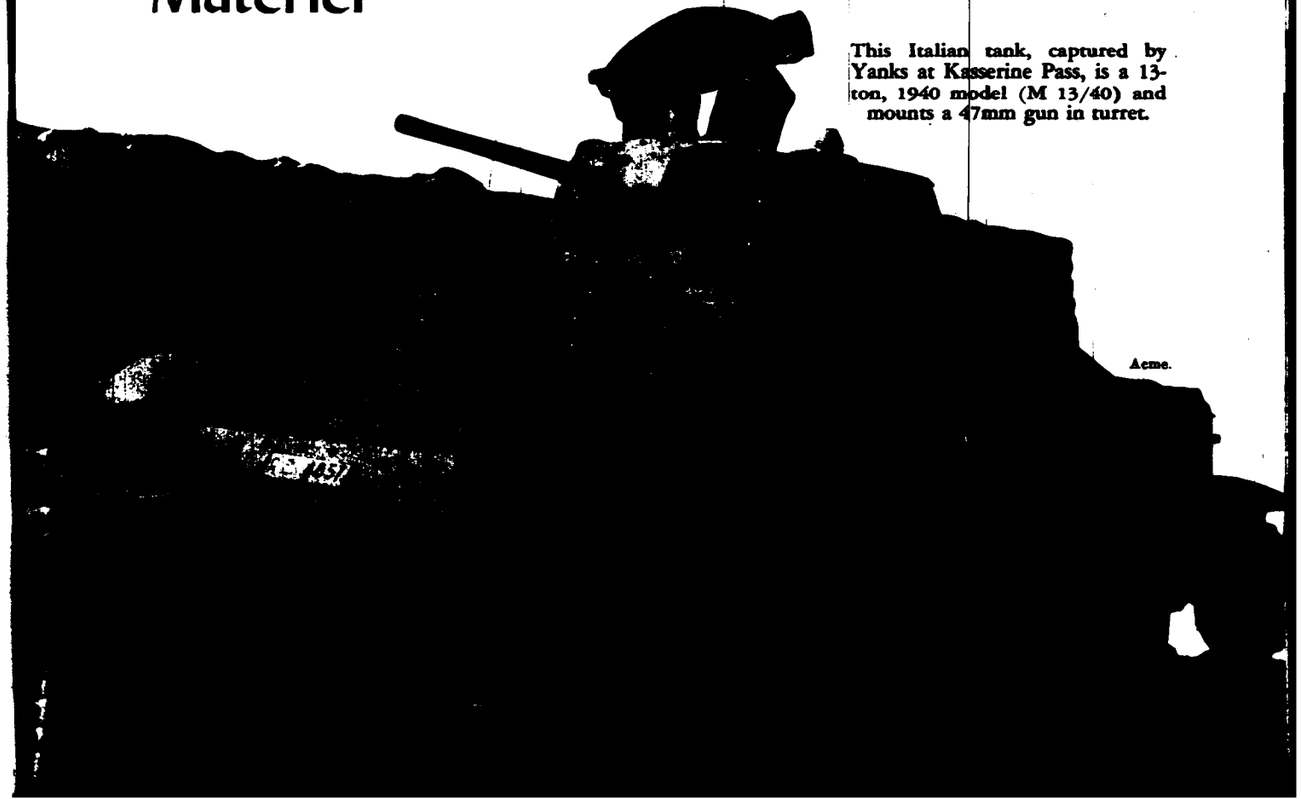
This Italian 105mm field howitzer with its tractor was captured by rapidly advancing American troops in Tunisia. The tractor wheels are equipped with grousers that roll out for use in deep mud or sand. In background (behind gun) is the U. S. armored car that made the capture.

Captured Italian Matériel



This Italian tank, captured by Yanks at Kasserine Pass, is a 13-ton, 1940 model (M 13/40) and mounts a 47mm gun in turret.

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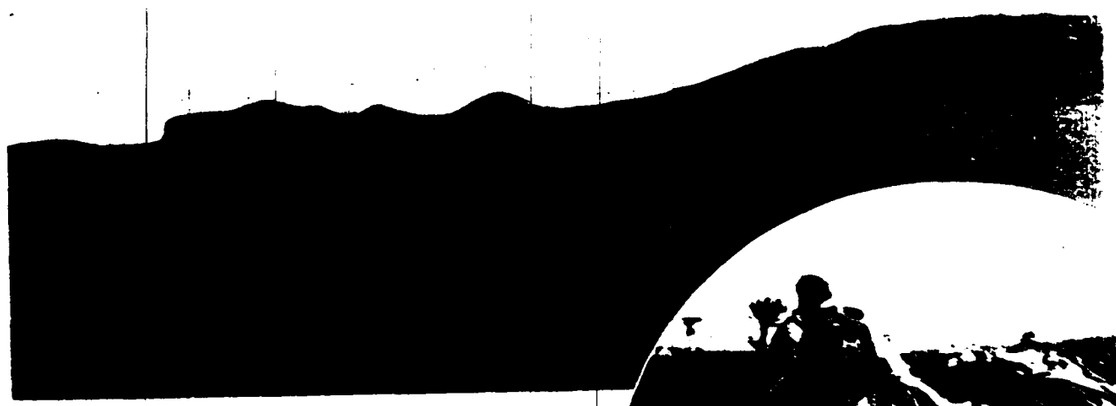
Trained Guerilla Troops

Behind the Enemy Lines



Between Jalo and Bengasi—450 miles behind the enemy lines.

GUERILLA WARFARE by trained troops is a highly specialized military function of modern total war. It is not to be confused with civilian bands or rebel groups of guerillas who operate without authority from the main armed forces. It is, rather, a phase in *trained armed warfare* that concentrates on destruction of enemy personnel and equipment in the enemy's own territory.

Small guerilla units, made up of specially selected men from various branches of the army, can and have performed missions behind the enemy lines that are of inestimable value. Operating with daring, precision, and coördination, these units have destroyed great quantities of materiel—men, guns, tanks, and grounded planes.

Activities in Libya

In Libya in 1942, a guerilla unit, made up of highly trained British and Fighting French volunteers who operated under the command of the British Headquarters Staff, executed many daring missions behind the enemy lines. They continually penetrated enemy positions, harassed supply routes and destroyed airdromes, munition dumps, gasoline stores, railroad tracks, depots, and communications.

One of the most valuable accomplishments of the guerillas in Libya was the destruction of planes and airdromes. The usual method of attacking an airdrome was for the men to leave their cars and go on foot up to the airdrome at night. When possible, they passed the sentries without detection and put their bombs on the planes, then left the airdrome, and got sufficiently far away to pick up their cars before the bombs went off. Of course, this was not always possible, and many times, sentries had to be killed in hand-to-hand fighting

Captain Smith stands at the head of a line of jeeps just before they reached an oasis on the Libyan desert.

or else by a sudden attack with a knife. If the guerillas were detected, a part of the group would hold off the attacking enemy forces, while the rest of the men continued to destroy the airplanes. In a case of this kind, they used the 32-second fuses rather than the long time fuses.

Although the Germans made every effort to protect their planes against such attacks, approximately 300 enemy planes were destroyed by this guerilla unit during a single 12-month span. For the same period, there was only one foray recorded when the men were not able to reach and destroy at least 50 percent of the planes.

Guerillas were also trained to dispose of transport columns at night by driving along side them and firing from machine guns with incendiary shells, which not only killed the personnel, but set the trucks on fire.

Most of this guerilla activity was conducted at night so that *efficient night firing* of machine guns and small arms was very important.

Guerilla units in Libya sometimes worked from three to six weeks in enemy territory, and on one occasion penetrated as far as 700 miles behind the lines. During this particular operation, which took place in August and September of 1942, they travelled across the Libyan desert for a total of 1976 miles and worked in and around the German patrols until they reached Bengasi.

This trip was executed by approximately 250 men in 52 jeeps and 42 three-ton trucks, which had to be dug out of the sand anywhere from three to eight times a day. Some days the group covered as much as 100 miles in 16 hours; other days, only 16 miles. The rate of speed depended largely on the terrain and the amount of extremely soft sand encountered. In many places, the terrain was so difficult (either soft sand or rocky, hilly country) that, except for the discipline and training of the men, the hardship of keeping the vehicles rolling would have made it impossible to continue.

On such forays, there were always two or three prearranged places to meet, and if the vehicles were destroyed, the men were to make their way to one of these meeting places on foot by compass.

En route to Bengasi, a base rendezvous was established in an area affording the best protection possible. There were no buildings and no trees, but a certain amount of scrub and some low bushes helped to camouflage excess equipment and the few men left on guard. From this rendezvous, the line of jeeps and trucks moved out under cover of darkness on the last phase of their mission.

Before reaching Bengasi, the raiding party spotted a small Italian outpost fort. Three officers and six men of the guerillas were dispatched in three jeeps to dispose of this group. They made their way to the base of the hill on which the enemy outpost was located and worked up with the jeeps for as far as possible. While their movements were carefully noted by the Italians on the hill, the men in the jeeps continued their activities with no apparent concern, and from time to time waved nonchalantly toward the enemy. In the deepening dusk, the impression given was one of friendliness.

As the guerillas neared the fort on foot, however, they separated and were soon fired upon. Returning the fire, they quickly drove the Italians behind their barricade and proceeded to attack. Then, using hand grenades to good advantage, they stormed the fortification and killed eight of the eleven occupants. After taking what papers and documents were available, they demolished the outpost and took the three remaining men as prisoners. The guerillas then withdrew and made their way back to the rendezvous. Two of the officers, seriously wounded in this operation, had to be left behind, but the main guerilla party continued toward Bengasi.

The Bengasi raid was to have been made in conjunction with attacks by two other guerilla units on Jalo and Tobruk. Had the Germans not had previous information regarding the coördinated attacks, it would have been possible to have captured these three main

THE AUTHOR

Captain Smith, a specialist in trained guerilla warfare, has recently rendered valuable service with guerilla units in Libya under the command of the British Headquarters Staff. Although serving with the French Foreign Legion, he is an American citizen, descended from a long line of fighting Americans. His forebears participated in the French and Indian Wars in 1758, the American Revolution, and the Civil War.

After graduating from Lawrenceville Preparatory School in New Jersey, he attended the University of Pennsylvania until 1916, when he left to join the Allied cause in France. There, he was graduated from **L'Ecole Militaire d'Artillerie** ***at Fontainbleau and served during the First World War as a lieutenant of the French Foreign Legion, detached to the 25th*** **Regiment d'Artillerie d'Campaigne** ***(75mm guns).***

Following the war, Captain Smith returned to America where he remained until after the fall of France. In 1941 he rejoined the French Foreign Legion under the Fighting French, and was immediately detached for guerilla operations with the Djebel Druse tribes (Arabs) south of Damascus. Since 1942, still on detached service from the Legion, he has devoted all of his time to trained guerilla fighting with the British and Fighting French behind the German lines. For his services in Libya, he was recently awarded the **Croix de Guerre** ***with Palm.***

Captain Smith and his jeep loaded for the trip to Bengasi. Machine guns, heavily wrapped to protect them against dust, are packed just above the camouflage net.

German garrisons forming the points of an isosceles triangle. In addition, a big portion of Rommel's reserves could have been encircled.

This was the longest operation that the Libyan guerillas ever made, and it proved that there was no limit to the time or distance of their forays, or the numbers involved.

After the fighting at Bengasi, about half of the party walked the entire distance back to the base rendezvous on foot. Some were fortunate enough to pick up transportation after the first 18 to 25 miles.

It must be borne in mind that all of the men were volunteers for this type of work and realized fully the conditions under which they were to fight. Of the wounded that were brought back, not one complained in the slightest, even though in most cases they had little or no morphine with which to deaden the pain.

Personnel

Successful trained guerilla operations depend largely upon the leader and the selection and training of his men. While the leader cannot be with all of the groups, he can so plan the work that they can operate in and over a large territory, and come together or separate as conditions warrant. He must have an excellent knowledge of enemy military tactics; he must be able to use his men advantageously in any type of country; and above all, he must be a *leader* of men.

The next most important thing in this type of warfare is the selection of personnel. All of the men, as well as the officers, must be volunteers. They must be individualists—men who are accustomed to living and thinking for themselves and acting independently of the thoughts and ideas of others.

They must have initiative, daring, and the ability to suffer or inflict punishment with equal sanguineness. This does not mean the gangster type of hoodlum, but rather a person of determined courage who can act quickly and with self-confidence under the most adverse conditions.

In the training of the volunteer guerillas who operated so successfully in Libya, every effort was made to build up a tremendous degree of self-confidence and self-discipline. Consequently, disciplinary action was rarely necessary.

Even after the most careful process of selection, however, it is not always possible to pick perfect men for the arduous assignments necessary. In many cases, this does not become apparent until after a man has been on an actual operation. In Libya, the guerilla unit was the only one that had the privilege of returning officers or men to their original units without censure or explanation. In this way, men unsuited for this specialized type of work were constantly weeded out.

Equipment

The next important thing in a guerilla organization is the type of equipment that the men must have to fight successfully inside enemy territory. Equipment in Libya consisted of American jeeps and three-ton trucks. Each jeep had 4 mounted machine guns and, in addition to many thousands of rounds of cartridges, carried 16 drums loaded with ammunition. Each jeep also carried hand grenades, tanks for water and additional gasoline, and sleeping equipment for three men. Extra supplies of fuel and ammunition were carried in trucks.

One of the most important weapons for trained guerilla warfare is the Maxim silencer, which enables the men to take care of sentries without any noise and makes it possible at the same time for other groups to kill the personnel in barracks with a minimum of commotion.

As soon as a guerilla party returns from operations, all fighting equipment is turned in and specially trained personnel (other than the fighting group) attend to putting this equipment back into first-class condition.

Training and Discipline

Speaking in the broad sense, guerillas are trained in all types of demolition warfare, although expert engineers with the groups take care of and assist in the working out of any major demolition work that might be undertaken.

All men, of course, are trained in unarmed combat so that they are able to handle guards and sentries without resorting to their arms. They should also have a fundamental knowledge of navigation (by compass) and map reading; that is, they should be able to read a compass fairly well. Although trained navigators should accompany each group, even when operating in terrain other than the desert, compass reading is essential because of the night work.

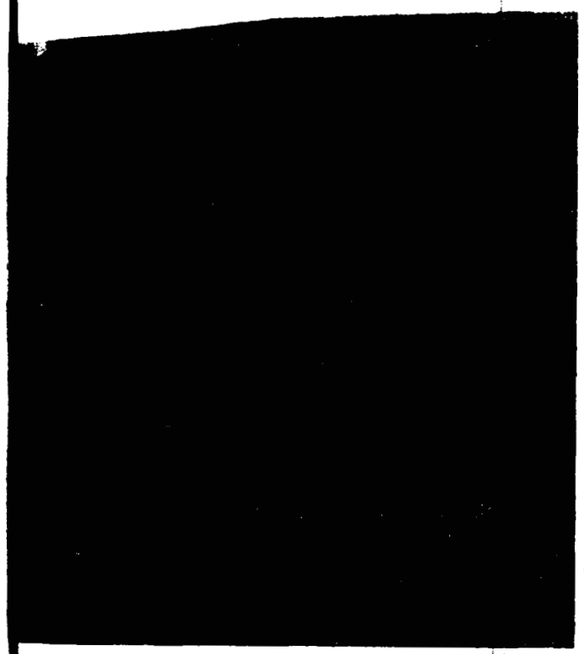
A great difficulty in trained guerilla warfare is keeping the men firing low, and this is particularly true during night operations. Much time and munitions were used, therefore, to make men efficient in firing machine guns and small arms at night.*

During the stay in camp, the men were permitted to draw ammunition at will to go out and continually practice firing, both small arms and machine guns. There was never a night that the guerillas were not out night-firing.

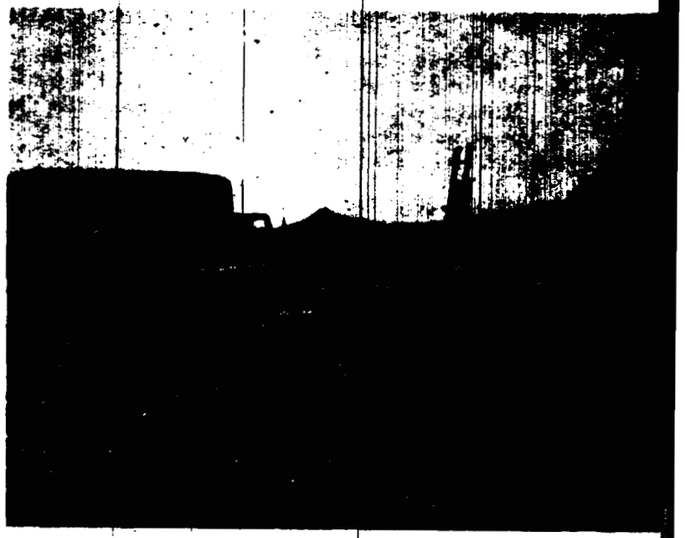
The next important thing in an organization of this kind is the discipline, which must be very strict and rigid in every detail, not only regarding military training, but also the personal control of each man over himself.

Men should be taught to go for long periods without a great deal of food yet still keep in perfect fighting condition. During training, our guerillas were taken on long night marches on which they were not allowed to smoke or drink water for the entire 25-mile walk. They were also taken out in the heat of the sun and permitted to drink only twice during the same distance. These experiences not only developed self-discipline but considerably increased the confidence of the men in their own ability to go without water for long periods of time.

*See "Are Our Machine Gunners Really Experts?" on page 70



Terrain such as this was encountered near Bengasi. In the center of the picture between rock mounds can be seen what is known as a "Wadi," often used for a roadway.



Two jeeps and a truck of Captain Smith's party break camp the night before the Bengasi raid. Each jeep mounts four .30 caliber machine guns in pairs, which can be shot either simultaneously or individually. Note the two sets on jeep in foreground.

Supplies for guerilla units naturally can be brought in by air, and food can often be taken from the enemy or picked up from the civil population. In Libya, each man was rationed an average of one quart of water a day per man in addition to two cups of coffee or tea.

Trained Guerillas for Europe

In the desert, the guerillas followed no roads, but travelled solely across country, and the work was naturally an entirely different type of operation from that which would be required in terrain such as continental Europe. It does not matter, however, where trained guerilla operations are used; difficulties of one kind or another are always encountered behind any enemy lines—but the results outweigh the handicaps. In the desert it was easier to maneuver; in Europe, it would be easier to camouflage. In the desert, guerilla activities were handicapped to a certain extent by difficulties of transportation. On the other hand, in the occupied countries of Europe, guerillas would have the benefit of forests and mountains in which to hide, and inhabited areas in which they would be able to get food and water.

It is possible to visualize a large army built up to operate in small bands as trained guerillas in Europe, and it is believed that such an army could very easily be built up by selected volunteers from the different army units.

The greatest difficulty to be encountered in guerilla warfare in Europe would be enemy tanks and armored cars rather than airplanes, but since all or most of the work would be done at night, the natural camouflage

of the country would be of great assistance in hiding out in the day time.

The demolitions carried would be that needed for the type of work expected in the particular country. For instance, in France, additional land mines would replace limpets. It would also be possible for operations in Europe to take field pieces, which could be dropped in gliders or even in parachutes.

With the use of gliders, groups of men and jeeps could be dropped continually behind the enemy lines by parachutes. Under proper leadership of the guerilla commander, these different groups could be kept in constant touch with one another by radio communications.

Ideal Organization

An ideal organizational setup for trained guerilla warfare would have three companies to a battalion in order to allow for fighting in a triangular formation when desirable. Each company would be comprised of four sections. Thus if tactical conditions warranted, the battalion could be split up into twelve self-contained sections, capable of operating as individual units. Experience has shown that the latter method of operation is the rule rather than the exception.

Desirable equipment for each section would include the following:

- Radio and radio-telephone (at least one per section)
- Machine guns—4 to each jeep, and 6 to 12 on trucks (at least 25 percent should be .50 caliber)
- Extra drums loaded and ready to use—16 to a jeep in addition to extra ammunition.
- Grenades (4 to 7 second)
- Submachine guns
- A pistol or revolver, knife, compass, water bottles, and miscellaneous personal equipment for each man
- A large amount of demolition supplies, including limpets—a mine, magnetized on flat side to fasten against the side of a ship, with time fuse. (Two of these placed one on each side, 4 feet under the water line, will blow two holes in the ship.)

Although the fighting matériel must remain practically the same for any type of terrain, the mode of transportation necessarily will vary. At times, guerillas may be required to work without trucks or jeeps, but in such warfare dependence on transportation cannot be allowed to interfere with the execution of the mission. When trucks cannot be used, pack horses can, and often will, suffice to transport essential matériel. At other times, the men may be compelled to operate entirely on foot and haul their own guns and equipment.

An ideal organization would depend largely on the equipment available. If possible, each jeep should have two .50 caliber machine guns mounted for use as anti-aircraft; also two .30 caliber machine guns. One "bazooka" or antitank gun could also be mounted on the flange up forward. This would also be available for dismounted use when necessary.

Regarding organization and equipment, it must be borne in mind that there must be two groups in every guerilla organization. One group is the fighting personnel whose sole job is to work and fight. All specialists and experts in this group are also fighters, and no administrative personnel is taken into the field. The other group, which must be kept to a minimum, is made up of nonfighting personnel whose sole work is to take care of administrative duties, supplies, etc. for the fighting groups. These men, naturally, must be fighters in the sense that they will fight just as hard to get and keep supplies coming to the men in the field as the men in the actual guerilla groups are fighting to destroy the enemy. *An efficient supply system, minus ordinary red tape, is imperative!*

Conclusion

The terrain in Libya was ideally suited for the use of jeeps and is very different from that which will be confronted in the coming theater of war. But guerilla activities behind the lines can be as successful in one terrain as another. Cavalry guerillas could operate over territory favorable to that arm. Since 1941, the Russians have developed and used large groups of trained soldiers as military guerillas, and many of their *cavalry units* have had outstanding successes in this rôle. One particular example was that of Major General Dovator who was decorated for his successful cavalry operations *behind the enemy lines* during the siege of Moscow in the winter of 1941. There are many other examples, too numerous to mention here.

In case of invasion of Europe, the benefits to be derived from a large force of guerillas, operating in small units, would be of the greatest value and assistance to an army endeavoring to open a bridgehead large enough to bring in an army.

Troops trained in guerilla warfare are not new in the annals of military history. The same principles were used successfully in the American Civil War by Mosby, and in the First World War by Lawrence of Arabia. The methods employed by soldier guerillas in Libya in 1942 were new only in that the weapons, matériel, and transportation were modernized to meet the conditions of modern war.

Guerilla warfare, on the other hand, is not ordinary warfare, nor does it substitute for any present arm or branch. It supplements the action of our combined arms by performing missions behind the lines impossible for less highly specialized groups.

Properly used, trained guerilla troops can furnish just one more means with which to disrupt the Nazi war machine and hasten its final breakdown.

Employment of Air Force

by Brigadier General H. S. Hawkins, Retired

MODERN war can be won only by a combination of land, sea, and air forces working in close co-operation.

Although air power applied to the bombing of enemy war production plants is certainly useful, this is not enough. There is still more useful employment for the air force. The effectiveness of bombing, and especially the launching of torpedoes, from aircraft in naval action has been demonstrated so convincingly that there is no need for further comment.

The coöperation of air force with armies in land warfare is imperative. Close support to ground troops operating against the enemy should be one of the most important uses of our air forces. Never again in this war should there be the absurd spectacle that obtained in France in 1940. In that campaign, French and British armies were being defeated and pursued by overwhelming German forces of all arms on the ground, closely supported by air force. And while that was going on, the British and French air forces were bombing Essen and other points in Germany far behind the battlefields. They offered no effective resistance to the German air forces, or the German armored forces that crowded and frequently jammed the roads.

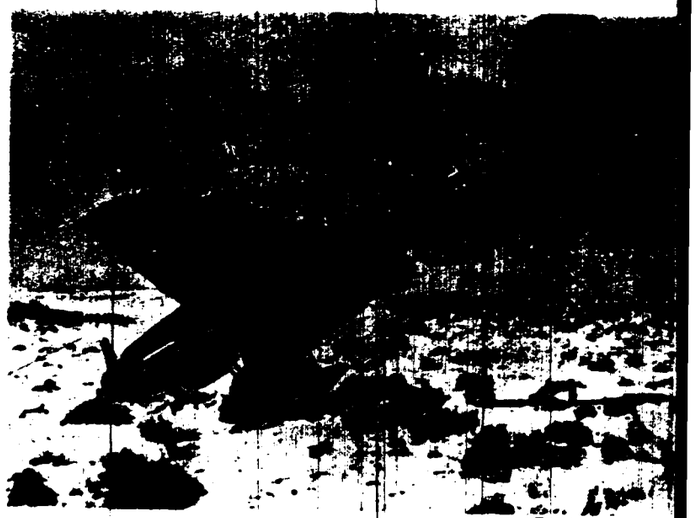
The same thing can happen to this country unless it is insisted that our air force units be subordinated to the commanding generals of our armies. The Navy needs its air force, as has already been indicated. The Army likewise needs its own air force (as has recently been demonstrated) just as closely as in the case of the Navy.

This fact has not yet become apparent to the people of our country. They are still under the spell of the Douhet theory. They hail with delight the reports of the frequent bombings of German cities, which at this writing are being carried out by British and American air forces in England. They have been told that this will bring Germany to her knees. They talk about doing the same thing to Japan, and indulge in dreams that this is all that is needed to defeat Japan.

The bombing of enemy supply and production sources is undoubtedly effective, and its importance should not be minimized. Army air forces will, for an indefinite time, have this task. They probably prefer this task to that of supporting ground troops, because in the former case they operate independently, while in the latter case they must be subordinated to the will and direction of ground army chiefs. Therefore, the problem arises as to how much of our air forces shall be assigned to these independent operations, and how much to the more important operations in close co-ordination with the movements and efforts of the ground armies.

This problem can not be solved satisfactorily until everyone concerned has discarded the idea that air power *alone* means victory. There should be assigned to our armies the amount of air force, designated by units, that is considered necessary for the proper support of ground troops. By this support is meant, not only the participation in battle by dive bombers in attacks against enemy troops, but also reconnaissance observation, communication, bombing of supply trains, ammunition dumps and enemy headquarters, transportation of troops to tactical or strategical points, transportation of food and ammunition in special cases, and any other useful employment. Of course, much of this is being done. How much, is not known. Of all these items, however, reconnaissance and participation in battle are the most important.

Not until after all of these means of support to the Army have been provided, should independent air force operations be aimed against the production centers in an enemy country. It is not meant that these independent operations should be delayed or postponed until armies are in the field against the enemy. But it does mean that the material, class of planes and personnel which are devoted to such operations, should not militate to leave the ground forces without sufficient air support when such ground forces go into action. Furthermore, everything must be in readiness before such action begins, and much preliminary train-



European

Buried in the desert sand of North Africa, a Junker S7 dive bomber plane stands as a striking symbol of the defeat suffered by the Afrika Korps. Hundreds of Nazi planes were similarly put out of action by the British.

Harbor installations at the important Axis supply port of Sfax, Tunisia, are battered from the air by Allied bombers.

ing is necessary to coordinate the action of the combined forces.

The independent operations of our air forces and the R.A.F. in England are undoubtedly useful. They are in process before any large scale American Army operations have been set in motion. But when those Army operations are started, the necessary air forces must be incorporated as a part of those armies and trained and ready to assume their various duties in the armies, just as is the artillery or any other branch.

This cannot be left to the last moment. It must all be attended to sufficiently beforehand to have a trained and well coordinated team of all arms. There must be no improvisations. Air forces equipped and trained only for independent operations will not be suitable for such assignments. They must be an organic part of the Army force to which they belong and in close liaison and association with other branches of the service.

Some air forces are already serving with troops in this manner in North Africa and the South Pacific. Because the latter case is one of island warfare, the air bases are very far away from the troops that they support. The airdrome on Guadalcanal, of course, is close to the troops on that island; but those troops are there only to defend the airbase that we wish to use for other purposes. Even there, the inability of air forces *alone* to defeat the enemy ground forces is being demonstrated in a very convincing manner.

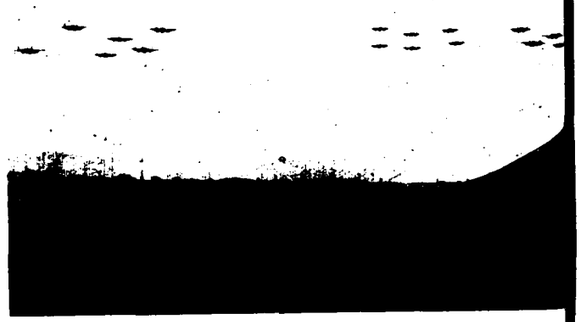
Last spring many people, including some military personnel, were lamenting the fact that there was not enough air force in the Philippines to defend at least the island of Luzon. Enough troops with a sizable force of airplanes could have defended the island. A large force of troops even without air force might possibly have done it. Air force *without troops* could not have done it.

In the summer of 1942, in North Africa, the British with superior air force were beaten by Rommel. The whole story has never been told, but perhaps superior numbers of troops at Rommel's disposal, or tactical errors by the British and a failure to use the air force in tactical coöperation with the ground troops, was at least partially responsible.

This is a very desperate war, and the air force can perform a very great part in it, if it is properly used. If the air force is not properly used, the war will be prolonged by such misuse, and blood and treasure will be expended unnecessarily.

It is futile and stupid to assign all importance to any one branch of the fighting forces. If all are necessary, then no one branch, however small, should be disparaged. And no one branch, however large, should be considered as the one branch that will win the war. Morale is a delicate thing. Every one man in the fighting forces should be given as much credit and importance as any other one man, no matter in which branch of the service he serves. Otherwise, jealousies spring up and disrupt judgment, initiative, efficiency, coöperation, and unity of effort against the common enemy. Generosity toward each other should pervade all branches, and when one element has performed a service that attracts the public attention, all other elements should subscribe generously to the general praise.

When our chiefs or leaders, military or civilian, press writers or radio commentators, or any other persons whose speech or writing is given publicity, make statements that this or that arm or branch is *the one* that has won a victory or *the one* that will win victory, he has done a disservice to the whole fighting force and to the whole country.



American B-25 bombers fly low over their camp after taking off on a mission somewhere in North Africa. Bombers like these "softened up" Rommel's Mareth Line and played a large part in forcing the Afrika Korps' retreat in Tunisia.

Air Power Gets Full War Test*

by Frank L. Kluckhohn

ALLIED HEADQUARTERS IN NORTH AFRICA, April 10—In the African war theater this week has not only seen a terrific air "blitz," but has provided a preview of things to come when United Nations forces invade the continent.

No one will deny the great part that aviation has played in this theater. It has been proved again in the heavy fighting in Tunisia that with planes an army can move forward, and without them it can be stalled and even forced to move back. At the Mareth Line, and this week again, planes played an important part in the move forward; just as earlier at Kasserine Pass, the absence of them, first, had a great deal to do with the German advance and, later, their presence was a factor in the German retreat.

Planes Alone Not Enough

Yet in North Africa again it has been demonstrated that, whatever their future possibilities, *planes alone cannot decide an issue*. They are super-mobile artillery of advancing or retreating infantry—as destructive a force as naval ships. They fly fast when there is no opposition in the air. In fact, they may play almost a lone part on the sea (although not in ground warfare) and are essential when the enemy has planes in the air. Armies can no more advance without planes than they can without heavy artillery, and the lack of both when the enemy is in possession is catastrophic.

Here this week, we have seen air power used at its best under Air Marshal Sir Arthur Tedder, who has had desert experience. Major General James E. Doolittle's strategic air force has bombed, set afire, or destroyed about sixty Axis ships at this writing. Other planes have pounded Axis air fields from Sardinia and Sicily to southern Tunisia, and destroyed many planes on the ground. Still other planes have attacked enemy armor, soldiers and ground assembly columns, and thus helped to hamper action.

This represents almost the perfect use of air power. No one who has watched it at work can deny its effect on morale or its destructiveness. Similarly, no one who has seen aviation in action from underneath can fail to realize its limited effect at this stage of its development.

The writer has seen Axis aircraft score direct hits on a rail station and seen the line repaired within eight hours—and this before we had equality, let alone the present overwhelming superiority, in Tunisia. He has seen troops rally after three straight days of bombing and seen convoys move with the loss of relatively few vessels, despite aerial activity.

Facts on Air Control

This weekend, after three days of "blitz," air force communiqués speak of knocking down Stukas (supposedly obsolete planes) from the air after the huge destruction wrought from above.

The truth is that there is no absolute control of the air when your enemy has airplanes. Correspondents, including those of *The New York Times*, have reported both from the Eighth Army front and from farther west and north in Tunisia that enemy aircraft have been active.

What has finally occurred is that in this theater, American, British and some French planes have acquired tremendous superiority. Since we may expect to have that in Europe as well as here, it is important to analyze what this means.

Much discussion about air power has come from German demonstrations in Poland and France and American demonstrations in the Pacific theater. Except second hand, this correspondent knows nothing about these, but he does know what has occurred in this theater, which provides a preview of Europe. Only incidentally has he directly followed the air war from Britain, where ground forces are not involved.

What Aviation Does

What his observation, which is common to reporters on the ground, amounts to is this: Aviation, or the absence of it, can slow the enemy, hamper him and increase the tempo of retreat of forces on the ground by attacking supplies behind the lines and lessening (although not eliminating) their flow. It can aid ground forces by knocking out artillery emplacements to some extent, although not completely. It can aid in demoralizing the enemy.

But accurate correspondents with the Eighth Army (not those at headquarters) in writing air reports, speak of artillery, infantry and tank divisions, not aviation, except when it is against them.

In the European landings, our great air superiority, when concentrated, can assure over a limited area that there shall be too few enemy planes in the air to affect the issue and that the ground forces will have less artillery and be more demoralized than otherwise by a great margin. It cannot clear the way completely for a landing. Obviously, that will take ground and airborne forces.

What Air Marshal Tedder achieved is the breakdown of the rapidly growing theory that air power is all. He has used air power in its proper perspective to hit the sea lanes, landing fields of the enemy air force, and ground installations with a proper distribution of heavy and medium bombing aircraft, plus fighter aircraft and those tied directly to ground operations. As in Tunisia, that should prove a big help when we go into Europe.

*New York Times (by wireless).

Philippine Campaign

Part II

Wide World.

Mount Mariveles on Bataan Peninsula as seen from Corregidor.

The Attack on Bataan: January

After the occupation of Manila, which occurred without incident, the Japanese spent ten days in assembling, reorganizing, and equipping their troops, reconnoitering the American positions from the air, and carrying out raids on the defensive lines in order to determine their strength.

They found that the lines, stretching across the base of the peninsula from Manila Bay to Subic Bay, were very strong and formed a position from which the Americans could take advantage of the thick jungle and rough terrain. They also provided ideal observation from Bataan Peak and its surrounding hills.

There were only two or three places on the Manila Bay side, and only Olongapo on the western coast, where landings were feasible. The position of the great island fortress of Corregidor, three miles off the tip of the peninsula and squarely in the middle of the entrance to Manila Bay, added greatly to the defensive strength of the American positions. Mariveles, located at the head of the small bay of the same name at the end of the peninsula, and Subic and Olongapo on Subic Bay, were minor naval bases, but their facilities had been destroyed when the Asiatic Fleet left for Surabaya shortly after the first Japanese landings.

During the defense of Bataan, Mariveles was used for communication with Corregidor; the other small ports were not used at all by the Americans. Actually, both Subic and Olongapo were captured early in February.

Apparently carried away by their early successes, the Japanese made the first ill-considered move of the entire campaign when they launched a hasty and poorly prepared attack along the entire 30-kilometer front on January 12th. At no point did their troops succeed in piercing even the first line of defense. The counterattack, executed by two divisions of the Philippine Army, drove the Japanese two miles in rear of their original positions and cut the Lubao-Olongapo road which was their principal lateral axis of communications.

This setback made the Japanese much more cautious,

Lieutenant Colonel C. Stanton Babcock has recently been promoted in rank to colonel.

and their next offensive, which was designed to recover the road and their former positions, was carefully planned and well executed after four days of thorough preparation by air and artillery bombardment. The battle lasted three days and was by far the most bitterly contested struggle of the campaign up to that time. The initial Japanese push reached its objective within some five hours of the jump-off, but their advance units were subjected to such intense artillery fire for the rest of the day and throughout the night, that they were never able to consolidate their positions.

Early the next morning, realizing the precariousness of their position, and being aware of an impending American counterattack, the Japanese withdrew their most advanced troops and gave up about half of the ground they had gained the previous day. The move was a good one, for the counterattack launched a few hours later was designed to drive the invaders out of their most advanced positions and, of course, landed in mid-air as a result of the Japanese retreat. When contact was gained, the force of the American drive was largely spent, and the Japanese troops instead of being disorganized by having been driven back from their positions were ready for the attack and stopped it easily.

Later in the day, the Japanese resumed the offensive and succeeded in reaching all their objectives for the second time. This time, heavy counterbattery fire by their artillery neutralized somewhat the effect of the American fire, and they were able to hold their positions until the next morning, when a strong counterattack drove them out once more. Now, however, it was the Americans who were unable to hold their gains, for their drive had carried them to the foot of the mountain range across the Olongapo-Lubao road, and their positions in the lowland were obviously untenable for very long. MacArthur either had to push on, which meant a general offensive, or withdraw to his lines across the base of the peninsula. There was only one choice, so during the night he pulled his divisions back to their original positions and was probably well satisfied with the time that he had gained and the really heavy losses which the Japanese had suffered—the first real losses, in fact, which they had incurred in the entire campaign.

The Attack on Bataan: February

It was now obvious to the Japanese that the reduction of Bataan and Corregidor was an operation which would require a major effort and all of the troops that they could assemble for the purpose. Lieutenant General Homma, the supreme commander in the Philippines, called a halt to operations in other parts of the islands and concentrated all of the troops that he could spare in preparation for a serious attack on the American lines.

Early in February the entire front, which had been quiescent for more than two weeks, broke out once more

Author's Note

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

Japanese accounts are nearly always vague, and in some cases conflicting, for the ideas of different agencies of the Government are frequently at variance in regard to the impression they desire to make on the public. Thus, the military would sanction the publication of a personal experience story which admitted temporary reverses and heavy losses, in order to play up the courage and fighting spirit of the Japanese soldier, while the bulletins issued by the Bureau of Information were inclined to minimize all enemy efforts, in an attempt to make the white man appear as an incompetent and a coward.

The information available, virtually all of which was published only in the vernacular, has been sketchy and disconnected, issued piecemeal over a period of six months, so that its translation and organization into a coherent story has presented many difficulties.

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. Every effort has been made to present the material without injecting either my own opinion or that of any one else, except insofar as was necessary to choose between conflicting versions of the same action.

Allied reports of the various events will undoubtedly disclose many discrepancies. It is believed, too, that the Japanese occasionally deliberately falsified dates in order to cover up reverses or to create an impression of greater speed or continuity in their campaigns than was actually the case.

It should also be remembered that all dates are one day advanced over those used in the United States. It is, therefore, the 8th of every month that the Japanese celebrate as *Imperial Rescript Day*, to commemorate December 8, 1941, when the Empire precipitated the war which they believe will liberate the races of Greater East Asia.

The Invasion of the Philippines from the Japanese point of view.

with renewed activity. The Japanese opened the show by staging a series of raids at both ends of the lines. The first few raids were small and short and designed to secure information and identifications, but they soon increased in intensity and scope until the 10th of February when two strong attacks, obviously intended to soften up the defensive strong points, were made by units the size of a regiment with strong artillery and even tank support.

All of this, of course, brought out an answering series of raids and patrols from the American side, and scarcely a night went by without a number of fierce minor engagements taking place at various important points along the front. The American raids and counterraids were for the purpose of finding out what was going on behind the Japanese lines, where they were concentrating, and where and when the main assault would come. The patrol activity by the young officers sent out through the dark enemy-infested jungles, and the intelligence work of the Headquarters staff appear to have been well done, for the Japanese admit that the defenders were well prepared and well informed when their two simultaneous attacks at Olongapo and Samai finally took place.

The infantry assaults, which came at dawn, were preceded by an eight-hour artillery preparation, with particularly heavy concentrations on the American batteries, and a thick blanket of smoke laid on the northern slopes of the Mt. Bataan range to blind the observation posts. The drive south along the east coast road smashed well into the main line of resistance and created a long narrow salient in the right wing of the American line. All day, the Japanese struggled to widen the gap and poured fresh troops into the line at the western base of the salient, but without effect. When the well-timed American counterattack came, just as the last effort of the Japanese was petering out, they were swept back to their jump-off positions and thrown completely out of the salient they had fought so hard to create.

During the next two days, the Philippine division in this sector acted so aggressively and launched so many local attacks that the Japanese were never able to gather themselves sufficiently to resume the offensive. They remained active, however, and, in spite of their failure to gain ground, managed to keep the Americans in their front thoroughly occupied, and probably prevented additional reserves from being sent to the Olongapo sector where the defenders were experiencing considerable difficulty.

The Japanese assert that the attack in the Subic Bay area against the Olongapo base was the main effort of this February offensive. Certainly they employed a strong force there (apparently two divisions) and drove their attacks home in a most determined manner. Not one of their assaults was stopped until its objective was reached, and none of the American counterattacks succeeded in regaining any lost ground.

For the first time in this campaign, the Japanese had recourse to their famous *Hōi Jōriku Sakusen,* or enveloping movement, by landing behind the enemy's lines. This operation had been used time and again to good effect during the campaigns in the lake region of Central China, and four years of practice had made the troops particularly skilful in this, a favorite Japanese maneuver.

Embarking somewhere in the vicinity of Subic, a specially trained landing detachment made its way up the bay during the night, and shortly before dawn attempted to land one or two kilometers south of Olongapo and behind the American lines. They succeeded in gaining a foothold on the beach, which they maintained for about two hours, but they were never able to widen the beach-head or to exploit their initial success and finally, according to the Japanese account, "were wiped out to the last man." It is more likely, however, that a good many of the prisoners captured by the defenders of the Bataan peninsula came from this unit.

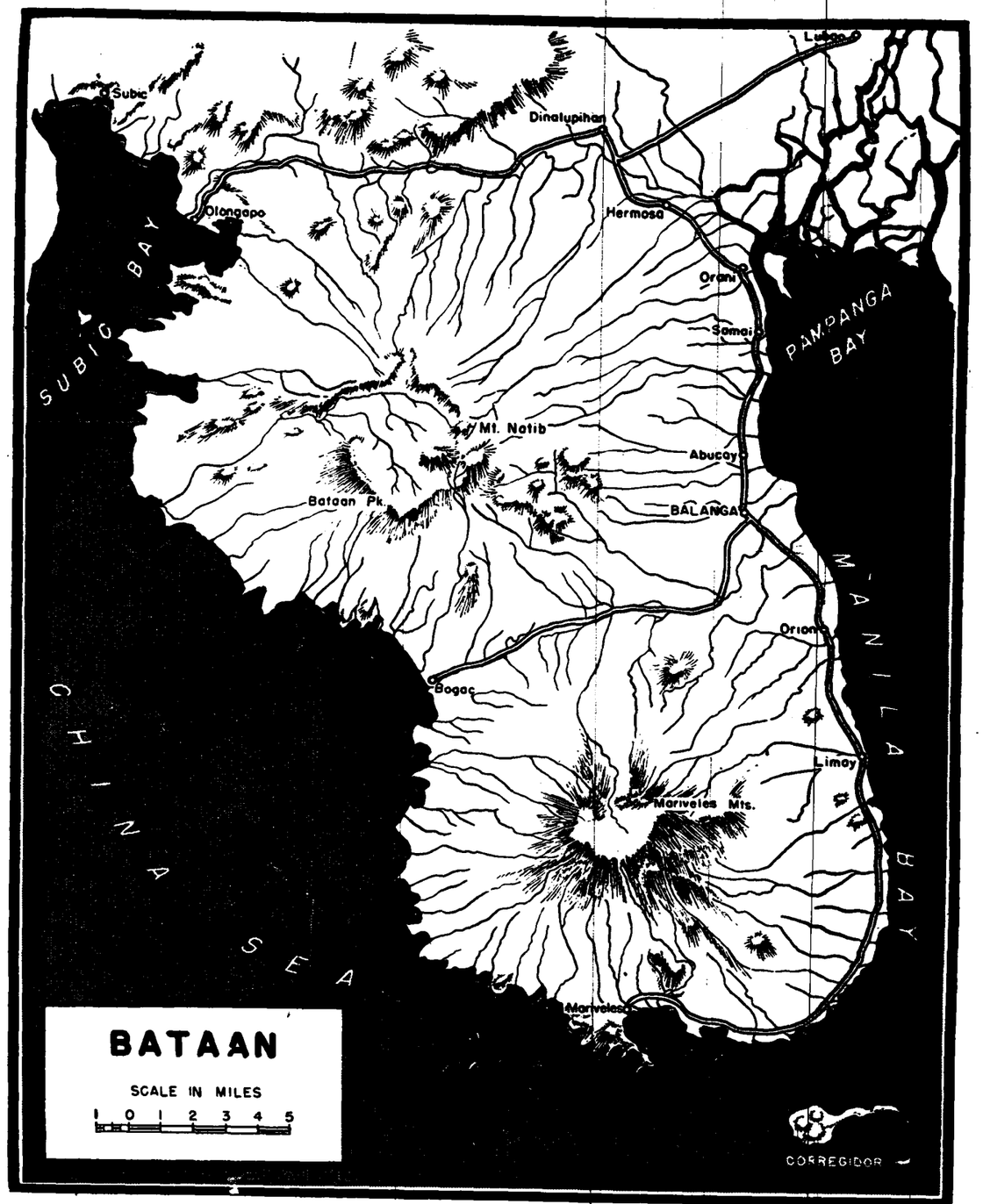
Although this attack in itself was a failure, it contributed greatly to the fall of Olongapo by disorganizing the rear areas behind the front line troops (who were engaged in resisting the main Japanese attack), creating confusion, and causing the diversion of support and reserve units that might have been used in badly needed counterattacks. On the other hand, the complete elimination by the Americans of this landing unit saved large numbers of their own troops which would otherwise have been cut off by this detachment and caught between it and the main Japanese force pushing south on Olongapo.

Apparently no serious effort was made by the Americans to retake Olongapo. They seem to have made a thorough job of destroying such naval facilities as remained there and fought desperately in defense of the place for the greater part of the morning. Then, fighting all the way, they evidently withdrew gradually until, at a point about two kilometers south of the town, the withdrawal became a hasty retreat accompanied by considerable confusion. Darkness saved the fleeing troops, and the Japanese halted their advance and spent the night in consolidating their positions. The fact that even when morning came they made no attempt to resume the attack, in spite of the obviously confused and weakened state of the Americans, would indicate that the attackers had selected limited objectives for this fight and probably that they had achieved them all.

The Fall of Bataan

There now ensued a long period of comparative inactivity, broken only by one serious offensive launched early in March. Practically nothing is mentioned of this drive in Japanese reports, and there are indications that it accomplished very little and was costly in both personnel and equipment.

The Japanese press at that time was full of reports testifying to the accuracy of the American artillery fire



On the rugged Bataan Peninsular, American and Philippine troops held up the Japanese campaign for nearly four months and thus gained for the United Nations some of the most valuable time of this war.

Wide World.

One of the last pictures to arrive from beleaguered Bataan shows how one community had been battered by Jap air raiders and artillery.

because of the excellent observation available from the Mt. Bataan range, and it would appear that this March drive broke down under the barrages of the defending batteries. Certain it is that for the next month, the sky over that sector was full of Japanese reconnaissance planes combing the area of thick jungle for the battery positions and paving the way for the mass bombing attacks that ushered in the final offensive on April 3rd.

In preparation for this battle, which was to close a little more than a month later with the collapse of all resistance in the islands, the Japanese moved into the Philippines an additional mechanized brigade equipped with the new medium tanks, about three heavy artillery brigades, and probably one fresh infantry division. In addition, both the army and navy air forces were reinforced by numerous bomber squadrons, released by the fall of Singapore and the collapse of resistance in the Netherlands East Indies.

All preparations were carefully made, and it was clear that this time the fight was to be carried through to a finish. Gradually the patrol activity along the front became more intense; air reconnaissance gave way to increasingly fierce aerial bombardment of the dreaded American gun positions; and the morale of the Japanese troops, heightened by all these preparations, was raised to fever pitch by the news that General MacArthur had flown from Corregidor to Australia and "deserted his command on the eve of its most decisive battle."

Lieutenant General Wainwright, who succeeded MacArthur, seems to have made a thorough estimate of the situation and to have made all dispositions possible to meet the expected attack. But, even before the assault really began, it became evident that the constant pounding from the reinforced Japanese artillery, and from the bomber squadrons that seemed to fly at will over the American gun positions, was daily reducing the effectiveness of the defenders' strongest weapon—their magnificent artillery barrages.

In order to conserve their dwindling ammunition supplies, the American batteries remained silent under this rain of fire, except for occasional interdictory fire at night on important roads, and a short but fierce concentration on the Japanese assembly areas as the troops were moving into position the evening before the attack.

The attack itself came in true *blitzkrieg* style just after dawn on April 3rd. The steady artillery fire, which had been daily increasing in intensity, rose to its maximum rate as the zero hour approached. The gunners poured a constant stream of high explosive on the defensive strong points, and placed thick black smoke on the heights where the American artillery observation posts were located. As daylight came, all the Japanese bomber planes in the Philippines roared overhead and unloaded on vital objectives, which the constant aerial reconnaissance of the previous month had carefully located—the last remaining airfield on the coast below Balanga, the defiles and bridges in the all-too-sketchy road net used for movement of the defenders' reserves and supplies, gun positions and ammunition dumps, and the assembly areas where the exhausted Americans were concentrating their scanty reserves.

Again, the points of attack were the extremities of the line. But this time, the main effort was made on the Japanese left, where they hoped to smash their way down the east coast road, cut off the defenders in the hills inland, break them up into isolated centers of resistance, and then mop up at leisure.

The first few hours of the attack were easy going for the Japanese. The heavy preparatory fire of the previous five days had forced the defenders to withdraw practically all troops from the outpost line and even, in some cases, from certain positions of the main line of resistance which had been subjected to particularly heavy fire. As the picked combat teams of infantry and engineers worked their way through the jungle, they encountered scarcely any resistance worthy of the name and found that even the defensive artillery barrages were unable to do more than slow their advance a little.

Eventually they reached the first strongly defended points and set about the business of piercing the defense zone so as to open the way for their tank battalions. Here occurred some of the fiercest fighting of the war. The struggle surged back and forth over the same ground for five days with heavy losses on both sides. The Japanese objective was to open a gap in the main line of resistance, through which they could pour their mechanized units and fan them out in the rear areas where they could disrupt communications, destroy supply and ammunition facilities, attack concentrations of reserves, and so disorganize the American sector that any orderly withdrawal of the defending troops would be impossible.

In order to prevent just such a disaster from occurring, the American defensive zone, extending south for a distance of six miles, had been organized in great depth with new centers of resistance, one behind the other. As the five-day battle raged it became evident to the Japanese that a break-through was impossible in the early stages, and they settled down to the arduous and costly task of fighting their way through the strongly fortified zone step by step with their infantry combat teams.

Day by day, they pushed forward under terrific barrages of supporting artillery, consolidated their gains, and fought desperately to beat off the American counterattacks. These had been fierce at first and frequently succeeded in driving the invaders back to their jump-off positions; but as the days wore on, and the same depleted and exhausted Americans had to battle over and over again with an endless stream of fresh Japanese troops, resistance weakened, and the Americans gave up position after position without attempting to retake them.

By the afternoon of April 8th, the Japanese attacks on the west had created a salient about three miles deep,[3] but the force of their drive had been spent, and it appeared that the Americans had little to fear in this sector except a series of containing attacks to pin them down and to prevent the movement of troops to the other flank. *On the east*, however, where the road runs down the coast to Mariveles, the defenders' situation was much more serious. Here the last of the carefully prepared defensive positions had been pierced, and nothing stood before the Japanese mechanized units, brought up at last for the final thrust, but a few hastily prepared shelter trenches and barricades thrown up by what was left of the American First Corps.[4]

The next morning the tanks jumped off and within an hour had pushed through to Orion, half way down the peninsula, and cut the east-west road which was the American main lateral axis of communication and supply. Here a part of the mechanized force turned west, and following this road, forced its way across the peninsula. By this action they completely disorganized the rear areas of the American First[5] Corps and the Philippine Corps, and bottled up those troops in a pocket from which they were never to escape. At the same time, detachments of Japanese infantry peeled off from the main column, which was following the tanks down the east coast road, and, forcing their way through the jungles, took what was left of the positions on Bataan heights in rear and flank, and then mopped up the last remaining isolated centers of resistance.

The end was now in sight. The only active body of American troops left on the peninsula was a portion of the First Corps[6] which had managed to pull out ahead of the advancing Japanese mechanized units and retreat hastily down the road towards Mariveles. Sumai, where the last American airfield was located, fell with

[3]The Americans had no artillery on the West Coast at that time.

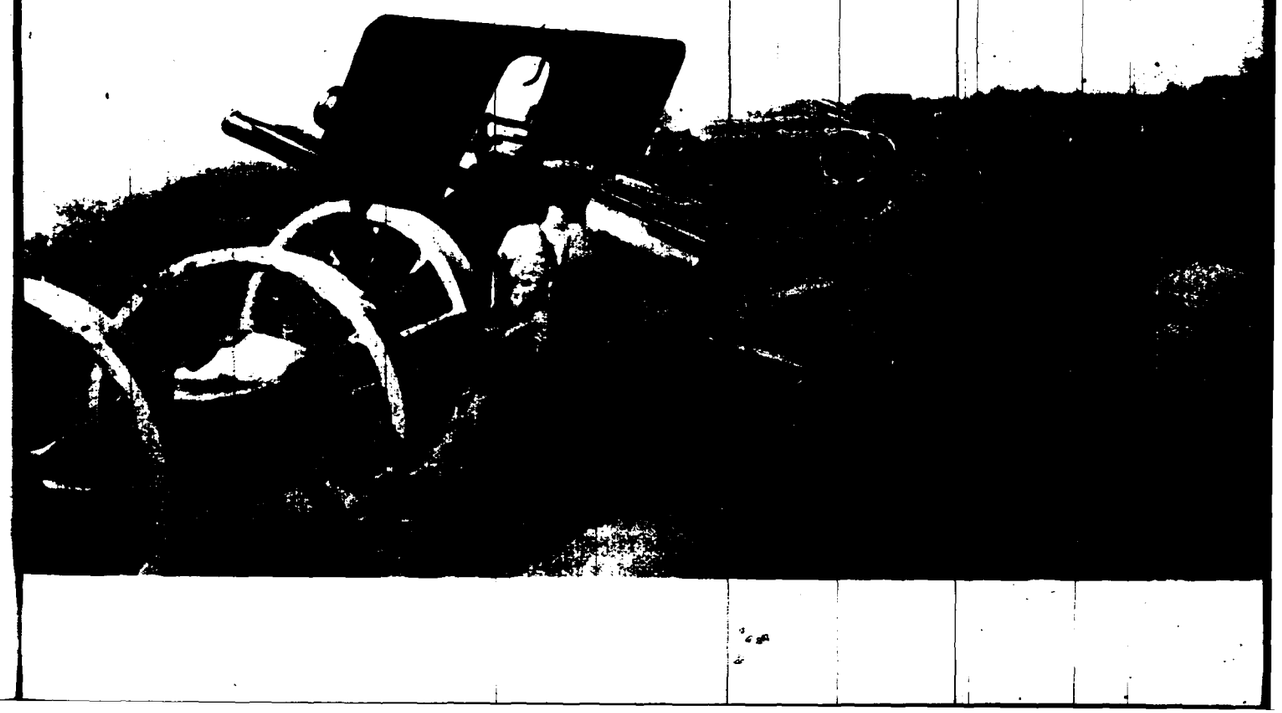
[4]First Corps was on the West Coast; Second Corps, on the East. This was evident by an error in the Japanese report.

[5]Second Corps.

[6]Second Corps.

Japanese artillery batteries 150mm. How. M15.

Wide World.



scarcely any resistance, and the Japanese High Command, which until this time had allowed no news of the battle to leak out, published the results of their great victory and announced to a thrilled nation the imminent surrender of the entire Bataan defensive force.

The surrender came on the 10th. Some 2500 soldiers and marines managed to escape to Corregidor before the vanguard of the Japanese column entered Mariveles, and all communication with the island fortress was finally cut off. General King, the Commanding General of the Peninsula force, saw the hopelessness of the situation, and sent word to the Japanese that he was prepared to surrender all of the troops under his command.

The Japanese claim to have captured in this battle 60,000 officers and men and large quantities of supplies and equipment. But the vast majority of the men were caught in isolated groups, cut off from all support and supplies, and there does not appear to have been any mass surrender of organized bodies of troops capable of further resistance. The Japanese themselves admit that practically all of the artillery pieces taken were damaged, and they have never published any figures on the quantity of ammunition captured, so it is unlikely that any large units surrendered until most of their combat equipment had been put out of action.

This is a view of a tunnel on Corregidor Island into which American Forces were crowded by overwhelming Jap troops.

Wide World.

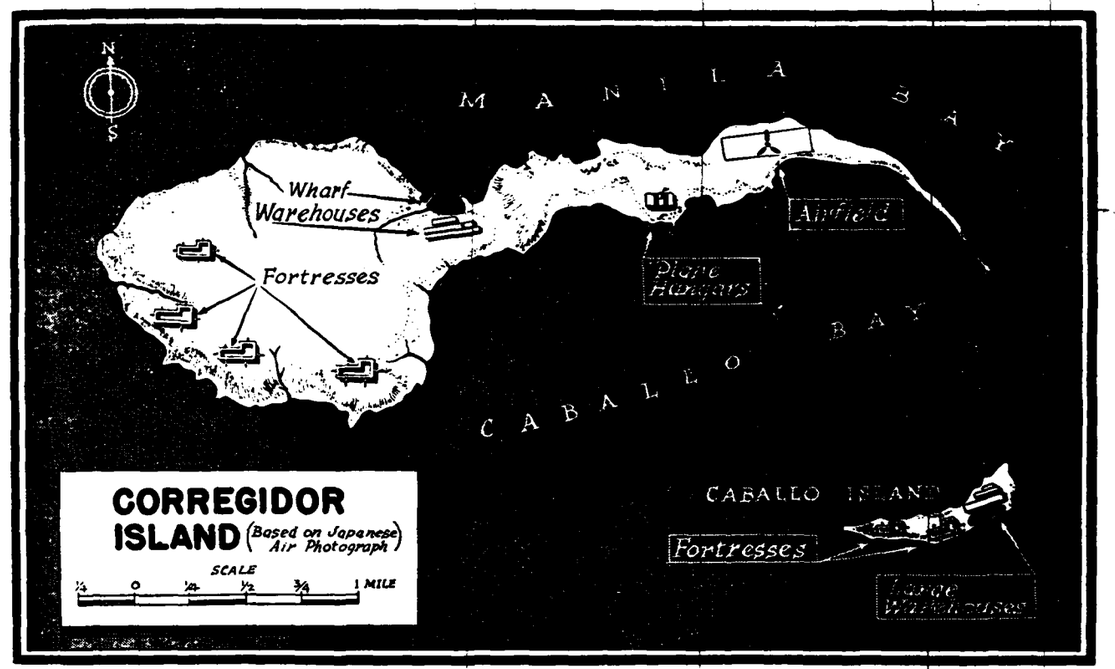
Corregidor

The attackers lost no time in pushing preparations for the assault on the last remaining stronghold, the fortress of Corregidor. Within five hours of the entrance of the first troops into Mariveles at the tip of the peninsula, the Japanese were installing their heavy guns on the slopes of Mt. Mariveles in preparation for the great artillery duel that was to last more than a month and finally come to an end with the silencing of all of Corregidor's guns and a successful attack by a landing party.

Mopping-up operations on the peninsula, and the movement of prisoners and captured matériel were delayed until all units to be used in the initial bombardment of the island were in position. No time was given the worn-out troops who had escaped to the fortress to reorganize and recuperate, and as evening fell on the day of the surrender of Bataan, the weary American prisoners, concentrated in groups throughout the peninsula, heard the opening roar of the artillery bombardment, which, in conjunction with daily aerial bombings, was to continue day and night until the final surrender on May 16th.

It was only a matter of time, and both sides knew it, for the frequent bombings and the incessant bombardment were silencing the American batteries one after another. With no air corps protection, and with all of its antiaircraft batteries out of action by the end of the first week, the fortress could only lie helpless and watch as squadrons of Japanese bombers came down to within a thousand feet and bombed the gun emplacements at will. At last, early in May, a day came when there was no answering fire from the smoke-shrouded rock. Realizing what this meant, the Japanese called on General Wainwright to surrender in order to prevent further unnecessary bloodshed. But the demand was rejected—apparently in the knowledge that the gallant resistance of this doomed fort was doing much to rebuild the morale of the American people after the successive series of smashing defeats suffered by the United Nations in the Far East.

The second night after the American refusal to surrender, the Japanese launched their attack. It was a pitch black night with no moon, and the constant roar of bursting shells effectually prevented the defenders from hearing the noise of the boats and barges as the assault units approached the island. In the van were about twenty specially constructed, steel, motor-driven assault barges, each of which contained a light or a medium tank and an accompanying combat team equipped with grenades, light automatic weapons, and light mortars. The second wave, which followed at a



distance of about two thousand meters, consisted of motor launches, tugs, ferry boats, and anything else that was capable of making the three-mile trip from Mariveles. Some of the troops and equipment, which crossed over after the initial landing but while the fighting was still going on, were transported in big barges and lighters towed by tugs.

The first wave was within five hundred meters of the island before the defenders gave any indication of being aware of what was coming. Then a single searchlight beam swept the dark waters and illuminated the first line of steel barges racing towards the low, flat tail of the islands where the small airfield had been constructed. In a few seconds, bursts of machine gun fire broke out, and later a few mortar shells dropped on the beach where the Japanese assault teams were struggling ashore, but there was no artillery barrage from the great fortress which had once bristled with guns.

The first landing was effected at 4:30 A.M., and within an hour the assault teams had taken possession of the tail of the island. But the job of getting the tanks ashore, through the debris of the shore barricades and entanglements, proved to be so difficult that the assault on the rock had to be started without tank support. Dawn was just breaking when the first infantry units jumped off from the narrow isthmus that connects the tail with the main part of the island, and began the difficult task of fighting their way up the heights to the peak. The resistance was desperate, and the battle raged all day. But the never-ending stream of reinforcements, which crossed over without hindrance in plain sight of the American positions, forced the defenders steadily back until they were crowded together on the highest point and jammed in the tunnels unable to fight. Then General Wainwright surrendered, and all serious resistance in the Philippines ended at last when he was taken prisoner along with the 6,500 officers and men who had fought so long and desperately.

The next night, under the terms of the surrender agreement, General Wainwright broadcast a message to all remaining American-Philippine troops throughout the islands directing them to cease resistance. No attention was paid to this order, and the few remaining units in Mindanao, which had been fighting the Japanese since the capture of Davao on January 4th, continued guerrilla activities until they were all finally rounded up late in May.

The only other place where American troops were left was in Cebu, and when the Japanese got around to landing at that point, the two regiments of Philippine troops retreated into the jungle where they carried on a short but sharp little campaign and finally capitulated only when their ammunition was exhausted.

The war in the Philippines was over. Japanese control was undisputed throughout the archipelago, and the military authorities, working in close coöperation with other Japanese government agencies, set about the great task of exploiting Philippine economy and fitting the Commonwealth into its niche in the Greater East Asia Co-prosperity Sphere.

Coördination

One of the most striking examples of coördination of forces is exemplified in the recent great Allied victory in Tunisia. The results achieved should not be minimized nor passed over lightly merely because the Allies had superiority in numbers. This numerical superiority was essential, for the Nazi Afrika Korps occupied strong defense positions in hills that could be held against even a superior attacking force.

The most important principle of war—surprise—was the opening blow that resulted in the fold-up of Nazi resistance. It was a brilliant piece of strategy, which "out-Rommeled" the best that the "old fox" produced in his entire African Campaign.

This strategy required the movement of a large number of troops over a long distance without letting the information get to the enemy. It required the carrying out of a clever ruse on the part of General Montgomery's Eighth Army in order to convince the Nazi forces that the main attack was coming from the south. As a matter of fact, it is reliably reported that a large force of Montgomery's troops was detached from the Eighth Army and sent north, with those from the Second Army Corps of our own Fifth Army. Captured high Nazi commanders admit that they did not know that the main attack was coming from the north until it actually developed.

That such a surprise attack could have been launched is a tribute not only to the military genius of Allied strategy, but also to the counter intelligence machinery established to prevent such information from getting into Nazi hands. In the accomplishment of the movement, perfect coördination of every officer and man was necessary. But most of all, in the final battle, the finest coöperation and coördination was shown between British, French and American armies and the various branches of the service within those armies.

Credit for the overwhelming victory cannot be given to any one group. Neither air force, armored force, artillery nor infantry alone could have achieved this complete success. Rather, the victory can be attributed mainly to the coördination of arms and armies—the coordination of British, American and French military strategy, and the coördination of air forces, ground forces, naval forces, and supply and maintenance units that kept the armies rolling. These formed a well balanced fighting force, having and using all the tools necessary to do the job at hand.

The victory in Tunisia is indeed a convincing rebuttal against the over-emphasis of any one branch in our armed forces.

Reconnaissance Training at The Cavalry School

"The Cavalry School is given the responsibility for developing the tactics, technique, and doctrine of horse and mechanized reconnaissance units. Developments in tactics and technique recommended by other agencies will be referred to The Cavalry School for review and coördination."

This is indeed an excellent improvement in the training methods formerly in operation for the teaching of our reconnaissance units. The principles of reconnaissance are fundamentally the same for horse or machine. Only slight modifications in the details of execution are necessary in order to apply these fundamentals to either one.

It is also fitting that reconnaissance tactics, technique, and doctrine should emanate from The Cavalry School, which over a period of many years has developed the background and facilities for this type of training.

Under the new program of unified instruction, many apparent flaws in the former method will be eliminated. Differences of opinion in technique and doctrine will be ironed out before being submitted to the student—and students will learn to talk the same language regardless of the reconnaissance unit to which they are assigned.

The Military Review

The CAVALRY JOURNAL extends a cordial welcome to a new monthly magazine in the field of military literature.

The Military Review, for many years published quarterly by the Command and General Staff School at Fort Leavenworth, Kansas, has recently been changed to a monthly publication. This publication is unique in the military field in that it covers every branch of the service.

Instructors at the Command and General Staff School and other well qualified military authorities are among regular contributors of main articles. The foreign field is covered by translations or digests of the most important military writings in enemy, friendly, and neutral countries.

Subscription, which is open to all, is three dollars per year, payable in advance to Book Department, Command and General Staff School, Fort Leavenworth, Kansas.

Change of Address

Occasionally subscribers have written letters stating that they have not been receiving their copies of The

CAVALRY JOURNAL and therefore wish to cancel their subscriptions. In every case it has been found that the writer really desires to keep on receiving the JOURNAL and is very complimentary on the material therein. But he has been transferred so often that he has gotten discouraged because the JOURNAL has failed to catch up with him and has finally decided to cancel.

Each individual complaint is carefully checked in this office and in nearly every case, it is found that the change of address has not been received.

Sometimes the JOURNAL is returned by the Post Office for wrong address. In such cases the correct address often can be located and the magazine remailed.

We want you to receive your JOURNAL. We believe that you enjoy reading it when you do receive it. *But we must have your change of address each time that you move* if you are to receive the JOURNAL promptly. It will also help if you will drop us a line when you do not get the JOURNAL *promptly.* We will be very glad to mail a duplicate copy.

You supply us with the address. We will supply you with The CAVALRY JOURNAL.

African Show—First Act to Curtain

Washington Daily News.

(1)—JUNE, 1940: Italy entered the war, and the battle of the Mediterranean opened as British crossed the Libyan border, closed Suez to Italian shipping. (2)—DECEMBER, 1940: Italian thrust carried to Sidi Barrani, where British braced, held. British counter-attacked, see-saw battle raged in border area for months. (3)—FEBRUARY, 1941: British had hurled the Italians out of Egypt, taken Cyrenaica in eastern Libya, captured El Agheila. This was farthest British drive into Libya before present victorious surge. (4)—MAY, 1941: Rommel took command of all Axis forces in Libya, and with strong German armored force thrust to El Alamein, threatening Alexandria. British held between Alamein and Qattera depression, Montgomery took over. (5)—NOVEMBER, 1942: Allied crusher is applied on African theatre . . . U. S., British forces land in Morocco, Algeria; Rommel is chased into Libya by reinforced British Eighth Army, and Axis forces race to occupy ports, airdromes in Tunisia. (6)—JANUARY, 1943: Axis defense narrows and consolidates in southern and coastal Tunisia as Eighth Army takes Tripoli. Allied forces move up to ring of hills surrounding Tunisian defenses, come off second best in first skirmishes. (7)—MARCH, 1943: Final blow begins to fall as British Eighth Army skirts southern defense line at Mareth, U. S.-British forces start two huge drives in north and central sectors of Tunisia. Gabes falls. Axis races north. (8)—MAY 13, 1943: Last remnants of Axis forces are cleaned up in Cape Bon peninsula. Bou Ficha areas. Nazi General Jurgen von Arnim is captured. "Everything has been destroyed. We are closing down forever."

A Striking Example of the Need for Cavalry

MY long-standing conviction of the usefulness of cavalry in modern war is continually reinforced and strengthened by current events in the military theaters of operations in many parts of the world. The operations of the Russian cavalry, about which not nearly enough is known, are convincing enough for any student of warfare. The effective operations of the American 26th Cavalry in the Philippines, during the winter of 1941-42, are also worthy of study.

It can also be shown how the absence of cavalry in some of the recent campaigns has had a profound effect on the fortunes of the belligerents concerned.

First of all, in 1939, the absence of a numerous force of modern cavalry in the Polish army helped to bring about the swift débacle in Poland. The Poles had about twenty-five thousand cavalry, or less. This was not nearly enough. Furthermore, it was not used properly by the high command, and it was not equipped, trained, or led to meet modern conditions. No effective antitank guns, few or no heavy machine guns, no effective artillery, no grenades, no well organized and motorized supply trains, no bold tactical conceptions for infiltrating between enemy columns, and no preparation for flank attacks against enemy mechanized columns or the columns of infantry which followed the panzer divisions. Indeed, the absence of any one of these prerequisites was enough to prevent any effective use of the Polish cavalry.

Second, the almost total absence of cavalry in the French and British armies, in the campaign of 1940, contributed much to the débacle in France. One hundred thousand French cavalry and fifty thousand British cavalry, properly armed and trained for modern war and skilfully used by the high command, could have seriously interrupted the progress of the German panzer troops and given the French and British armies time to regroup and to regain order and morale. Not only was there little or no cavalry, but throughout the whole of the Allied armies, there were neither antitank guns nor other means capable of combating tanks effectively.

Had the necessity for these means been foreseen, and had they been provided, the German army, despite its superior strength, might have been stopped far short of its total conquest over France.

Third, a powerful modern cavalry such as the Red Army's, could have done much for the Germans in their offensive against the Russians, and might have prevented the disastrous defeats suffered in the autumn and winter of 1942-43.

During the months of January and February, 1943, an American task force consisting of infantry, artillery, armored troops, engineers and other auxiliary forces, was given the obvious mission of intervening in Tunisia between the German forces of General Rommel and those of Von Arnim. Rommel's army was confronted from the east by the British Eighth Army near the Mareth line. Von Arnim's army was confronted from the west, near Bizerte and Tunis, by the British First Army. Rommel's army was expected eventually to have to retreat westward under pressure from the British Eighth Army. The American force was sent to operate towards Rommel's rear and to cut his communications and make it awkward for him in his retreat to join Von Arnim. (This statement of the American mission is only assumed as obvious. I have no official information whatever.)

This sort of mission is a very dangerous one, because the force entrusted with it is likely to be attacked by very superior forces of the enemy. If the enemy is able to break away from our force at his front he may turn upon our force at his rear with more troops than we have at our disposal at this point. It is the same kind of situation that a rear guard or delaying force has to face if the enemy attacks in force. Therefore, our force detailed for such a mission must be powerful enough to fight an independent battle with the enemy's whole force; else, it must be composed of such mobile troops that it can fight and retire if necessary without too much loss.

When such a task force is composed of armored troops and cavalry, it is very flexible. But if, instead of cavalry, motorized infantry is used, it is not very flexible. It is true that motorized infantry can move over roads with great speed to gain its initial position. If it has to fight, however, it must detruck and deploy at considerable distances away from its parked motor transportation. This motor transport must be parked fairly near to roads leading in the right direction for subsequent advance or retreat. If the enemy attacks in great force, the infantry may have to retire rapidly. It must march back to its motor transport and get loaded and started to the rear before the enemy overtakes it. But if the enemy mobile forces gain our flanks or intercept the road in our rear, our motorized forces are in great danger. The motor transport cannot readily change the line of retreat because it must use the road and cannot move across country except on very favorable ground.

Our armored forces, or tanks, would undoubtedly come to the rescue of the infantry and try to form a rear guard and a flank guard. But tanks are not suitable for fighting defensive actions on open ground, especially if they themselves are menaced by superior armored forces of the enemy.

In the situation referred to in Tunisia in February, the American force was attacked by superior German mobile forces, and found itself hampered by the very conditions just explained above. The American troops fought very gallantly but had to retreat rapidly. Many of them were unable to get back to their parked trucks in good time or to get away after entrucking, because the enemy blocked the road leading to the rear. Some battalions sacrificed themselves in order to let others withdraw. Presumably, our armored troops attacked the enemy, but many units found themselves outflanked or surrounded by superior numbers of enemy tanks.

Heroic fighting and excellent leadership no doubt saved many units and rescued much of the infantry. But, undoubtedly, many of our rear guards found themselves overrun or surrounded. Even some of our artillery, in its positions in rear of the other troops, may have been surrounded before it could get away because of the inability of our rear guards to keep in front of the enemy and delay him long enough.

Had this task force been composed of armored force together with our modern cavalry instead of motorized infantry, or perhaps in addition to motorized infantry, there is every reason to believe that the Germans could not have maneuvered so freely and so rapidly.

Cavalry in delaying actions or rear guard missions could not have been overrun and surrounded, because cavalry squadrons can move in any direction across country and do not need roads leading in the convenient direction. When fighting on foot, each small cavalry unit has its led horses placed in rear of it or not too far away for quick mounting. Motorized infantry has to be assembled at the parking place near a road before it can entruck and move in the required direction. The cavalry mounts in a much shorter time and can move in any direction either to attack or to escape.

In open order, across country, cavalry is not nearly so vulnerable to air attack as troops crowded into motor vehicles proceeding in column along roads.

For reconnaissance, other than the distant reconnaissance performed by the use of airplanes, there is no force comparable to cavalry.

For combining with infantry and armored force, as a link between these two, in attacking the enemy, cavalry is invaluable.

For security to columns of infantry or armored forces when in close proximity to the enemy, cavalry is also invaluable.

Dismounted cavalry has the same modern weapons, including antitank guns, that the infantry has. Although the infantry remains the great mobile basic arm of the service, as often stated in these Notes, it needs cavalry with it in many situations. Both armored forces and infantry need cavalry when undertaking missions in which they are liable to be attacked by superior forces of the enemy, as was the case in February, 1943, in Tunisia.

The question as to whether we ought to have cavalry in North Africa and in every other big theater of operations, or whether we could transport it overseas under present conditions, is not discussed in this paper. But there is no question whatever of its usefulness or its indispensability for certain tasks, which cannot be accomplished without it, except at the risk of disastrous losses or serious defeat.

If we ever attempt to reëstablish our cavalry and to use it in this or any other war, it should be remembered that little driblets of cavalry can accomplish very little. In Tunisia we could use, if we had it, four or five divisions of cavalry. Too often in the past, a single division of cavalry has been given tasks that required five or six times as many, with unsatisfactory results and the discrediting of cavalry as a whole, or with tragedy to the cause for which it fought and sometimes died.

This picture from Tunisia, dated April 21, 1943, shows a British mounted patrol, which assisted in locating a large amount of enemy equipment.

British official photo

German Cavalry in Russia, 1941

by Lieutenant Count de Schmettow, German Army

This short account of German cavalry protecting the flank of an armored corps is reprinted from a translation in Ejercito, Spanish military magazine, which republished it from the German Militar Wochenblatt, January, 1942.

THE first great German advances in the Russian campaigns brought the cavalry, along with an armored corps, to the interior of the country, where modern cavalry was to determine the outcome of the most difficult situations.

We moved rapidly all the way from the Bug River to the southern boundary of the Pripet Marshes. Within a week we had made long marches that had brought us close to the enemy. For the first time in this war, German cavalry advanced ahead of the motorized units, which had remained ditched in the sand of the so-called Russian roads.

On the morning of June 28, 1941 (six days after the beginning of the campaign), we prepared to carry out our mission, which was one of the most difficult that can be entrusted to mounted units. We were to protect the right flank of the units of an armored corps, which were advancing along the road toward the east and drawing steadily farther away from their bases of supply.

At 14 hours, the mounted units began their march. The motorized columns started later along other roads. Ahead of us there spread the impassable Pripet Marshes, which, in conjunction with the great forests, made an ideal zone for the enemy whose perfect knowledge of the terrain might enable him to attack the rear of our armored division.

With our General marching at the head of his squadrons, we rode over sandy and swampy ground from dusk until the late hours of the night and remained always in contact with the armored division. The mobility and flexibility provided by the capacity of our horses to travel through this area, permitted us to overcome all difficulties of the terrain and reach our objective with suitable dispositions for combat.

Horses and troops were forced to the limit of their strength. In this, the horse from East Prussia again demonstrated his excellent quality as a horse for a cavalry division. Hunger and thirst, heat and dust, mosquitoes, the weight of weapons, and dragging the combat train through sandy ground did not exhaust his resistance. *The objective was always reached within the set time, although little time might remain for rest.*

Always in contact with the armored division, we rode across the plain toward the east, and finally arrived at another river, where the infantry established a bridgehead which it continued to enlarge.

Some days later, because our communications with the rear were menaced, we started to march toward the south. For the first time in the campaign, we placed ourselves in the van of the infantry, which had advanced by a powerful drive. Moving forward with it, we constituted a wing or flank guard.

About this time, a beautiful picture was presented to our sight.

Skilfully taking advantage of the terrain, the squadrons deployed in combat formation until they reached the point where they had been ordered to dismount. Here the squadron leaders placed themselves in front, and for three days we attacked on foot against the tenacious resistance of the enemy positions in that sector. When we mounted again, some good comrades no longer accompanied us.

For a total of nine days we had marched and fought constantly, had received violent fire from the enemy artillery and had sustained repeated attacks from the Russian infantry supported by tanks.

Black Star. →

A heavy machine gun cavalry troop of the German S.S. (Armed Elite Guard). Men carry the MG 34's as well as light machine guns. Note tripods on first horse, belt boxes on far horse; also, spotted camouflage suits, typical of S.S. troops.

Meeting the Nazi Armored Fist*

by Colonel A. Yakovlev, Red Army

DURING the spring of 1943, the Donets valley has seen some of the most stubborn fighting of the war. The possession of single inhabited points or important communications is contested for weeks on end.

The Germans recently increased their resistance on this sector. They transferred large fresh forces from Western Europe to the Soviet-German front, and replenished divisions badly battered in previous fighting. This enabled them to launch furious counterattacks, which were sometimes repeated eight or ten times daily.

The present German counterattacks are vastly different from those of last winter, when the fighting took on the character of positional warfare. In those days, the Germans counterattacked unremittingly, but with limited objectives such as the recovery of former defense zones or of some favorable position. Such counterattacks were usually launched by platoons or companies and were supported by small groups of tanks.

The present situation is quite different. The Soviet troops have created gaps in the depth of German defenses and advanced many hundreds of kilometers. Mobile battles have developed over vast areas.

Powerful Combined Thrusts

The front line zigzags. Soviet vanguards on many sectors have thrust deep into the German positions, and threatened the enemy's rear and communications. The Germans take every opportunity to counterattack the attackers. They throw into battle large infantry formations, strongly supported from the air. They concentrate panzer forces on selected fronts, and frequently employ dozens of tanks to support the infantry attack.

In the Donets valley south of Kharkov, the German counterattacks developed far more than tactical significance. The Red Army had thrust deep into the enemy positions and occupied Krasnograd, Lozovaya, Pavlograd and Krasnoarmeiskoye. The Germans hurriedly transferred a number of fresh divisions to this area and launched one counterattack after another in an effort to outflank the Soviet troops and reach their communications. The Red Army offered stubborn resistance, but while the fighting was in progress, the Germans brought up more fresh reserves.

Finally, the enemy succeeded in concentrating twenty-five divisions in a comparatively small area. About half were panzer divisions. With this powerful group, the Germans tried to encircle the Soviet troops who had thrust deep into their defenses. These advanced Red Army units fought defensive battles against tremendous odds, and doggedly defended the positions they had won until, on the orders of the command, they withdrew from a number of towns, including Kharkov, and retired to the northwest.

Protecting the Flanks

The recent fighting has been a useful school of experience in dealing with enemy counterattacks. *First and foremost, reconnaissance must be carefully organized.* Whatever type of operation the unit is engaged in, wherever it may be, and whatever the situation, constant, comprehensive reconnaissance of enemy forces, positions and intentions must be carried out. The commander must always have a clear picture of the situation on his sector. He must know the enemy's intentions, and prevent his acting.

During the breaching of the enemy defenses, the flanks of the attacking force for a time remain open on certain sectors. The enemy tries to find these weak positions in order to deliver counterblows. Reliable protection of the flanks therefore is essential.

The following example is instructive. Units of "N" formation, smashing German resistance west of Sevsk, breached the defenses and thrust forward. The Germans, suffering heavy losses, retreated, but regrouped their forces to some extent the next day. They sent an infantry regiment, supported by twenty-five tanks against the flanks of the counterattack.

The Soviet commanders took the necessary steps to protect their flanks in the area of the German concentration. The result was that when the Germans launched their attack, they were met by heavy artillery and mortar fire. The first enemy counterattack failed, but an hour later the Germans again began to advance.

One Soviet battalion then began to thrust forward into the position held by the attacking German group. The Red Army men hacked from both sides of the wedge, cut through the German tank and infantry formation, and surrounded and destroyed it. During the day, the enemy made several further attempts to counterattack, but with no success. He lost large numbers of tanks and infantry and was pushed a long way back.

The Germans had been defeated, but the Soviet commanders never forgot that they might launch an attack on the other flank. This actually happened, but as the Soviet units had reliable cover on this flank, the Germans met with no success.

Panzer Fury

During the past spring, German tanks have cooperated in most enemy counterattacks. The enemy is trying everywhere to concentrate heavy armored forces, and with these mailed fists, cut up the Soviet defenses, thrust into them, and check the Red Army's advance.

Soviet troops have learned to deal with German counterattacks. *The enemy's mailed fist must be met with powerful fire concentrations.* The Soviet troops have adequate fire power at their disposal. They have extensive antitank and other artillery. It is only a matter of utilizing fire power correctly to the full extent. Wherever this is done, enemy tanks find no thoroughfare.

A few days ago, to the west of Suja, one Red Army company, strengthened by two guns, succeeded for 24 hours in holding off a large enemy tank group which was attacking with an infantry company. The Germans advanced from various directions and tried to strike from the rear, but the Red Army men had organized their defenses so well that none of the enemy's counterattacks succeeded.

Artillery Can Hold Tanks

Antitank riflemen did particularly good work. They allowed the enemy tanks to approach within close range, and fired at them point-blank. Artillery was used where enemy pressure was strongest. The German tanks, in face of this heavy fire, either remained static on the battlefield or were forced to retreat.

When separate enemy tanks entered the Soviet defenses, the Red Army men plastered them with grenades, and the tanks were immobilized. When the Germans had lost a considerable number of tanks, they gave up their effort to break through.

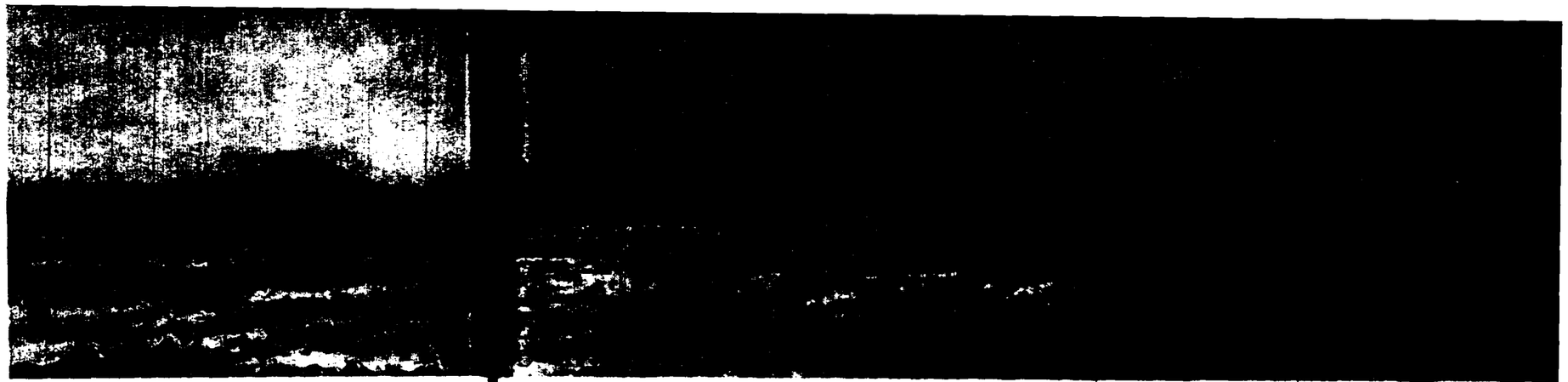
When driven out of any important position, the Germans nearly always launch furious counterattacks in an attempt to regain it. That is why positions won in inhabited places and on important communications must be consolidated immediately.

For example, a unit has straddled the highway. Fire positions must be established at once, and the road covered in both directions. Antitank and antipersonnel obstacles must be erected as quickly as possible, to enable the defenders to repulse any attack, irrespective of the direction from which it comes.

In inhabited points, as a rule, defense must be circular, because the enemy frequently attempts to change his direction, to attack from the flanks, to cut the Red Army's connections with the base, or to attack suddenly from the rear.

The Germans are counterattacking on almost all sectors of the Soviet offensive. They see their counterattacks as a means of checking the Soviet offensive. Every enemy counterattack, therefore, must be repulsed.

*Soviet Embassy.



Sovfoto

The 57mm AT guns in action, showing muzzle brakes very like the German 50mm.

Sovfoto

← Two Russian Model 1941 57mm antitank guns towed by two T-60 light tanks. The crews of the guns ride the tanks. Split-trailed, the 57s have a tube 62 calibers long (very long for any gun), and throw a 2.5kg projectile. Their range with HE is quoted by the Germans as 8km.

ARMORED UNITS

In Street Fighting*

by Colonel I. Ziberov, Red Army

DURING fighting in large inhabited centers, small tank units are often obliged to act independently in separate streets. Under these conditions, it is not always possible to centralize command which makes it particularly difficult to coördinate the activities of troops as a whole when fighting in inhabited places.

Streets are usually filled with troops engaged in battle, wrecked motor vehicles, ruins of houses and remains of barricades. All this limits the movement of troops and of dispatch riders (in cars, on motorcycles, or cycles). Unless traffic regulation schemes are adopted, movement along streets becomes almost impossible. Before the attack begins, the headquarters of formations and units issue instructions on the order of movement along streets.

It is important that all troops not actually engaged in fighting should move along one side of the street and leave a passage clear for dispatch riders and ammunition trucks going forward to the companies. It is advisable to place troops, not actually in battle, in large yards or gardens along boulevards or in other places where there is vegetation. This clears the streets and at the same time affords cover for the troops.

During offensive operations in streets, tank platoon and company commanders should always be in tanks with their units and should direct their movements. Directions are given by platoon commanders mostly by flag signals, tracer bullets and shells, or orally by means of infantrymen coöperating with the tanks. Commanders of tank companies direct platoons by radio instructions transmitted through the infantry, and partially by flags. The company commander should always be able to see the leading platoon of his company, and should follow and direct its activities.

Action of Commanders

Commanders control movement of smaller units by radio, runners, and personally issued orders to units concerned. Side streets are used to move laterally along the front. Personal visits from the commander of the unit, or even of higher formations, are more frequent in street fighting than on the battlefield. The effect of this on the success of the offensive is very great. Unit and formation commanders personally, through their staffs and from observation posts, follow the course of the attack of every company in order to give them timely coöperation by all means at their disposal.

Unit command posts are situated never more than 500 to 700 meters from the firing line, and formation command posts, no more than a kilometer. Formation and unit headquarters use local means of communications, telephone, motor cars and cycles. Sometimes the telephones of infantry coöperating with the tanks may be used to direct the tank units.

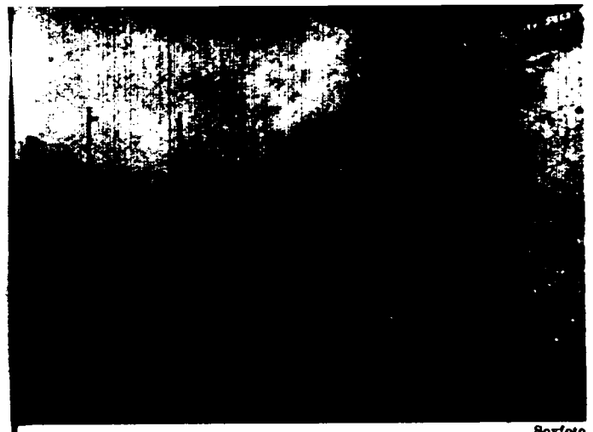
In street fighting, runners on foot frequently have to be used. Considering the slowness of the advance of smaller units, these are frequently very reliable means of communication and direction.

Reconnaissance

The most important measures to be undertaken in ensuring protection are reconnaissance, air and ground observation, flank and rearguards for the attacking units, and firefighting and clearance of streets from the remains of barricades and ruins.

Reconnaissance of enemy streets, obstacles, strongholds, various buildings and objects is carried out by the leading units in the battle. Headquarters frequently has to organize special reconnaissance to establish the whereabouts of minefields, the character of obstacles and fortifications, strongholds, side roads, fortified objects, approaches to water supply, electric power stations, communication centers, and railway stations. Forces sufficient to ensure the necessary information are detailed for this work.

Street fighting in Stalingrad. The German Mark IV tank in rear has just been knocked out.



Sovfoto

A gun crew defends this Stalingrad street with one of the new 57mm antitank guns.

At the end of 1941 and beginning of 1942, the Germans, attempting to hold the town of Narofominsk and Mozhaisk, mined their streets so as to hold up Soviet tanks and infantry. In these places Soviet sappers with mine detectors went ahead of the tanks, found the mines, rendered them harmless, and made a passage for tanks and infantry.

Reconnaissance on the flanks of attacking units is of great importance. Its task is to discover and report signs of enemy counterattacks and enemy maneuvers on the flanks or flanking movements.

Observation

Observation plays an important rôle during street fighting in towns. Staffs of units and formations organize close observation of the enemy in front, on the flanks, and in the rear, as well as observation of operations of our own leading units. Staff observers should be in direct communication (telephone, radio, motorcycles, signal, or other means) with their staffs and should keep them constantly informed of the situation in their sectors.

The number of observation posts that can be organized depends on the situation. Brigade headquarters usually requires at least three observation posts —one in the center and two on the flanks of their area. Unit headquarters will have at least two O.P.s. One of the O.P.s organized by any headquarters should be the commander's O.P. Observers are also placed on every street.

Observation posts are placed in high buildings, in belfries, and other places from which a good view is to be obtained. O.P.s move forward together with attacking units and are never more than 400 or 500 meters from the advanced units.

The difficulties of observation during street fighting, the possibility of sudden attack from side streets, buildings, parks and other places that may serve as a cover for an enemy ambush, make it essential that special measures be taken for protecting the flanks and rear of attacking units. Sabotage and sudden attacks by enemy soldiers disguised as civilians are more likely in street fighting than in open country. To counteract this, infantry pickets are placed in streets and when occasion demands are strengthened by light tanks and armored cars.

During battle, the civil population are forbidden to appear on the streets, balconies, at windows, or street doors.

Air Protection

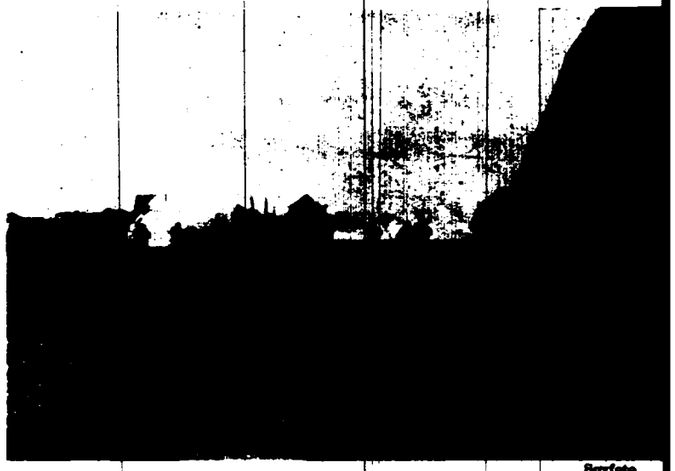
In the organization of antiaircraft defenses, it must be remembered that enemy aircraft will fly low to shoot up or bomb units during street fighting, as it is impossible for them to get a clear picture of the situation from high altitudes.

Air observation may be carried out by O.P.s having communication with their headquarters.

To repulse air attacks and fire on low flying aircraft, the usual weapons are employed—AA guns and machine guns, AA snipers, and groups of riflemen from an infantry unit. Tanks provided with AA weapons open fire on the enemy only when not taking direct part in battle. The best means of AA defense is for the fighter aircraft of the attacking side to cover the armored units during the attack on an inhabited point. This should be accomplished in accordance with the plan of the general staff and any request made by the staff of the armored formation.

Fire Fighting and Mopping Up

Tank units, advanced infantry, and sapper units do not take part in extinguishing burning buildings. This is the duty of reserve units of the attacking formation, or even of succeeding echelons. Operation orders should



Sovfoto

Tankists in coöperation with automatic riflemen dislodge Germans from a populated place in the Stalingrad area. The tank is a T-34—fast, medium.

*Courtesy, *The Tank* (British).

provide for action to be taken by tanks and infantry who meet with fires on their way. They frequently have to go around burning districts by side streets, to return to their own general direction after passing the fires.

In the event of the fire breaking out on the leading tank, the machine withdraws from the battle line under its own power. If possible, measures to extinguish the fire are taken on the spot. This task is performed by infantry or sappers following behind the tank. Both sappers and infantry operating with tanks in inhabited centers should be trained to deal with fires in tanks, and utilize any means at hand (sand or earth).

Headquarters of units and formations organize timely mopping up operations in lanes made through the inhabited point. All houses, after having been seized, are carefully examined to ensure that no enemy officers or men have remained behind in them. As they move forward, units mopping up in buildings and streets inform following units of buildings that have not been examined. This is to prevent the possibility of them being fired on unexpectedly and to enable them to adopt any necessary measures. Particular attention is paid to clearing buildings of contact and delayed action mines.

Tank Evacuation

Street fighting usually causes greater tank losses than fighting in the field. Maneuvering tanks in streets is extremely difficult. Evacuation of damaged tanks from the battle area is a difficult task, especially in narrow streets. Damaged tanks in forward units may block the street and hinder the action of other fighting vehicles. It is not possible to evacuate tanks by means of dragon tractors until the enemy in the street has been mopped up. Tanks, therefore, are taken in tow by other tanks moving in reverse.

A tank which has been damaged in a street is covered by fire of infantry or a light tank until it is removed or repaired. Damaged tanks evacuated from narrow streets should not be taken far in tow, as this crowds the streets and hinders the forward movement of troops from the rear. Towing of a machine under enemy fire is usually done in reverse. A better method is to drag the damaged machine from the street into a large yard or park where the enemy has already been mopped up. The tank remains there until the whole unit advances; then it is evacuated to the tank recovery unit of the formation.

Because of the difficulty of observing forward platoons in action on streets, and also the maintenance of communications with them, advanced observation posts and advanced communications are combined with the observation posts set up by the staff of the unit which will most quickly obtain information concerning damage to the armored fighting vehicles in action, as this unit usually has communications with the advanced units.

A tank recovery unit of a formation operating in street battles should be situated outside the inhabited point, because frequent attacks on this unit by remnants of the enemy's forces are possible. If the inhabited point passes quickly into the hands of the attacking force and the enemy is speedily mopped up, then the tank recovery unit is set up on the outskirts of the point, in parks or on waste land. Guards for the unit are organized in the usual manner.

Ammunition and Refueling

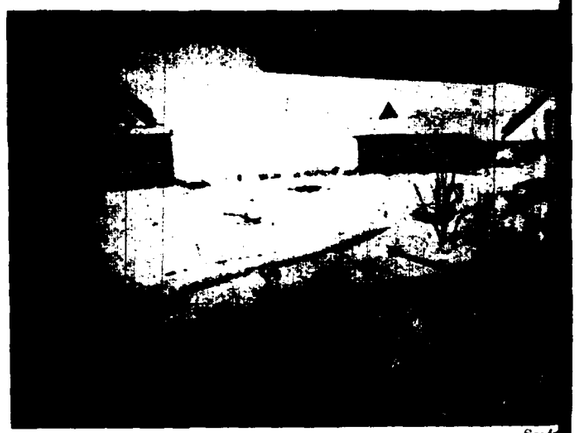
One of the characteristics of street fighting is the unequal expenditure of ammunition in companies. The leading platoons conduct the main battle on the streets. Remaining platoons can give the leaders only partial support and mop up small enemy groups that remain behind. It follows, therefore, that ammunition is used up faster in the leading platoon than by platoons that follow. The leading platoon then halts and, when its place is taken by other platoons, retires.

Tanks should not turn in streets blocked by ammunitionless tanks. Ammunition supplies should be brought up from the rear only as far as the company headquarters.

Tanks should not be refueled in the inhabited point, especially in the streets, as this takes considerable time under conditions when the tanks, to a great extent, are without their fighting abilities.

During street fighting, refueling should be carried out only for individual tanks, and then only under conditions of absolute necessity. Groups of tanks are refueled only as an exception. Refueling should be done outside the inhabited point—in woods, on sports grounds, and other large open spaces where tanks are not likely to be attacked with bottle bombs, inflammables or flame-throwers from adjacent buildings housing enemy antitank troops.

In battles for inhabited places, the concrete situation must be considered on each occasion and decisions taken in accordance with that situation. There can be no stereotyped rules.



Sovfo

An antitank rifle crew fire from a building in the Velikie Luki sector.

HOW effectively Soviet Cossack units are combating enemy tank forces was described by a colonel of Cossacks visiting Moscow. The colonel, who did not wish his name disclosed, commands a Cossack unit that took an active part in repulsing a counterattack by enemy tank forces in June, 1942.

A column of large and medium fascist tanks advanced over a broad plain against lines held by Cossack cavalry squadrons. Had the Germans succeeded in breaking through, they would have been able to penetrate deep into the Soviet positions.

The battle was to decide the fate, not only of the particular Cossack unit, but of the other Red Army units concentrated behind them. These were groomed for a thrust against heavily fortified German defenses that comprised a chain of subterranean and surface fortifications protecting the approaches to a certain city.

The battle began at dawn on a hot June day. Allowing the tank column to approach, the antitank batteries opened heavy fire. The first squall of shells disabled several enemy tanks, but the others continued to advance. Cossack antitank gunners, skilfully hidden in clumps of bushes along the roadside, then went into action. Forming a close semi-circle around the tank column, their fire slowed down another 10 tanks and then put them out of the running altogether. The Germans, however, pressed forward doggedly.

At that moment, three flights of Soviet bombers rose suddenly from behind a near-by forest and dropped their lethal loads on the attackers. In the meantime, the antitank artillery intensified its fire and forced the German machines to falter and turn back. This exposed the fascist infantry, for whom the tanks had been serving as cover. The Cossack machine guns went into action and spit death at the retreating enemy.

Having lost their tank protection, the German infantry could not stand the hurricane of fire, and soon their retreat changed to a panicky flight. They fled the field and left dozens of disabled tanks and hundreds of killed and wounded infantrymen behind them.

The Cossacks mounted and galloped in pursuit of the enemy, then engaged them in hand to hand fighting. The whole operation took nearly three hours and cost the Germans huge losses in men and equipment.

The colonel compared this battle to some he had fought in 1941. "Since then," he observed, "the technical equipment of our cavalry has improved beyond measure. The unit under my command is equipped with practically every type of the newest firearms."

One of the arms most favored by the Cossacks, the colonel said, is the antitank musket. Convenient to carry and simple to use, these weapons have been nicknamed the "20th century lance." When attached to the saddle during a march, the weapons bear a resemblance to the lances carried by Cossack horsemen of old.

Great fire power enables the Cossack units to withstand furious enemy frontal attacks even when the latter are supported by tanks and airplanes.

The colonel recalled how early this spring his unit operated for a long time far behind the enemy lines. He is quite convinced that had the cavalry not been equipped with all modern arms, it would not have been able to deal the fascists the shattering blows that played such a decisive part when the Red Army captured important strategic positions on this sector of the front.

*Moscow News.

LAND NAVIGATION

*by Major William L. Stockman, Jr., Cavalry**

WHEREVER operations are conducted at night, in fog, or in regions where prominent terrain features are lacking, the ability to navigate is the prerequisite of success.

The present war has been characterized by large scale desert warfare and by increasing dependence on night operations. Small detachments operate independently over wide areas. To be effective, such detachments must know their positions at all times and be able to follow their chosen courses accurately. During the daytime, in terrain where prominent landmarks are present, simple map reading will suffice; but in terrain where no landmarks are present, or at night when landmarks cannot be seen, some form of land navigation will be necessary.

Types of Navigation

The object of land navigation is to keep one always informed of his position. The subject divides itself roughly into three main sub-divisions. They are: pilotage, dead reckoning, and celestial navigation.

Pilotage or point-to-point navigation is the act of moving from one well defined point, be it a natural terrain feature or work of man, to another such well defined point. This is land navigation in its simplest form.

Dead reckoning in its basic form is merely the mechanics of keeping an accurate record of deviations from a given course. Dead reckoning may be used to supplement pilotage but will ordinarily be used when pilotage becomes impossible.

Celestial navigation is more complex than pilotage or dead reckoning and consists of the procedure necessary to locate your geographical position on the earth's surface by means of celestial bodies. An octant or sextant and special tables enable the navigator to determine by means of a "fix" on a celestial body his exact location on the surface of the earth. The procedure followed is similar to that used by the aerial navigator or the navigator of a vessel. This type of navigation is resorted to only when great error is introduced into dead reckoning because of long distances involved.

Of these three-sub-divisions of land navigation, dead reckoning is the most practical method of navigation for motorized, mechanized, and armored units during darkness and over terrain where landmarks are not in evidence. This article, therefore, will consider dead reckoning more in detail than either pilotage or celestial navigation.

Dead Reckoning

As previously stated, dead reckoning in its basic form is merely the mechanics of keeping an accurate record of deviations from a given course. The equipment used

*Instructor, Department of Tactics, Staff and Faculty, The Cavalry School.

LOG No. 1

VEHICLE No. W-131729 FROM CR 829

DRIVER J. Doe DATE April 2, 1943

PASSENGERS (1) W. Jones (2) H. Smith

COURSE	TIME	ODOMETER READING	AZIMUTH	MILES	MILES RECORDED	REMARKS
1	0800	726.4	20°(m)	3.1	3	Desert trail — Cut .1mi, sand
2	0812	729.5	330°(m)	2.6	2.3	Rocky area - Cut .3 mi. detour around obstacles.
3	0832	732.1	55°(m)	2.5	2.5	Good trail
4	0858	734.6	324°(m)	.8	.8	Rendezvous!
		735.4				

Figure 1

to compute this data will vary from a dead reckoning set now in the experimental stage, to the more common equipment of government issue that is found in field units.

Some of the more unusual items of equipment to be found in the dead reckoning set are listed below with brief explanations.

Magnetic Compass, Fixed.—A fixed vehicular compass made with adjustable magnets placed close to the compass in such a manner as to neutralize the magnetic fields of the vehicle.

Sun Compass, Universal.—An instrument by which, given the latitude and local sun time, the true azimuth of any given course may be determined.

Board, Drawing, with Universal Drafting Arm.—A drawing board with a built-in protractor and drafting arm, enabling the user to plot angles automatically.

The more common items of equipment which may be used to compute the necessary data for dead reckoning are the lensatic compass, engineers scale, protractor, triangle, paper, and pencil.

The distance traveled is obtained from the odometer, that part of the vehicular speedometer that registers in miles and tenths of a mile the distance covered by the vehicle. Before starting out on a "run," the accuracy of the instrument should be determined. Many factors, however, will affect the accuracy of the reading other than the mechanical deficiency of the instrument itself. Well-worn tires and tires smaller or larger than those specified, or operated at less than specified air pressure, will cause corresponding errors in the reading on the odometer.

It must be remembered that a map measurement gives the horizontal distance between two points. In actual travel between these two points, there will be a vertical deviation from the horizontal measurement due to obstacles and hilly terrain. In sandy or muddy terrain, slippage of the wheels will cause the odometer to read more than the distance actually covered. Errors caused by any of these factors must be estimated and an adjustment made for them in recording mileage in the log. (See Figure 1.)

Direction is determined by azimuth as shown on any compass. If the lensatic compass is used, the person using it must dismount from the vehicle before taking a reading. Suggested minimum distances are 50 yards from any armored vehicle and 25 yards from any other vehicle. The lensatic compass is also easily affected by any base metals on the person.

In order to record azimuths and distances traveled, an accurate log must be kept. All information pertaining to the movement of the vehicle must be written down promptly. Nothing must be left to memory. Each major change of direction is a new azimuth COURSE. Courses are numbered consecutively in Column 1.

The columns headed Time and Odometer Reading

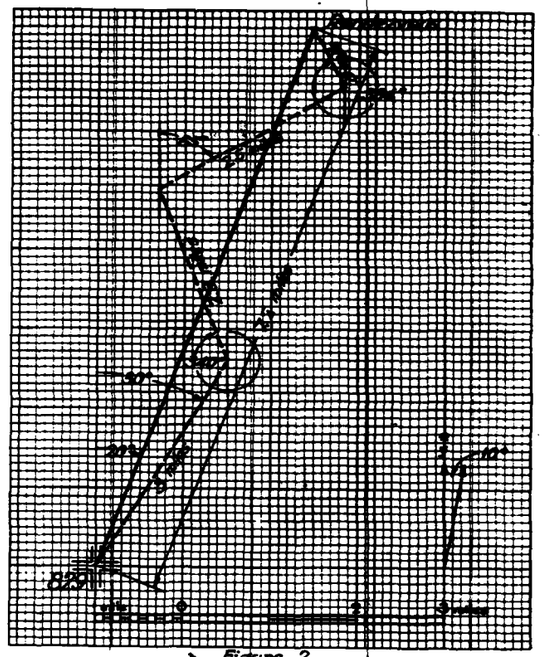


Figure 2

are filled in for each change of direction. The azimuth, either magnetic or true, is recorded for each change of direction in the column headed Azimuth. In the column headed Miles, the mileage as registered by the odometer is recorded. Under the heading Miles Recorded, the adjusted mileage, taking account of slippage, deviations, and other factors, is recorded. In the Remarks column, brief remarks about the terrain and reasons for adjusting mileage in the Miles Recorded column are entered.

A given "run" may be plotted either on a piece of graph paper or on a map. Each "run" is plotted as soon as practicable from the data shown in the log as illustrated in Figure 2.

In the following illustrative problem, a short distance has been used merely to illustrate the mechanics of keeping the log and plotting the course. Distances will usually be far greater than shown in the problem. In the problem, the lensatic compass, the vehicle odometer, a protractor, an engineer's scale, an ordinary piece of graph paper, and a pencil are the only necessary materials. It has been assumed that the magnetic declination for this problem is 10° east. All azimuth readings in the log are magnetic, and it is therefore necessary to convert them to grid azimuth before plotting them.

Problem

Assume that you have been given the mission of driving across country from CR 829 to a rendezvous pinpointed on a map but otherwise unknown. Be-

cause of the scarcity of maps or the fact that no terrain features are shown on the map, you decide to plot your course on a piece of graph paper. You must never assume that you will be able to keep a straight course all of the way unless you have certain knowledge of that fact by familiarity with the terrain.

The vehicle odometer has been checked and found to be accurate, and no compensation for error will be necessary. The distance and azimuth to the rendezvous are taken from the map and plotted to scale on the graph. The distance is found to be 7.2 miles, and the azimuth is found to be 20° grid. This is your base line. If you could travel for 7.2 miles on a grid azimuth of 20°, you would arrive at your destination. Your best procedure is to travel as nearly as possible along this base line, and, meanwhile, keep track of all deviations from it.

The course, time, and odometer reading (726.4) are logged by the recorder. In approximately the same direction that you wish to advance, there is a trail which you decide to take. The azimuth of the trail is 20° magnetic. You travel an actual distance of 3.1 miles, and then you are confronted with a rock-strewn area, that necessitates a change of direction. Because you have crossed a sandy stretch, and your tires slipped, you decide to compensate for this slippage by deducting .1 mile, making the distance recorded 3 miles. These entries are recorded in the appropriate column.

Course, time, and odometer reading are entered in the log for course No. 2. You decide to go around the rock-strewn area, and you feel that an opening through the area on a magnetic azimuth of 330° will be passable. After proceeding an actual distance of 2.6 miles, you decide to get back in the direction of your original line. Because you were forced to detour around certain obstacles on this leg, you compensate for this by deducting .3 mile. Notations are made in the log under appropriate headings.

After you have entered the course, time, and odometer reading in your log, you decide to take a trail to the right on a magnetic azimuth of 55°. After proceeding up the trail for 2.5 miles, you decide to do some checking and find that you must be in the vicinity of the rendezvous as you have traveled a recorded distance of 8.6 miles. You plot your course as shown in Figure 2 and find that your rendezvous is .8 miles away on a grid azimuth of 334°. This reading is converted to magnetic, and you proceed to your rendezvous.

Successful dead reckoning depends on accurate and timely entries in the log, accurate plotting of the course, and careful estimation of and adjustment for errors in mileage.

GRADUATES OF THE OFFICER CANDIDATE CLASS, APRIL 15, 1943, THE CAVALRY SCHOOL

Reading from left to right front row seated: Raymond E. Anderson, Willis B. Berblinger, Harold B. Beverly, Roy J. Bolen, George F. Brosan, Jr., Ralph A. Broussard, Louis F. Brown, Robert M. Brown, Thomas J. Burch, Class Secretary and Treasurer; Charles F. Carroll, Captain Harry Coopland, Jr., Cavalry, Commanding; First Lieutenant James J. Costigan, Cavalry, Executive; Albert D. Clanton, Wayne A. Cowan, Clifford W. Crites, Ellsworth C. Cross, Leo M. Doran, Robert E. Ellis, Weldon W. Fetters, Walter N. Garms, Paul R. Herrera, Paul H. Hofeditz, Class President; Victor R. Holt, Robert A. Huffman, Leon A. Isreal. *Back row standing:* George F. Lastrapes, II, Max D. Lewis, William H. Lynn, Walton J. McHale, Charles H. Mills, William J. Miniham, William R. Moran, Calvin L. Morgenthaler, Warren J. Morrow, Paul R. Moynahan, Joseph J. Olah, John B. Parkhurst, Joseph H. Peake, Dallas R. Peters, John D. Petropulos, Marx Rosenzweig, Michael R. Ryan, Martin W. Schoepfer, David H. Shenk, Edgar E. Sheppard, Donalan J. Shillington, Joe E. Shoemaker, Marvin E. Tomlinson, Furman H. Updike, Raymond E. Wantz, Harvey E. Wood, Frank L. Young.

The Reconnaissance Squadron in the Motorized Division

*by Lieutenant Colonel Brainard S. Cook, Cavalry**

RECONNAISSANCE, as defined by the Field Service Manual, is the operation of obtaining military information in the field by troops sent out for that purpose. The term "military information" is used instead of the "enemy information," as used in some publications of the Field Service Manual, because it is believed that the all-inclusive term is especially applicable to the motorized division.

The nature of the terrain, the availability and condition of the road net, and the location, strength, and condition of the various stream crossings in the theater of operations should be items of immediate concern to any commander of motorized forces. Second only to direct information of the location, strength, and disposition of the enemy main body, these considerations will have a tremendous bearing on the decision of the motorized division commander. Hence, these terrain conditions must be a matter of immediate concern to all ground reconnaissance agencies of the division.

The mission of the reconnaissance squadron is twofold: first, to secure information regarding location, strength, disposition, or movement of any enemy forces that could interfere with the mission of the division; second, to secure and send back vital information regarding the nature of the terrain and the condition of the road net within the zones reconnoitered.

Means of Reconnaissance

Having diagnosed the trouble, the good mechanic reaches for the proper tool for repairs. Certain tools are available within the division for the accomplishment of its reconnaissance missions. Each regimental combat team has available its own reconnaissance platoon, but these are for close-in reconnaissance, and should remain under control of the combat team's commander.

The division engineer battalion also has a reconnaissance company, which includes one complete reconnaissance platoon. These men are specialists on route and bridge reconnaissance, but are not sufficient to cover all routes that might be used. They should be left under the control of the engineer commander.

The reconnaissance squadron then is the unit within the division upon which the commander must rely for the bulk of his early information. It is his own tool box, always available on his call, without depleting the strength of other units of the division.

Within this so-called tool box are the types of tools designed to accomplish the job that the squadron will be called upon to do. It contains reconnaissance units to seek out information, and support units to furnish the squadron with a fast-moving mobile reserve that can be used to conduct a reconnaissance in force or that can be held in reserve to effect a penetration of the enemy's reconnaissance screen. It may also be used to counterattack and afford the scattered reconnaissance units an opportunity to reorganize after a determined enemy attack. It also includes mortar and pioneer and demolition squads.

Scope of Employment

On many occasions, officers have suggested and problems have been written, to force the reconnaissance platoon into dismounted action, and to continue a fire fight against opposing infantry. While dismounted action is the basis upon which all thorough reconnaissance is built, and the reconnaissance personnel should be trained thoroughly in all phases of dismounted scouting and patrolling, it is not believed that dismounted action on the part of a reconnaissance platoon should be resorted to on every occasion of meeting resistance. Every tendency to close with the enemy should be avoided. Dismounted, the platoon becomes two small reconnaissance patrols, each supported by a light machine gun. Vehicles left immobile are useless and reduce the reconnaissance platoon to the same speed as the opposing dismounted platoon.

The dismounted platoon does not possess sufficient fire power for conducting a dismounted fire-fight. However, a small dismounted reconnaissance patrol may be formed from either section. This dismounted patrol should consist of not over five riflemen. These make excellent reconnaissance patrols and still leave the automatic weapons in the vehicles available for support or rear protection. Drivers and radio operators can man these weapons without neglecting their primary duties.

The most frequent questions encountered when attempting an explanation of vehicular reconnaissance are:

What frontage can be covered?
At what speed can it be covered?
How far should they operate in front of the division?

A reconnaissance platoon can cover effectively a front of from five to seven miles. A troop on reconnaissance should be able to cover roughly a frontage of from fifteen to twenty-five miles. All distances, of course, de-

*8th Reconnaissance Squadron.

pend on the nature of the terrain and the availability of the road net.

Zone

In wide, relatively flat, open terrain, these frontages might be extended considerably. In close, hilly country, with numerous intersecting roads, either the forward speed of the entire reconnaissance must be sacrificed or the frontage covered must be reduced. Side reconnaissance, lateral contact, and flank protection are the most difficult, and consequently, are the governing factors in the forward movement of a reconnaissance patrol. Taking these things into consideration, it might be deduced that the reconnaissance squadron can cover effectively a maximum zone of from sixty to seventy-five miles in width. This leaves nothing for special reconnaissance and only a small reserve. If this zone to be covered can be reduced to about forty to fifty miles, the squadron usually can be assured of having sufficient units left for special reconnaissance missions. This gives the division commander and the division G-2 something immediately at hand—a working reconnaissance agency to investigate suspicious areas and conform questionable reports without depleting his carefully planned reconnaissance teams.

Operation

Before discussing the forward speed of a vehicular reconnaissance unit, it is necessary to discuss briefly the method of operation of those units. The popular conception of a vehicular reconnaissance team seems to be a group of vehicles, either armed or unarmed, which rolls down the highways in a more or less haphazard patrol formation until some alert enemy with a machine gun or antitank weapon opens fire on the leading vehicle. The fact that one vehicle out of five undoubtedly will be lost in such operations seems to create no impression. The loss of that vehicle and crew is considered as a fair price for the information obtained regardless of how meager that information might be. Working on that theory, a reconnaissance section would then send back exactly five messages, and the last one would be brought in by the motorcyclist who is credited with enough brains to turn tail and run when the reconnaissance car is blasted out of existence.

The division commander who wants reconnaissance today undoubtedly will want more reconnaissance tomorrow. It is the duty of the reconnaissance commander to so train his units that they may be able to operate in such a way as to secure the maximum of information with the minimum of losses. This requires such a high state of training that replacements are almost nonexistent. The boldness of the lion must be tempered with the wariness of the jackal, and the team-work of the wolf-pack must be supplemented by the cunning of the fox when the pack is scattered.

Replacements cannot be placed immediately in responsible positions but must be worked gradually up through the organization until their metal has been tried, tested, and found true. A replacement is not a reconnaissance man. He is a soldier who has not been shown the rudiments of individual protection. He must be worked into the team after his arrival. Teamwork and perfect coördination are the essence of good reconnaissance.

Movement and observation, each dependent on the other, constitute the basis upon which reconnaissance is made. During the early stages of an operation, when opposing forces are at comparatively great distances, *observation* may be somewhat *subordinate* to *movement*. As the two forces approach within striking distance, however, the positions reverse and *movement* then becomes dependent on *observation*.

In a discussion of the reconnaissance elements of a division, a recent instruction pamphlet states in one paragraph that the reconnaissance troop should precede the division by a distance of from fifty to seventy-five miles. On another page, the distances are again stated as between fifteen and seventy-five miles. It seems possible that the upper limit of seventy-five miles is allowing the base runner to get too much lead off first base. A good left hander could pick him off too easily. From recent reports, both Adolph and Hirohito seem well supplied with southpaws. So many conditions affect this variable distance that it would be impossible to set definite limits that would not at some time or another be exceeded.

The more conservative Field Service Regulations says, "The reconnaissance squadron should operate far enough in advance of the motorized division to give timely warning of any hostile threat of such forces that might interfere with the mission of the division."

The most mobile force that can affect the mission of the division are the enemy armored units. They move fast, strike quickly and can do considerable damage. Most reports indicate that heavily armored vehicles have a top speed of between eighteen and twenty-five miles per hour, but no mechanized unit can move at top speed for any great distance.

A safe estimate would be an average of between twelve and fourteen miles per hour for the entire unit, unopposed but expecting resistance. Using these figures, the armored unit would then cover thirty-six to forty-two miles in three hours. Allowing one hour for the transmission of messages, this leaves two hours for

An outline of the tactical characteristics of the Reconnaissance Squadron and its ultimate use to further the mission of the Division as a fighting team—

the preparation of our mobile defense, provided that our reconnaissance agencies are forty-two miles in advance of the leading elements of the division. With tank destroyer units well to the front of the division columns, it is believed that this time should be sufficient to allow for organization of selected positions.

The time that might be secured by effective delay of the armored column has not been considered. The reconnaissance squadron is fairly well equipped with land mines, antitank guns, and demolitions to affect considerable delay on these columns. This then, allows a margin on the side of safety for the selection and occupation of the position upon which our defense is to be organized.

With these estimates as a basis, and allowing another eight miles on the side of safety, we can set our upper limit at about fifty miles. The lower limit of fifteen miles seems to be adequate to permit the deployment of the division without interference from the reconnaissance squadron.

Communications

For communications, the reconnaissance squadron must depend on radio and the motorcycle messenger. The squadron is equipped with both long and short-range sets. Panels in each armored vehicle are available for air-ground communications but are seldom practicable because of the speed with which reconnaissance patrols must operate.

Operators must be highly trained, and net discipline must be almost perfect. Continuous wave operation between the long-range sets is preferable to voice transmission, because it is more readable through local interference, and it also eliminates the chance of errors through poor pronunciation.

Division codes and cipher devices should not be carried because of the possibility of capture. Messages may be transmitted in the clear, but code names and template designations should be used to conceal the identity of subjects of locations. A short system of abbreviations, capable of being committed to memory, should be used—more to speed transmission than to confuse the meaning of the message.

In addition to the means at hand, both commercial and friendly wire communications should be used to the utmost, when available. Emphasis is placed on speed and accuracy of transmission, rather than on the means used. In moving into operation, radio transmission should be kept to a minimum. Radio silence, however, should not be imposed on any unit actually engaged in reconnaissance, as constant changes in locale sometimes affect transmission, and immediate radio contact must be insured for the speedy transmission of initial contacts.

The trains of the reconnaissance squadron should move by bounds and follow closely on the advance of the squadron. They contain the maintenance personnel, armorers, kitchens, and ammunition trucks. The motor maintenance vehicles are equipped for protection of the trains, and each maintenance crew is transported in a radio-equipped armored car.

Disposition of the trains can be made in two ways. Troop trains may be released from squadron control and may move along the troop axis of movement, or the entire squadron trains may be grouped under control of the squadron S-4 or motor officer and move along the axis of the squadron that is released to the troops to move up under cover of darkness. The latter method seems to offer greater control and more protection.

Except in extreme cases, the trains should be kept in concealed bivouac during daylight and should be prepared to move up under cover of darkness. If the advance is so rapid that movement in daylight must be made, new bivouac areas must be selected, and the trains moved by infiltration under protection of the maintenance cars.

Three-quarter ton cargo carriers in the squadron trains will allow part of the trains to move forward for supply of the troops under control of the motor officer. The remainder, under the squadron S-4, moves back to the division supply points for replenishment. If ordnance repair crews are attached to the reconnaissance squadron maintenance crews, then the long tow back to the Ordnance repair shop will be eliminated and valuable hours of darkness can be utilized for repair.

Advantages and Disadvantages of the Rcn. Sq.

One of the advantages of the reconnaissance squadron (like the cavalry) is its *Mobility* and *Fire Power*. Added to these are the improved communications that can be maintained by the electrically operated radio sets, and the protection afforded by the speed of the quarter-ton and the armor plate of the armored car. This gives a reconnaissance unit that can move fast, deliver a stinging blow when necessary, and report its information promptly.

As a disadvantage, it is a unit that, while not entirely roadbound, is dependent on fairly good roads for quick movement. *Motor vehicles are noisy, and this puts a distinct limit on their use for night patrols.* Motor reconnaissance must be supported closely if expected to seize and hold vital terrain features. Lastly, all motor vehicles present a difficult maintenance and supply problem that must be solved completely, if the unit is to remain in operation.

Rôle

The rôle that any reconnaissance unit plays in the theater of operations is dependent upon the mission assigned and the position of the parent unit. When the division is acting alone, the reconnaissance squadron may be called on to furnish reconnaissance to the front and flanks. This will present the hardest problem to the reconnaissance commander, as in almost every case, all of the troops must be used constantly. As battle is

joined, reconnaissance units withdraw to the flanks and move out and in, to report enemy rear installations.

When the division is operating as part of the corps on one of the flanks, the reconnaissance squadron must maintain close contact with the corps reconnaissance regiment and cover the exposed flank. In the initial stages a reconnaissance patrol may be detached to the interior flank as a contact patrol between adjacent divisions.

When the division is operating as an interior division of the corps, the reconnaissance squadron should usually be detached and used to augment the corps reconnaissance regiment. If not, it may be used to protect the division trains and cover routes for their forward movement under cover of darkness.

When the division is in reserve, the reconnaissance squadron should not be detached and used to supplement corps reconnaissance, but should be left at the disposal of the division commander for the reconnaissance of routes to both flanks and used to cover the forward movements of the division when it is committed to action.

In some instances, the squadron may be used either by division or corps to cover the movement of a particular task force which has been assigned the mission of seizing important terrain features well to the front or flanks. These tasks are essentially the same as those assigned the reconnaissance troop in the triangular division.

The motorized division was developed in order that it might provide fast moving combat teams to follow up the advantage gained by an armored thrust. The reconnaissance squadron, therefore, must follow closely on the advance of the armored force, maintain contact with it, and seek out and report isolated bodies of enemy troops that might be left in its wake. Finally, it must push well to the front and flanks of the terrain feature to be held. It must be prepared to meet and report the size, strength, and direction of movement of any counterattack that might be launched. But in addition to all this, it must be remembered that the division commander will want positive information as to routes, bridges, and terrain.

Conclusion

It is well to enumerate the instructions and information that the reconnaissance squadron commander must have from the division staff, in order to accomplish the task assigned. First and foremost, he must have early information of the mission of the division and the division commander's plan of action. He should be informed at all times of the enemy situation and any subsequent changes. If he is assigned a dual mission, one must be given priority. If he is required to seize and hold terrain features, he should be reinforced by ground troops sufficient to organize the position to be held. As vehicle maintenance and supply is one of his most serious problems, some consideration must be given his unit as to priority on repair and replacement.

In return for this, the division staff can expect a thorough, fast moving reconnaissance; information of the enemy both positive and negative; first-hand information of roads, trails, bridges, and the general conformation of the terrain; and a reasonable delay of main enemy columns to allow the division time to prepare for action.

The Time to Learn Is Now

We frequently hear the remark: "They will learn to take cover when the first bullet comes," or, "Don't worry, those men won't do it like that when they are actually in combat."

Men who learn from the first bullet will only learn by fear and that is the wrong way. They will scuttle to earth and figuratively put their heads in the sand like ostriches. Some will be wounded or killed by the bullet that is supposed to teach them. Fear leads to panic. Confidence, which is so essential to success, is never found where fear is.

Men must learn *now* to take cover. Men must acquire *now* the physical stamina and determination which will enable them to continue to fight intelligently and correctly no matter how tired they may be. It cannot be too strongly emphasized that merely hiding is not the objective. The purpose of training in concealment is to teach men and officers to conceal themselves and still keep the enemy in view. It takes training to lie quietly watching an enemy, calm in the assurance that he cannot see you. It requires training to know the effect of backgrounds and it takes practice to learn how to use them.

It requires constant emphasis to make men realize that in this war the enemy may be expected on the flanks and in the rear just as surely as in front. Men and officers do not always realize that support platoons, elements of the heavy weapons company and the reserve company can expect fire from any direction and must dispose themselves to be ready for such fire at any and all times.—Colonel W. H. Wilbur, U. S. Army.

Notes from a Cavalry Regiment Overseas

by Colonel J. W. Cunningham

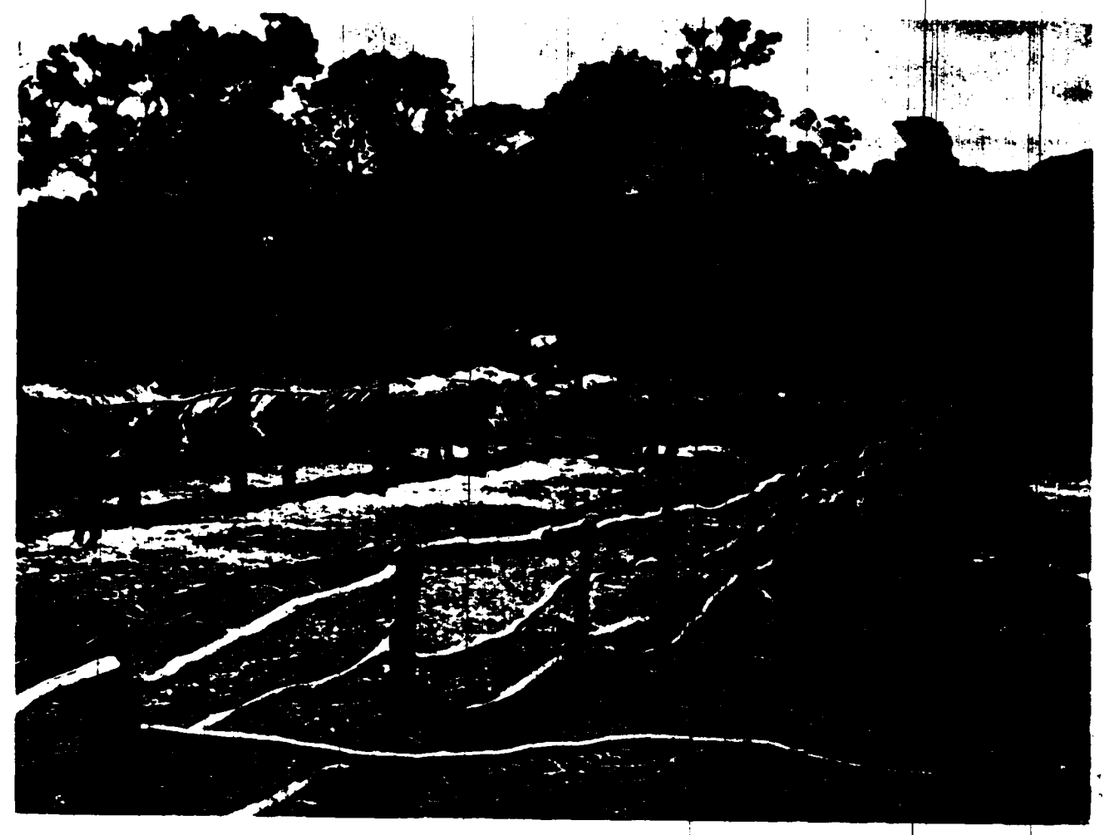
Preparation for Overseas

When a regiment is alerted for overseas service, the first question to arise is that of equipment. Orders from higher authority require that it be limited to that specified in the Table of Basic Allowances. In general, this has proven satisfactory for a cavalry regiment. The six months' supply of maintenance matériel, however, as prescribed in the Table of Basic Allowances, is based on requirements of dismounted organizations. To these must be added certain supplies peculiar to the cavalry, such as neatsfoot oil, saddle soap, sponges, repair parts for machine gun and ammunition hangers, horse equipment, leather, etc.

To allow for the use of saddle bags in place of the infantry packs, a certain amount of adjustment must also be made in the prescribed plan for the packing of individual equipment. Changes in the normal packing of barrack bags A and B are necessary in order to dispose of the shelter-half and blanket, as they naturally cannot be carried in the saddle bags.

Among items not listed as prescribed equipment, but which should be included by a unit preparing for an overseas assignment, is a moving picture projector and generator.

Another item that should be mentioned is the matter of motor spare parts and accessories. Any regiment go-



Mangers and corrals constructed by the regiment

ing overseas should take all of them possible. They will be needed.

Should the band instruments be taken? Yes—by all means! Our Cavalry Band has been the greatest single morale factor, not only for this regiment, but for practically all neighboring units of all branches of the service.

Equipment must be packed in strong containers, marked as directed, with lists of equipment contained therein. In addition, a large and easily recognized identifying mark should be placed on the corner of each container. This will be particularly helpful in securing equipment upon debarkation.

During the period of preparation for overseas service, the closest attention should be given to the correct disposal of troop-owned property and the payment of bills—not only by organizations but by individuals. If insisted upon, this will eliminate much paper work after arrival.

Aboard Transport

The regiment embarked, and every attention was immediately given to the security of the vessel. All caliber .50 guns were mounted and manned, as were all 37mm guns. Calisthenics and "abandon ship" drills were conducted. In addition to the gun crews, a considerable portion of the command was occupied by police, guard, and kitchen details. Officers schools were conducted during the voyage. Duties of some kind were assigned to as many as possible in order to counteract the monotony of the days at sea under conditions of crowded quarters and limited deck space.

The usual blackout was in effect, and upon one occasion of an actual alert against submarine attack, the conduct of officers and men was excellent, and reflected their prior training.

Debarkation

When the promised land was reached, the regiment debarked and immediately marched to a near-by staging area, then promptly marched back again, to unload the ship.

At this point it was discovered that we had apparently landed in the original nest of "Ali Baba and his Forty Thieves." Property and Post Exchange supplies disappeared under our very eyes, and this situation was remedied only by the establishment of a heavy guard. If possible, all organizations should take their own Post Exchange supplies with them overseas.

Semi-Permanent Camp

After several days in the initial staging area, the regiment was directed to move to a more suitable location. This area proved to be a fortunate choice. Located in a broad valley through which run several crystal-clear streams, the site affords ample camp space, a drill field approximately the size of that at Fort Bliss, water, grass and considerable cover. Roads, bridges, corrals, feed boxes, and racks for long forage have been constructed. Kitchens have been screened, and are now equipped with concrete floors. Wooden frame mess halls are now screened and are fly-proof and comfortable.

Animals

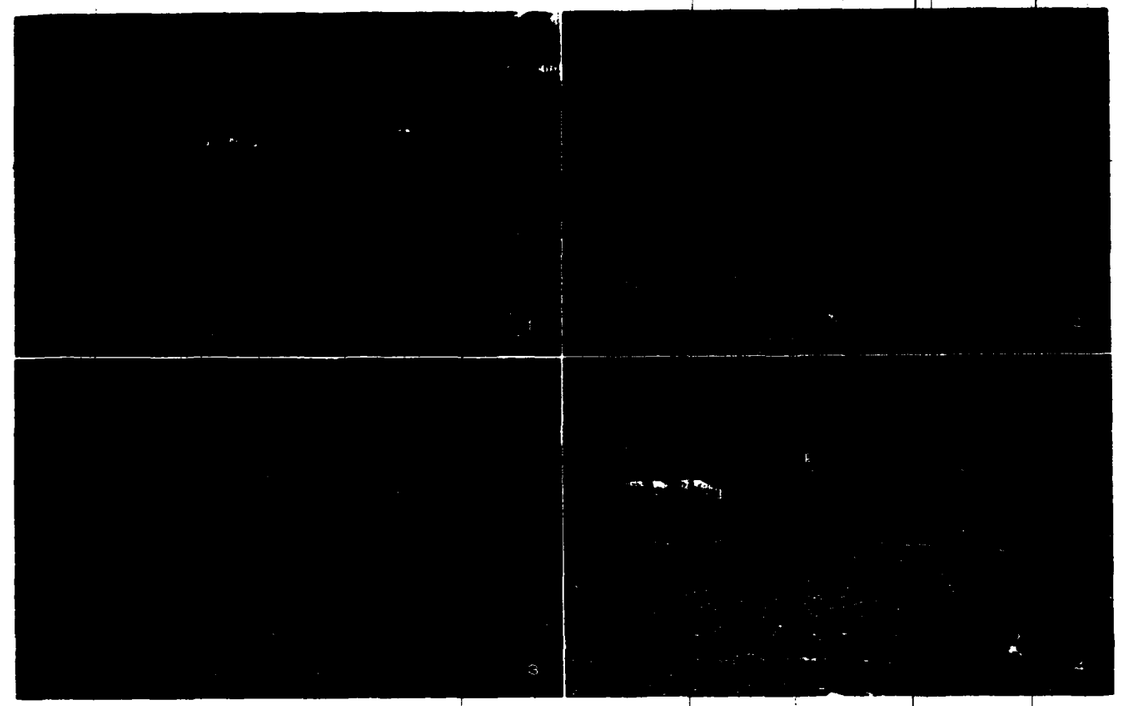
Upon arrival, it was discovered that approximately five hundred recently purchased animals had been torpedoed en route. The several hundred on hand were inferior in quality and in very poor condition. This situation was soon straightened out, and the regiment is now completely mounted. The conditioning of these animals has been a difficult task. Many of them arrived after their sea voyage with strangles or in such a condition as to make them unfit for duty for a considerable period of time. In addition, many of them, approximately four hundred, are under five years of age, and require careful handling. Very few of these animals were broken before they arrived, and there has been a heavy casualty list in the near-by hospital for some months.

The feed situation for horses has been another one of our problems. Oats have been furnished in good quality and in sufficient quantity. There has been little or no "hay" as we understood the word in the United States. The bulk forage has consisted for some months of chaff, which is nothing more nor less than chopped up oats and straw. It was found very unsatisfactory to feed this chaff in nose bags and some 200 twenty-foot feed troughs had to be constructed without delay. For the last few months the long forage has consisted of the oat stalk with the oat heads upon it. The result is that the animals eat the oats, pull out the straw, and trample a great deal of it under foot. This causes considerable waste. It is the opinion of all officers, including the regimental veterinarians, that the animals cannot do as well on this present long forage. It is deficient in nutritive value and should be replaced at the earliest possible moment, preferably by a roughage similar to the hay grown in the United States or at least by the chaff referred to above.

Approximately 60% of the animals show a great deal of thoroughbred blood. They have good heads and necks, long sloping shoulders, and straight legs. There is a strong tendency, however, to short sloping croups, and light bone. The high withers have been a source of trouble. Of the considerable number of small, stocky, draft-type animals received, a few have made excellent pack horses, but many are unsuited for use as either pack or riding horses because of their too-broad backs and almost entire lack of withers. Some of these have made excellent work horses, however, and all troops have developed good teams.

Training

Training has been based upon war department directives applicable to this theater of operations, and upon personal accounts of troops who have seen active duty. Much emphasis has been placed upon rifle firing at short ranges, conditioning marches, dismounted reconnaissance of the rugged terrain of this locality,



1—Draft type, used for riding, as pack, and work horses. 2—There is a high percentage of mares in horses received. 3—Good type trooper's mount. 4—A good pack horse of the draft type.

and hand-to-hand combat. Again, the bayonet has been a very useful weapon in preparation for this type of fighting.

Officers and noncommissioned officers classes are conducted, and in general our training has corresponded very largely to that required at home.

The regiment has been seriously handicapped by details and special duty requirements—varying in number from 100 to 300 men—which have been continuous since our arrival.

General

The climate of this locality is excellent. The health of the command, aside from the casualties incurred in breaking the remounts, has been excellent—comparable to that of our best located posts at home. Since June of 1942 there has been but one case of venereal disease incurred. This I believe is a record to be proud of.

The greatest problem now confronting us is the preservation of the present high state of morale which is maintained by keeping everyone reasonably occupied, yet providing time for such recreation as conditions afford. This cavalry regiment, trained to fight mounted or dismounted, intends to be ready to meet the enemy.

★ ★ ★ ★

Many things hitherto unnoticed even by the thinking public have been brought to light, frequently with new emphasis and implications, through experiences undergone on the China and home fronts in connection with the present conflict. The usefulness of the horse in modern warfare is one of such discoveries. In reality, without the services of this dumb, faithful animal, Japanese troops would not have been able to carry out successful, daring attacks upon enemy positions, particularly in battles on the rugged steeps and in the narrow passes of the Chinese mountains. Contrary to popular expectations, the increasing mechanization of the army has by no means diminished the utility of army horses. The present hostilities have certainly established their distinct place in modern warfare.

From the April, 1939, edition of the *Tokyo Gazette*, a monthly report of current policies, official statements, and statistics of the Japanese Government published in Tokyo.

Superb Cavalry Mounts

From Soviet Horse Ranches*

REMEMBER how Belov's famous cavalry broke through the redoubtable Guderian's lines and sent the German "tank god" scampering back? Or the scores of other instances of shattering avalanches of mounted men that struck fear into the fascist troops and crumpled up their lines under the hoofs of superb horses to the accompaniment of flashing steel?

Everyone knows the punch of the mounted arm of the Red Army. Yet few stop to think what that punch is based on, where it derives—besides the valor and stamina of its men and the skill and grit of its commanders—the strength that has disproved all those "military theoreticians" who doomed the horse to oblivion as an important participant in frontline action.

To get to the source of the colossal momentum of a cavalry charge, one must turn to the far-flung regions of the USSR where the common, obscure horse rancher and breeder has spent long years in raising steeds that now have stood the country in good stead as a reliable battle reserve. Their persistent, stubborn work runs back for a long time.

*Moscow News.

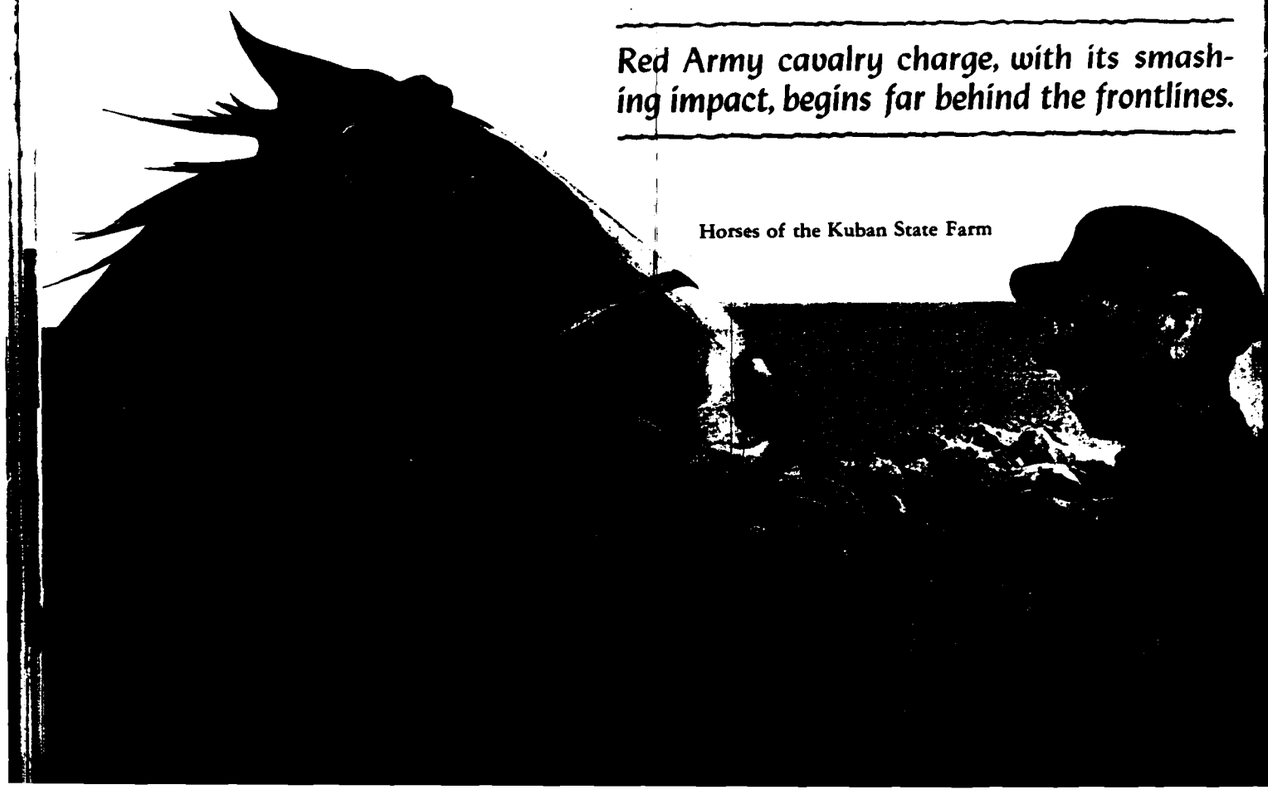
Vast Reserves

A large army of horses at the front—supplied in abundance by collective horse farms—requires vast reserves of remounts in the rear. The Soviet Union has these reserves, and even the months of war have not made much of a dent in them. In Siberia alone, there are many regions with 30,000 to 50,000 horses suitable for the army each year. What is more, these remount reserves are slated for a further increase this year, with the plan calling for a considerable rise in the number of head as against last year.

Incidentally, it must be remembered that not every horse is fit for service in the armed forces. Cavalrymen have their own requirements—only enduring and fleet-footed chargers will do for them—while the artillery evaluates its horses by their strength and plodding power. So it goes all along the line, with each arm presenting its own demands as to breeds. But they all must be superbly trained.

The Russian army has always been famed for its sturdy horses and skilled trainers. Field Marshal Suvorov made his cavalrymen especially train their horses to cope with the bristling square that then was a potent tactical stunt on the battlefield. Great masters at training cavalry mounts are Cossacks and Caucasians, as well as the steppe dwellers of Kalmuckia, Kirghizia and Turkmenia, all of whom have added to their adeptness at the game during the last two decades.

Red Army cavalry charge, with its smashing impact, begins far behind the frontlines.



Horses of the Kuban State Farm

These Kirghiz horses, shown on a collective farm in Kirghizia, are descendants of the sturdy Mongolian breed.

Wide Range of Breeds

The tremendous variety of climatic conditions to be found in the Soviet Union is one of the factors that contributes to the fulfillment of the demands placed by the army. Thanks to them, the country has a wide range of breeds suiting the most varied requirements, from modest barnyard dobbins to pedigree pacers and heavy-duty draft horses. From the very beginning of Soviet large-scale stud farming, it has been placed on a scientific foundation. Specialization of a sort took place in the various regions, and each centered its attention on the breed best adapted to it.

The Cossacks of the Don, for instance, breed the famous Don strain of unexcelled cavalry horses. Though the Don breed has spread to many other regions, even as far away as distant Buryat-Mongolia, it is the Don area that still remains the main supplier of the breed that bears its name for the army.

The autonomous Soviet republic of Kabardino-Balkaria in the North Caucasus produces the local Kabardin breed, unexcelled for service in the mountains.

Turkmenia is the home of the Akhal-Tekin desert horse, hardy and enduring. Nor is it capricious as to food, which is a distinct advantage under frontline conditions. A few glasses of water and a couple of pork sandwiches will suffice for a day!

Gorky region and the Mordovian autonomous republic give us our Brabancons, well adapted for artillery, and Tambov and Ivanovo regions, our Clydesdales.

The central regions of Russia and the Volga area raise the Russian and Russo-American race horses, so popular in the army.

The thousands of horses of the famous Kirghiz strain, found in the cavalry units, are daily bearing out on the battlefield their reputation for stamina and speed.

The collective farmers are devoting themselves heart and soul to raising saddle horses worthy of the Red Army cavalry; they know that the lives of the men defending the country and their peaceful labor often depend on the animals they breed.

The Kirghiz horse is a descendant of the sturdy Mongolian breed that appeared in Central Asia along with the countless nomad tribes moving westward from Mongolia. This was the steed used by the invincible warriors of Genghis Khan in their thousand-mile marches, and, although not very prepossessing in appearance, it moves over mountain paths with the agility of a goat, can make a run of from 60 to 80 km. under a blazing sun without reducing speed, and if it so happens that the rider cannot provide fodder, will find its own food, for it eats anything its strong teeth can chew.

Evolve Improved Cross

Considerable work on improving the breed of the Kirghiz horse has been carried on in recent years. After

many experiments, an improved cross between the Kirghiz horse and English and Don strains, as well as the Oryol trotter, has been evolved, Kirghizia now has a splendid animal which, while retaining all the merits of the Mongol breed, displays the speed of an English or Don purebred on the race track and the endurance and power of the famous Oryol strain on the field.

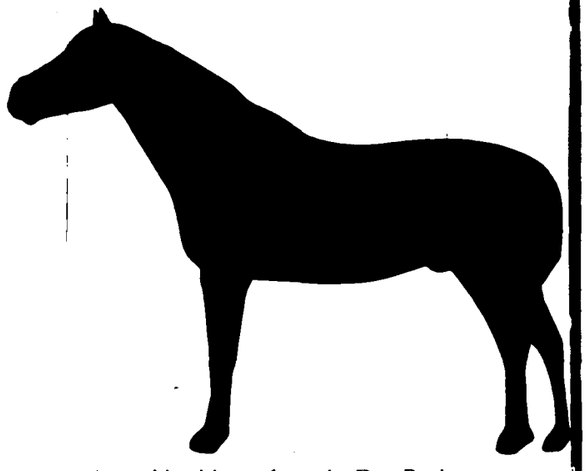
Between 1935 and 1940 inclusive, the number of head of horses in Kirghizia rose by 48.7%—the number of cross-breeds increasing 3.5-fold. In the last two years, the number of head of improved breeds also increased considerably. This development came as a direct result of extension of stud farming in the republic. Whereas in 1934 there were all in all 127 collective farm stud sections in Kirghizia, by the beginning of this year their number had risen to 1,590.

The improved Kirghiz strains have gained renown far beyond the confines of their home in central Asia. Last year they participated in races at the country's biggest tracks, and turned in some splendid times. For example, one English-Kirghiz cross-breed covered the 1,500-meter distance in 1 min. 48.9 sec.

Though not much to look at, the tough and brawny Siberian horse—a relative of the famed Mongolian breeds—did good work last winter at the approaches to Moscow. This short-legged, low-slung war horse is a priceless cavalry mount particularly in winter conditions.

War Needs

This regional specialization, incidentally, played no small part in making it possible to render the maximum assistance to the collective horse ranches. Many collective farms in all regions of the USSR now have their own studs, while in regions where horse breeding has been most developed, there have been set up pedigree horse breeding stations, supplying the farms with colts and stud horses. These stations also propagate the best methods of raising horses, select the best breeds to raise in the given district and check up on pedigrees, etc. Besides them, there are the state-owned stud farms and stables, state farms, and race tracks, which play a big rôle in improving and increasing the remount reserves of the country.



A pureblood horse from the Don Region

A Soviet horse farm in Kazakhstan. These horses are quite similar to the Kirghiz strain.

The war has made some changes in the appreciation of a number of breeds of horses. For instance, some pure bred, pedigree strains turned out to be poorly adapted to the difficulties of campaigning in the field. Though the scions of famous record breakers are splendidly trained and taken care of, many of these "hothouse" products proved too delicate for the requirements of war. The cavalrymen at the front prefer local breeds—sturdy draft horses that combine fleetness with endurance and strength.

Love for horses and century-old experience at taking care of them go a long way in explaining the work of the breeders to whom the men at the front are so much indebted. It is this love, incidentally, that long before the war helped in building up horse breeding and establishing the collective stud farms, which have been of great importance in insuring the Red Army the equine reserves it needs. Perhaps one day there will be a memorial raised to the unknown horse fancier to whom the Red Army cavalry owes a good deal of its successes in battle.

The Campaign Horse

by Major Emil Engel, 2MC Cavalry

ABOUT the eleventh century, Genghis Khan overran more territory with his Mongolian type of horse (that could subsist on pasturage alone—winter and summer) than any conqueror of any time. His armies covered as much distance as a thousand miles a month, and up to eighty miles a day.

There are few horses today that could duplicate these feats, mainly because most of our horses are barn-raised. In the days of Genghis Khan, horses were what we call range or pasture-bred, and very few were barn-raised. For military purposes—then or now—the pasture or range-bred horse is far superior to the barn-raised horse.

An interesting example of the hardiness of the range-bred horse is found in the descendants of the "Barb," a breed of horse from the North of Africa with which early Spanish expeditions to America were often equipped.

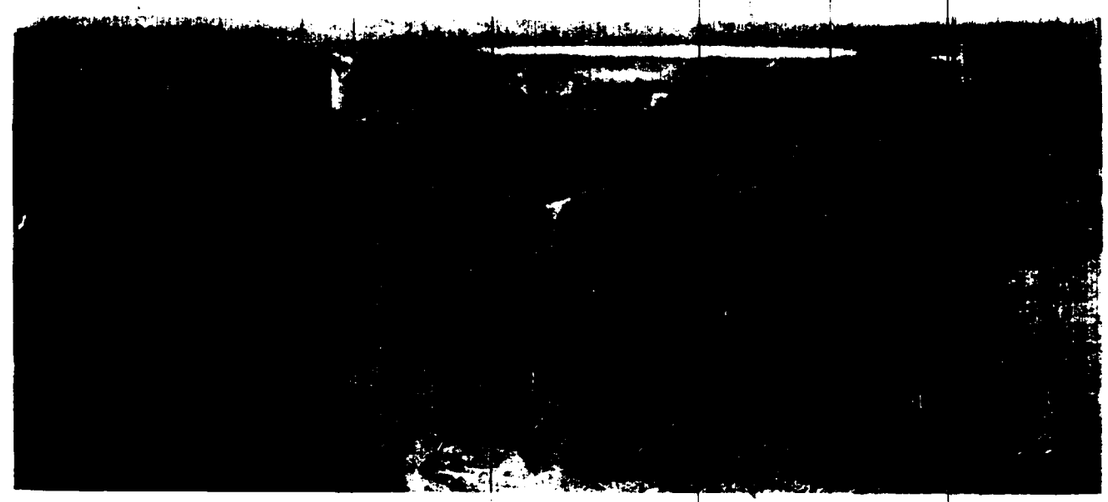
About three hundred years ago, one (or more) of those expedition vessels was wrecked near the islands between Cape Lookout and Cape Hatteras, off the Carolina coast. The surviving horses either were washed ashore or swam in, and today their descendants are still there.

The islands on which they have survived have very few trees and no streams. The principal growth is a sort of marsh grass, but the horses have such an efficient digestive tract that they have assimilated enough from their relatively poor pasturage to propagate for more than two hundred years.

Barbs were selected for many of the Spanish expeditions, not only because they were numerous in the north of Africa at that time, but because they could subsist on "nothing." Also, they could move forward at a vigorous gallop and were strong enough to pack the weight. They were "easy keepers," "free goers," and galloping types. "Action carries weight"—and herein lie all of the essentials of a good campaign horse.

Balanced Physical Development

In breeding and raising horses that will meet campaign requirements, all of the animal's physical systems must be brought to a point of balanced development: his nervous system, which coördinates everything; the circulatory system, which brings oxygen and repair materials to all the tissues and cells, and carries away waste; the digestive system, which takes raw material and turns it into blood and lymph; and the muscular system, both voluntary and involuntary, which controls all movement—external for the work to which the animal is put, and internal, for the various processes of life itself.



Descendants of the early campaign horses of the Spanish conquistadores have lived on the sand banks off the coast of North Carolina for 300 years. They are believed to have come ashore from a wrecked Spanish galleon and have propagated on these relatively poor pastures for all of these years. They have the characteristic goose rump of the Barbs. These Spanish expeditions were outfitted with horses from the north of Africa. They are one of the foundation strain of the present English thoroughbred. Photo by author in August, 1941, at the Diamond Head Pen, Shackelton Banks, off Beaufort, N. C.

The size of the horse, likewise, must be in balance with all these systems. One of the worst errors in raising horses today is the practice of forcing the skeletal growth, without getting the necessary and corresponding growth of all the other systems. This produces an animal big enough, but without any physical vigor or activity. The race track is filled with thoroughbreds like this. "Early maturity, early decay," is an old saying on the track.

Pasture in Campaign

The best food in the world for growing horses is good pasture. There is no dry food that can equal it. If food is good for the *growing* animal, it is also good for the *grown* animal.

Pasture, both winter and summer, should form the basic food for all military horses. Dry foods should be supplementary. In practice, this is usually reversed, and barn feeds are made the basic food; and pasture, the supplementary feed.

Many will say that it is impractical to give horses pasture; that it disturbs army schedules and daily routine. The old officers, experienced in Indian campaigns, found a way to do it. In the cavalry, it used to be customary to have mounted drill and stables completed by ten o'clock. Horses were then turned loose in the corral, and the herd guard of four men, with an experienced stable sergeant in charge, assembled mounted outside the corral gate. The gate was opened, and the horses were quietly, and without urging, allowed to wander through the gate and were gradually herded out to the grassy drill ground, where they remained until shortly before afternoon stables. This gave them four hours of grazing—and any horse can eat a belly full of lush grass in this time. In the days when this practice was maintained, both hay and grain rations were very much reduced.

During campaign, our old cavalry officers worked out an excellent system that kept their horses in good shape without any shipments of either hay or grain. They were saddled up and on the march before sunrise. They marched until about ten o'clock, and then they went into midday camp for four or five hours. Horses were groomed and minor injuries touched up; then they were either turned out to graze or were picketed out individually.

The men had a heavy meal, washed and hung clothes on bushes to dry, bathed, and rested for several hours. About three o'clock, they saddled up and marched until about an hour before sunset. Then they went into camp for the night, and turned the horses out for night grazing.

In a hostile country, this method not only gave subsistence but also security. Men and horses were up and out long before daybreak and ready for any predawn attack. The camp in the middle of the day enabled the outposts to detect any approaching hostile force. Because of the short stay, even if detected, the bivouac was vacated by the time that the enemy was ready for an attack. When finally encamped for the night, there

No. 1

Lady Porter, the barn-raised thoroughbred pictured above, is a "Free Goer" and a "galloping type." Not an "easy keeper" on winter pasture alone, she will stay in excellent condition on pasture from May to December inclusive, but falls off to unserviceability on winter pasture alone in late February and March. Photo shows her being ridden at the ordinary trot with a little collection. Reins stretched and jaw supple. No curb chain.

was only about one hour of daylight left for the enemy to discover the location. This method was used by General Crook during the Indian Campaigns and later again in Mexico by Colonel Dodd (who had served under Crook).

The time has come when the tremendous military value of the horse in this war should be realized. In any discussion on the subject, the question always arises as to the difficulties of supplying our animals with hay and grain in distant theaters of war. This is not a problem at all. A horse *does not* require "high octane" forage to keep him fit to fight today, any more than he did 75 years ago. He can still be raised and trained on pasture forage and be strong and vigorous. It is absurd to think otherwise. It has been proved in Russia today.

Russia is the only country that is maintaining a large force of horse cavalry, and their horsemen, many of whom are descendants of the old Mongol invaders of the Genghis Khan period, raise and maintain their animals with pasturage as the basic food and dry feeds as supplementary.

Winter Pasture

Winter pasture is now practically unheard of among our eastern horsemen. Very few know that the blue grass that grows so well in our eastern and middle states, when allowed to mature, will cure on the stem and make excellent winter pasture. The writer has kept horses for years, and is keeping them at this time, on such pasture. Although the barn door is always open, the horses, even on the coldest nights (ten and more degrees below zero) seem to prefer the outdoors and the winter pasture. Corn on the cob is fed merely to keep them coming into the barn, and for those barn-raised horses that have not the efficient digestive systems of the range or pasture-raised horses. When

hay is thrown down, they kick it about and go outside to eat, unless the snow is very deep and all of the grass is covered up. Even then, they will paw the snow away to get at the brown winter blue grass. These pastures consist of blue grass and white clover; the white clover disappears early in January but reappears again late in March.

An old veterinarian, who joined the First Dragoons in 1858 and went with them to Walla Walla, Washington, told the writer that when the grass was high enough for the horses to bite, they took the field; and they never returned until the snow drove them in. During this time, they never saw a bale of hay or a sack of oats.

Experience in maintaining horses in this manner is necessary so that one can calculate just how long the animals will maintain themselves on the amount of pasturage available. This necessitates moving to fresh pastures, unless the acreage per animal is very large. The great herds of horses used by the Mongols made a nomadic people of them.

No. 2

Same as number 1. Progress in training consists in sending up to the flexed jaw more and more muscular impulsion. This can only be done slowly from day to day. All the muscular impulsion that the mare was capable of receiving on the hand while holding a good position of the head, neck and shoulders is shown in this photo. The whole horse is shortened, and all the joints show more flexion and springiness. Her trot is cadenced.

During the growing season, one horse can be maintained on two acres of good pasture. The same horse in winter pasture from December first until April first will require at least another three acres, which should have been saved for winter pasture by not grazing it. The carrying capacity of pastures varies considerably because of the fertility of the soil and the amount of rainfall.

Energy and Sustained Effort

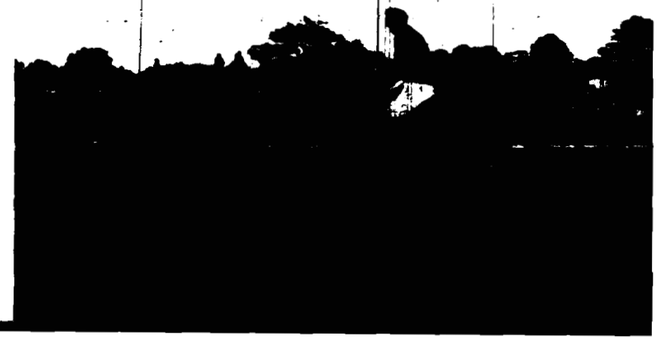
Exercise from birth, and all through the growing years, is as important as pasture. The healthy growing horse on good pasture takes exercise by instinct. This is a sure sign that the animal is growing properly; and if he does not exercise, it is a sure sign that something is wrong. This applies as well to the mature animal. When an older horse stops joining the herd in its regular gallops, he is ill or finished. The young healthy horse keeps galloping with brief intervals of rest for fully twenty minutes, and puts everything he has into the effort. The young horse that is always lagging behind most assuredly has had some interference with his growth.

Big pastures afford a better opportunity to study horses than do small paddocks. The ratio of the capacity of the circulatory system to the size of the horse has much to do with the vigor and recuperative powers of the animal. This is developed only during the growing years and only as a result of exercise. Obviously, the more energetic the horse, the better developed his circulatory system must be. This brings oxygen to the muscle cells, and the horse with the finer network of capillaries is able to get more oxygen to the cells than one that has not this development. The characteristic of the barn-raised horse, regardless of how well bred, is the lack of ability to make a powerful and sustained effort.

The nervous system, with its fine network of nerves, is also influenced in its growth by exposure to weather as well as by exercise. A windy country is a better horse

No. 3

Second generation of a pasture-raised mare. Sired by a two-year-old, half-bred colt that had not been altered and who covered a polo mare. Foaled in the field and raised with very little grain in the winter (one pound daily), she will stay in the condition seen here all winter long on nothing but winter pasture and will try playfully to buck you off. Although she is the same height as the thoroughbred in Nos. 1 and 2, her girth is twelve inches more and her weight is fully 100 pounds more. Photo shows her being schooled at the gallop to engage haunches under the body at every stride. She is not yet able to get the jaw relaxed from a muscular impulse and stops from full gallop at a touch of the bit. No curb chain. An "easy keeper."



raising country than one that is not subject to storm. The islands along the Carolina coast, where the Spanish ponies have propagated, is subject to the most violent storms and more ship-wrecks than any other section of our long coast line. Exposure to weather hardens men and horses. Starvation and deprivation of proper food and sleep only injure them. *Strength of nerve,* or the ability to work with a cool head under the most trying conditions of every sort, should be the outstanding quality of the military man and the military horse.

The capacity of the animal to stand up and work under short rations is determined by what is known as the alkaline reserve of the animal. Fatty reserve alone is not enough. The daily processes of life require lime, potassium, sodium, iron, and other minerals. These are in chemical combination with organic matter to perform certain physiological functions. When the horse is muscular instead of fat, and has pasture as its basic food, the alkaline reserve and vitamins are present. Nature puts its reserves to work in strengthening all the tissues of the body. Its reserves are not idle. When the animal is forced to work on a shortage of food, it is able to subsist on itself for a considerable number of days.

During the expedition in Mexico in 1916, the 7th Cavalry marched about five hundred miles in one month on ten days' rations for the men and horses. Horses were grazed, and the men picked up something from the country. Young horses, like young men, have not built up over a long period of years, big reserves that will stand up for a long period against hardship. Here is where the animal can surpass the machine. Where an older man or a horse shows a lack of physical endurance, it is only because they did not build their own reserve.

Speed

To meet the competition of the machine, horses must show just where and when they are superior. In new modern armies, the machine plays the bigger part and has set a standard of speed that makes it necessary to get more out of our horses.

Where foot troops are now expected to march twenty-five miles in eight marching hours, horse cavalry must be able to march fifty. This is easy if while on the march, the rider will always lead his mount wherever he can travel on foot as fast as the horse.

In 1902, there was a horse race (military) from Brussels to Ostend, a distance of eighty miles. The winner made the distance in four hours and fifty-five minutes. He alternately led his mare and rode her at a gallop. I saw this mare in France. *Courageau* was her name. She was a small, bay, high school mare from the French cavalry school, but she was small only in height, as she was fairly broad in front and behind and showed no signs of malnutrition or forcing during the growing periods. She was also an aged horse.

The ability to subsist on "nothing" is not enough for the campaign horse. It must also be able to move at speed. In Mexico, in 1916, I watched a troop of the 7th Cavalry of about forty men ride to its designated position after enemy action had started. They rode at a gallop of less than sixteen miles an hour, and in going about two miles those forty horses were spread over one mile by the time that the leading officer had arrived at his position. The horses were not thin. They had marched all day, however, over mountainous trails. The horse that the leading officer rode was a small, range-bred horse only recently purchased by its owner.

This inability to get up speed is not a question of breeding. The race track has plenty of race horses that hate to gallop. I have had a number of thoroughbreds that, when turned out in the pasture with my own pasture-raised horses, would stand still and watch them run. These horses were perfectly sound, young, and in some cases bred by the leading sire of the previous year.

Many of these lazy thoroughbreds reach the hands of polo dealers and are a disappointment. They have everything except the energy and vigor. Nearly all thoroughbreds are barn-raised, and I have never had one that could go through a winter pasture alone without losing so much in flesh that it affected the serviceability of the animal, while a pasture-born and raised thoroughbred, although not as tall, would stay in good flesh and even try by playful bucking to dismount his rider.

Conclusion

This question of vigor is a matter of the balanced development of the nervous and circulatory systems, while the question of living on "nothing" is a matter of the development to the highest point of efficiency of the digestive tract.

The plane and tank have become indispensable in warfare, and the horse is a valuable supplement to them. Mud, snow and slush, cold weather, and rain are things with which the pasture-raised horse grows up. They impede the animal very little. His food and pasture are native to most parts of the world.

The military aim should be to find a balance between mechanical and animal transport.

The great soldiers are the creative tacticians—General Arthur MacArthur. Maneuvers, American Lake, 1904.

Tactics change every five minutes—Napoleon.

Victory goes to the side with the last reserves—Napoleon.

Victory hangs by a thread—Napoleon.

All the above are still applicable to the present war. The horse now plays a very small part, but the part it plays may be the thread that gives victory to the side that has the creative tactical ability to use the animal that has played such an important part in the history of war.

SPEAKING IN JAPANESE

by Bruce Barnes

SERVE your country!—learn to speak Japanese. Nowadays there's a crying need for people with a knowledge of the language of the yellow race. And you can be one of these people if you're willing to devote a little time to conscientious study. The language really is not too difficult. In fact, you can learn enough in a few days time to get you by. Serve your country!—learn to speak Japanese.

The first thing to learn in any language of course, is correct pronunciation. Fortunately, in Japanese this isn't difficult. For the most part, I think we can say that consonants are pronounced as in English. Vowels, however, must be sounded according to the chart below.

"A" is pronounced like the *a* in *cart*
"E" is pronounced like the *e* in *shred*
"I" is pronounced like the *i* in *ski*
"O" is pronounced like the *o* in *below*
"U" is pronounced like the *u* in *blue*

Occasionally in a Japanese word a letter is doubled. (tt, oo, ii, pp, kk, etc.) When this occurs, in pronouncing the word you simply hold the *sound* of the doubled letter a trifle longer than you normally would if it were not doubled. (Thus, "i" is pronounced like the *i* in *ski*. But "ii" is pronounced like the "eeee"-sound in "eek.") This rule, incidentally, is true of both consonants and vowels.

Occasionally in your study of Japanese you will notice that a letter has a short dash (-) over it. This, too, indicates that the sound of the letter must be held a fraction longer than normal.

Bearing these pronunciation rules in mind, let us turn now to a few Japanese sentences which you may find it convenient to memorize. In fact, for best results, speak them out loud. You'll learn them more quickly and easily if you do. Our sentences then are:

Mizu ga hoshii ..... I want water
Gohan ga hoshii ..... I want food
Naifu ga hoshii ..... I want a knife
Machi ga hoshii ..... I want some matches
Empitsu ga hoshii ..... I want a pencil
Uma ga hoshii ..... I want a horse
Yofuku ga hoshii ..... I want clothes
Zubon ga hoshii ..... I want trousers
Sekken ga hoshii ..... I want soap
Tabako ga hoshii ..... I want a cigaret

From the above you can readily see that to express a desire in Japanese, all you need do is place the name of the object wanted in front of the phrase "ga hoshii." By knowing this little trick, you can easily make a meagre knowledge of the language cover a lot of territory.

Here is another expression you may need to know—along with the "formula" for using it.

Sore wa warui ..... That is bad
yoi ..... good
kirei ..... clean
umai ..... good tasting
kekko ..... delightful—fine
kitanai ..... dirty
mazui ..... unpalatable
ōkii ..... big
chiisai ..... small
abunai ..... dangerous

In line with the above, should you want to say "this," instead of "that," substitute "*kore*" for "*sore.*"

Finally, here are a few common expressions and military terms you may want to know. Once again I suggest that you practice them out loud.

Konnichi wa ..... Good day
Konban wa ..... Good evening
Arigato Gozaimas ..... Thank you
Kochira ye oide ..... Come here
Hayaku ..... Hurry!
Hai or *E* ..... Yes
Iye ..... No
Ki wo tsukete ..... Be careful!
Wakarimasu ..... I understand
Wakarimasen ..... I don't understand
Wakarimasu ka ..... Do you understand?
Goran nasai ..... Look!
Baka! ..... Fool! (Don't use unless you want to start a fight.)

ki-hei is cavalry
tai ho is cannon or gun
yaku bo is cartridge
hohei is foot soldier
shikku suru is to gallop
tsuji is interpereter
seki ju jisha is Red Cross Society
shoju is rifle
noru is to ride
isha is doctor
teki is enemy
tomare! means halt!
tsuna is rope
kihei rentai is cavalry regiment
uma is horse
shageki is musketry
tzu is map
meirei is a command
tazuna is reins
kura is saddle
abumi is stirrup
kuruma is wagon

JAPANESE NIGHT OPERATIONS

JAPANESE military leaders consider night attacks one of their specialties. In these, they were very successful in the Russo-Japanese war, the Manchuria "Incident," the China "Incident," and more recently in Malaya, Borneo, and the Philippines. They have experimented extensively with various night tactics, over a period of many years, and have adopted certain specific techniques.

As a rule, the Japanese have only limited objectives at night and do not attack very deeply. Once these objectives have been accomplished, the Japs usually effect a slight withdrawal, and reorganize for rest during the next day (except for reconnaissance or infiltration activities).

Although the Japanese admit that night operations result in more confusion and less control, they feel these disadvantages are more than offset by the advantages of greater mobility, secrecy of movement, and therefore greater surprise.

A Dutch officer, who escaped from Japanese confinement in Borneo, attributed the following statement to a Japanese officer:

"You Europeans march all day, prepare all night, and at dawn launch an attack with tired troops. We Japanese allow our troops to rest all day, while we reconnoiter your positions exactly. Then that night we attack with fresh troops."

Objectives

The objectives of Japanese night attacks usually are to locate and attack the front lines of the opposition with only limited or shallow objectives. "However, there will be times when it is necessary to attack the enemy's position in considerable depth," their manual explains.

Before the attack, each subordinate unit is given a clearly defined terrain objective. Objectives can be clearly defined only by thorough daytime reconnaissance, or by drawing hostile fire. Villages are avoided because they are difficult to attack at night.

Reconnaissance

Japanese regulations emphasize the importance of thoroughly reconnoitering terrain over which night operations are to take place, and of obtaining detailed information as to the location of opposing centers of resistance, machine gun positions, obstacles, and searchlights. The reconnaissances are made in daytime. Japanese patrols, frequently moving for long distances on their stomachs at a snail-like pace, get as close as possible to opposition positions without being observed. If they are unable to locate these positions exactly, they sometimes deliberately expose men to draw fire from the opposing forces so that the latter will give their locations away.

The patrols also select the points where the opposition's wires will be cut.

Sometimes, the Japanese make a second reconnaissance just before dark to satisfy themselves as to opposition positions, or to determine whether new positions have been occupied.

Formation of Plans

Japanese military leaders go into great detail in mapping plans for attack. This is doubly true for night operations. Particularly emphasized are march directions, methods of identifying friendly troops, liaison with adjacent units, the necessity for silence in order to achieve surprise, and flank protection.

Obstacles which would interfere with the attacks are removed by destruction squads—usually engineers—about an hour beforehand. This phase includes the cutting of lanes through barbed wire.

Approach Movements

In approaching, the Japanese select routes over which the troops will make the least noise. They generally move by column rather than in a line, in order to maintain as much control as possible up to the point of assault.

To maintain direction, the Japanese may use any or all of the following: compass, flares, rear lights—which give direction by alignments; searchlights or disappearing lanterns; markers, white stakes, strips of paper; lines of chalk, flour, or tape; and artillery shells fired for direction.

The Assault

Japanese techniques in the assault are quoted from their own manual, as follows:

"(1) *With limited objectives.*—When the attacking unit gets close to the enemy's position (the assault position), the commander orders a front-line group to assault. The remainder of the troops will quickly observe the general situation. For instance, if it is necessary to strengthen the front line with reserves, these should either attack the flank of the enemy, or enemy counterattacking troops. The commander watches for these opportunities, and leads the battle with firm determination. Placing reserves in the front lines thoughtlessly and unnecessarily will bring about confusion. This must be avoided.[1]

"At the start of combat, the commander of the reserves will send out liaison men to inform him regarding the movements of our assault echelons and the enemy situation, to connect the reserves with the front-line unit, and to secure our flanks, rear, and front.

"When the assault has captured the enemy position, quickly organize your attacking forces. For example, the machine gun and infantry gun units take up their firing positions, security measures are taken, order is quickly restored and preparations are made to repel any enemy attack to recover the position just lost. The reserve commander will send out patrols as quickly as possible to the rear, flank, and front to determine the condition of the enemy, and he will be prepared for action with the remainder of his troops.

"The machine gun takes part in the night attack by occupying a secure position. Thus, it ordinarily cooperates with reserve troops in action, and may at times participate in the direct night attack, according to the opportunities for firing.

"When attacking by sheer strength, the machine gun is used to cut off enemy communication with other adjacent areas. Furthermore, it opposes the counterattack from other areas and concentrates its fire at the proper time. For this reason, the machine-gun plan must consider the coöperating fire plan of the artillery. The use of firearms will expose our plans, and it may bring hostile fire on our troops. There is also the danger of hitting friendly troops. Therefore, make thorough arrangements beforehand.

"(2) *Attack in depth.*—When attacking deeply in depth with two assault echelons, the front-line unit will capture the predetermined hostile position and take security and reconnaissance measures, restore order, and make arrangements for the enemy's return attack. It must prepare quickly to be leap-frogged by the second echelon of attack and always must make local conditions clear to this unit. If the first line unit receives a counterattack by the enemy, do not fire, because it would endanger the leap-frogging unit.

"The second attack echelon takes up the attack formation at the beginning, as a security measure. Before leap-frogging, it will put out security reconnaissance. Maintenance of direction will be considered after leap-frogging. In order not to get intermingled with the first echelon unit at the time of leap-frogging, the distance and intervals before and during the attack are controlled accordingly.

"The second assault unit of attack must keep in definite contact with the first-line unit, and keep itself informed of the enemy situation and the progress of the first echelon. It will be prepared to advance by leap-frogging as soon as the order arrives. At this point, do not come too close to the first-line unit because of the danger of getting into the lines of fire.

"The commander will determine the time when the second echelon must first advance to the attack from the place of departure. The time of advance will depend upon when the first echelon, leading out, has passed the second-line unit. . . .

"When the second assault unit captures the designated hostile position, the commander must get control of the unit quickly and then have the first assault unit advance to secure completely the occupied position. The remainder (the reserve) prepare for action."

Pursuit

The Japanese nearly always seek to capitalize to the fullest on pursuit. Even before combat begins, they have detailed plans for maintaining close contact with retiring forces. The following data on pursuit is quoted from their manual:

"The enemy will take advantage of darkness to conceal his retreat. It is important to gain early knowledge of this retreat by keeping a close contact with him. The battalion commander must make close reconnaissance, observe various signs, and always be careful not to lose the enemy. In order to clear up the possibility of an enemy retreat, do not hesitate to make a night attack with any necessary part of your strength.

"If the enemy's retreat is found out, the battalion commander quickly sends out a part of his strength for quick pursuit—the main force follows soon thereafter. . . ."

Machine Guns In Defense

"Because the development of battle during the night is very quick, it is necessary to put machine guns in positions where they will be able to concentrate their fire power on important areas to the front of the battalion's positions. The guns should be sited to have enfilade fire against the line of advance of the enemy, or in such a way as to be able to fire on a small, specific sector through which the enemy must pass. To obtain the most effective fire, machine guns are sometimes placed in the front line. Avoid placing guns separately at night. . . .

"Depending on the amount of natural light available, machine guns vary the firing method, and use night firing lights when necessary. . . ."

Retirement

"When you are retreating during the night, hinder the enemy's reconnaissance, and do not make any movements before darkness. According to the situation, make night attacks with small units, or have patrols to move about. These will help to deceive the enemy as to the true action you intend to take.

"As quickly as possible, make full use of the road with the main force, and concentrate your strength close behind the battle. Make sure that control will be well in hand by retreating in a column without confusion. . . ."

[1] Although the Japanese manual emphasizes the importance of holding troops in reserve during night attacks, in the present war the Japs have often thrown their full strength into the battle at the beginning.

How to Use Your Eyes at Night

MODERN WAR is often fought at night. This means that men must learn to see in the dark—or at least to use their eyes in new and unfamiliar ways.

This article is written to tell you how to make the best use of your eyes at night. It will help you, whether your job is in an airplane or a tank, on a ship, driving a truck, or just getting about on your own feet.

It will not give you the uncanny eyes of an owl or a cat, but it may give you just the edge on the enemy you need to get in the first shot—and to get home.

You already know that when you go into a dark room from a bright one, it is hard to see until your eyes have become used to the gloom. At a movie it takes a minute or two to see the vacant seat. It may take another minute or two to be able to recognize a friend. During these minutes your eyes become more sensitive to the faint light.

Adjusting for Darkness

Your eyes adjust in two ways for seeing in the dark. One way is by opening up to let in more light or to make maximum use of what little light there is. This works in the same way as a camera diaphragm, which can be opened up wide for taking pictures in dim light. Your eye pupils open wide in dim light and close to a pin-point opening when the light is very bright.

But this is not the most important change in the way your eye works in dim lighting.

You actually have two kinds of sight. Your day eyes use one kind of vision cells known as "cones." They are principally located in the very center of the eye.

Your night eyes use an entirely different kind of cells, the rod cells, which are mostly around the outside edge of the eye.

The rod cells used by your night eyes are color blind. That is why "all cats look gray at night." If you see a colored light shining at night, and it looks red or green or blue, it is only because it is bright enough so that you can see it with your daylight eyes.

But your night vision is much more sensitive to light of some colors than to others. Red is seen equally well by night and day vision. Blue light, however, affects your night eyes 1,000 times as much as it does your day eyes. For this reason it is extremely dangerous to use blue lights in a blackout because it affects the enemy's eyes just as much as it does yours.

Night eyes lack the sharp vision for detail that your day eyes have. If you want to see to read, if you want to watch the dial of an instrument, if you must look at a map, a road sign, or your watch, then you must use your day vision. For this you must have good light—the more the better. Especially if the print or other forms are small, the light must be bright.

Night eyes are extraordinarily sensitive to faint light. This is shown by calculations that an ordinary candle flame could be seen at a distance of more than 100 miles if the night were completely black and if haze, dust, and the curvature of the earth did not interfere. A lighted match is about as bright as a candle flame. Under ordinary night conditions, a match can be seen from a plane for many miles away.

Night vision is not in use as soon as you step into the dark. It takes time—a half hour or more—before your eyes are completely adapted to the dark. When you leave a sunny street to go into a darkened theater, or step from a brightly-lighted room into the dark outdoors, you are completely blind at first.

Then several things happen. First the pupil of your eye dilates, letting more light into your eyes. This is a mechanical action.

Next the cones of your day vision adapt to the darkness. This takes about 5 minutes, and after that you feel more comfortable about moving around in the pitch dark.

After a much longer time, your rod vision adapts itself to the darkness and you can begin to see shapes and outlines in the gloom that were not even vague bulking shadows at first.

Just how this change-over from cone to rod cells is accomplished is not completely understoood, but it is at least partly a chemical process.

The soldier who, at a command or an alert signal, leaves a lighted room to run on duty without having prepared his eyes is completely at the mercy of the enemy insofar as his vision is concerned. By the time he gains the use of his night eyes, the emergency may be all over.

And even when your eyes are adapted to the dark, flashing on a light, even for a very short time, may ruin your night vision for another half hour. You can lose in a few minutes all you gained by half an hour in the dark. The brighter the light and the longer you look at it, the more you lose.

Getting Your Eyes Ready

Complete darkness is the best preparation for night fighting. It pays to protect your eyes from light before you start and while you are out. If you can't stay in darkness, keep the lights around you as low as possible and don't look straight at them. If it is necessary to look

at any lighted object, be as quick as you can about it. Experiments have shown that looking at an instrument dial lighted only by radium paint will cut down the distance at which you can see a friendly or an enemy plane by 50 per cent. Don't look at the dial any longer than you must or the loss will be greater.

Experienced gun pointers and spotters know that they must not watch the flash of their guns as they fire. The flash of a 6-inch gun may dull the eyes for a minute or more. Under continuous fire at dawn or dusk it is impossible to aim some rapid-fire guns accurately at a target more than 7 times a minute if the gunners watch the flash. At night the blinding effect would be even greater. Looking away from the flash gives almost complete protection. Luckily the flash of rifles and small-caliber machine guns has much less effect on the eyes.

There are several ways by which one can become dark-adapted or maintain dark-adaptation, even though working in a fairly bright light. Each method is suitable for certain types of jobs, and each has its limitations and dangers. A patch worn over one eye will keep this eye ready for night duty at any time, but vision from one eye alone is not as accurate as binocular (two-eye) vision, especially in judging distances of near-by objects. An individual may work in red light, or wear close-fitting red goggles, either of which are effective since red light has little effect on the rod cells and leaves one ready for nearly instant action in the dark. It is wisest to consult a medical officer concerning the necessity for such preparation, and the methods best suited for the task at hand.

Using Your Eyes Properly

Always remember that you must look a little to one side in order to see best on a very dark night. Learn to pay attention to things which are just a little off to the side. Learn to keep from looking directly at any object. As you feel your eyes drawn irresistibly toward what you want to see, just let them slide on over it to the other side and look again with the tail of your eye. It takes practice to learn to do this without fail, but it is worth the trouble to learn the trick.

And don't keep looking steadily to the same side of an object. This will make it disappear, too.

Try it out yourself and see how your eyes at night can play "parlor magic" tricks on you.

When in your darkened room or outdoors, hold up your finger and look steadily at it. It will disappear. Look a little to one side and it will appear again. But if you keep staring at this side it will soon be gone again. Move your eyes to the other side and back and it will reappear.

This means that in searching the sea or the sky for a dark object, you must look at first one area and then another. When you think you have spotted something, keep looking first on one side of the object and then at the other, or above and below it.

But don't try to sweep your eyes over the sky or the horizon—you can't see well while the eyes are moving. "Scan" the sky, don't sweep over it. Night eyes are slow in responding. At night, a faint object may not be recognizable until after you have looked near it a number of times. If you have ever hunted quail in the morning or watched deer in the dusk, you know that you can look right at such a camouflaged object for a while before you notice it. In darkness, such an object is even harder to pick out because you won't see it at all if you stare. You have to look again and again at points near it.

Contrast Helps Night Vision

Another thing that affects our vision at night is the contrast between an object and its background. If the thing observed is very different from its background, it is much more easily seen. An airplane may be clear if you look up at it against the night sky, but invisible if you look down on it against the dark ground. A ship may show up clearly against a star-lit sky, but fade into the background if you are looking at it against a background of dark water.

If light from the moon is reflected onto the under side of an airplane from white clouds below, the plane may become almost invisible from any angle.

To notice small differences in contrast, it is essential to have clear vision. It is for this reason that windshields must be kept clean and free of scratches or fog. These tend to scatter light in all directions and reduce contrast. Careless night fighters have been known to tolerate enough dirt on their windshields to double the time it takes to see a plane moving along near by. And sailors on ships sometimes let the salt from spray pile up in blotches on the glass. This is courting death.

For the same reason it is important to keep down the lights on your side of a windshield. Any light on your side reduces the contrast because stray light spreads over the whole glass and reflects in your eyes. That is why you push up close to a window when you try to look out at night. By coming up close, you shade part of the glass and increase the contrast of the objects seen through this part. If it is necessary to have any light on your side, keep it as dim as you can and screen it from the glass. This also helps your adaptation to darkness.

Vitamins

There has been a good deal of talk about the effect of shortages of vitamins A and C on ability to see at night. These are the vitamins in fresh vegetables, cheese, and fruit. People who don't get enough of these vitamins do become poor in night vision, but regular Army and Navy rations supply plenty of these vitamins. Occasionally, when boats are on long trips or when fighting lasts until fresh foods are all gone, a shortage of vitamins may occur. In these cases, medical officers will supply men who are likely to be on night duty with

vitamin capsules. Extra vitamins don't improve night vision if your diet or your night vision is already normal.

Night vision is affected by fatigue. Anything that reduces your physical well-being has a greater effect on night vision than on day vision. Experiments have shown that hangovers, slight illnesses, or excessive fatigue may double or even triple the amount of light needed to see an object. The night fighter must train for his job as a boxer trains for a big match. The boxer who is not at the peak of training is likely to be knocked out. The night fighter whose eyes are not at the peak of efficiency is likely to be killed.

Remember These Things

a. Protect your eyes from light before you go on night duty and while you are out.

b. Don't look directly at any light or illuminated object. If you must, be quick about it.

c. Use the corners of your eyes. Night targets are more clearly seen when you don't look directly at them.

d. Keep your eyes moving. Quick, jerky movements and short pauses are better than long, sweeping movements and long pauses.

e. Keep your windshield spotless and free of scratches and fog.

f. Keep yourself wide awake and on the alert. Don't break training. Use good sense about eating, drinking, and smoking.

g. Practice what you know about seeing at night until it becomes second nature to use your eyes to the best advantage. Use every possible device to aid you in learning to recognize ships, planes, and other important objects from slight cues.

Are Our Machine Gunners Really Experts?

*by Lieutenant Colonel Will J. Hayek**

NOW that periods for intensive, large scale maneuvers are again approaching, the question arises as to what further phases of training should be stressed. Perhaps that training most neglected, and (from all reports received) that which is most needed, is the ability to defend against attacks during periods of darkness.

The maneuvers of 1942 showed that our forces had improved in making the training realistic. They had improved in the use of camouflage. They had learned to put out guards and outposts that could alert the command in the event of the approach of an enemy force. But these improvements are not enough for 1943.

Could the maneuver outpost of 1942 hold off an enemy attack during the night, or during a period of fog or heavy rain—periods of poor visibility? Could effective fire be continued during darkness on the areas previously determined to be possible avenues of enemy approach, i.e., a bridge, a crossroad, or some pass in the hills? Could effective grazing fire be placed along a selected slope of a hill which our force might need to defend during periods of poor visibility? Was each machine gun still delivering effective fire along the final protective line instead of firing several feet too high because someone had accidentally shoved the gun?

In order to answer these questions in the affirmative, the soldiers operating the machine guns must have been trained in the technique of night firing, in addition to having fired the known distance courses.

Many former maneuver umpires can recall having heard from some noncommissioned officer in command of an outpost, an answer to the effect that his number one machine gun could lay fire on that bridge, and his number two gun could cover that crossroad; or that it would be impossible for the Blues to take his position by any attack from that direction.

Some umpire, who took his job seriously and realistically, may not have been satisfied with this fine answer. He may actually have gotten down on his "belly" and required the gunner to demonstrate and prove his sergeant's answer. So far, so good. That inspection may have sufficed for 1941 maneuvers. In the maneuvers of 1942, the umpires may have insisted on the machine gunners furnishing and explaining range charts, and may have checked up on the selection of alternate positions by the platoon leader.

But now comes the supreme test—the maneuvers of 1943. Will they teach our machine gunners how to repel the Japs' night attacks and meet the need for the training suggested in "Fighting on Guadalcanal"? Our forces will be confronted with much of this type of warfare, for, as stated in this very interesting and illuminating booklet, the Jap, "when given his choice, operates exclusively at night . . . he attacks on a very narrow front, practically *en masse*."

If our force can have all possible approaches to the occupied area covered by machine gun fire at all times during darkness, a successful night attack by the enemy will be impossible.

Machine gunners who have fired the prescribed qualification courses have no trouble in registering on targets in the daytime. Those units having qualified gunners can be reasonably certain that an enemy attack in the daytime can be repulsed. At night, however, more is needed than merely the ability to fire the gun.

During the period subsequent to the registration of the guns on the target during daylight, the gun may have been accidentally moved. It may have been either depressed or elevated, and instead of covering the assigned target, the strike would then be in an area several yards away from it. This alteration would result in having no defensive fires to prevent the enemy from crossing the spot previously determined as a possible approach for hostile troops. Thus the enemy would be able to come through and carry on.

Again, a situation may arise where a first attack had been successfully repulsed by well laid machine gun fire, but in the excitement of the battle the machine gun had become inadvertently moved and no check had been made to ascertain whether it still covered the assigned target; so in a second attack, the enemy would come through at that spot, because it would not be covered. The gun, having been shifted by this accidental movement, would land its strikes in an area several yards away from the original target. It takes only a slight change in elevation to throw the center of impact of the shots 150 yards from the target—especially when firing at close range on level ground.

Our gunners must know how to check for this accidental movement. If the check discloses the gun to have been moved, they must be able to re-lay it at night, so that it will again cover the target on which it was registered during the day. There are several methods used for this type of checking and re-laying. Two of the most common are the use of the aiming stake, and the use of the night aiming box, also called night firing box.

Investigation has disclosed that some phases of this instruction have already been touched upon in some of the service schools. Unfortunately, many graduates of these schools—several of them serving with machine gun units—do not know any methods which may be used for this important detail, and the machine gun units themselves seem never to have had this brought to their attention! Possibly this is because not enough stress was placed upon this point, or possibly the student failed to grasp the importance of this training. At any rate, *our machine gunners do not know how to check for an inadvertent movement of the gun, and do not know how to re-lay it during periods of poor visibility.*

Field Manual 23-60, Caliber .50, Browning Machine Gun, Ground, goes into some detail on placing night firing devices and on the use thereof. If the reader, however, fails to realize the need for this type of instruction, and simply reads these references without studying them, he will not have learned what was intended to be taught. Neither *Field Manual 23-45,* covering the ground use of the light machine gun, nor *Field Manual 23-55,* covering the ground use of the heavy machine gun, contains any information on the use of night firing devices.

Each manual does contain brief instructions on laying the gun at night, during fog, or darkness, on final protective lines. Here, again, unless the reader makes a thorough study of the short reference and is inspired by a realization of the possible importance of this type of training, he will quite easily miss the point.

Since both the caliber .30 heavy, and the caliber .30 light machine gun, would be used as much, and probably more, against ground attacks by enemy personnel than would the caliber .50 gun, this instruction in *Field Manual 23-60,* on use of night firing devices, should be inserted in the other two field manuals. This information should be so well known and understood by every machine gunner that it would become second nature for him to check periodically for any inadvertent movement of his gun.

Conclusion

One of the goals for training in the maneuvers of 1943 should be for everyone armed with a machine gun to learn the technique of night firing. The wearing of one of the qualification badges for the known distance machine gun course, should not in itself satisfy any commanding officer that the wearer has learned to handle the machine gun during the night.

Our machine gunners must check the guns automatically and if a mis-alinement is found, then they must correct it by re-laying the gun to the sight setting as recorded on the range chart during the registration the previous evening. This can be done through the use of some night aiming device.

If our gunners have this knowledge, and are able to keep the fire of each machine gun on the assigned probable approaches of the enemy during darkness, heavy rain, fog, or smoke, it will then follow that a break-through laid down by the attackers will be impossible, and a successful enemy attack can be prevented.

*Office of the Inspector General, IX Corps, Fort Lewis, Wash.

TRAINING BRITISH TANK CREWS

*by Guy Innes**

TANKS, born in the last war, have been developed in the present war to a state where they are now the object of all possible ingenuity in order to make them ever more formidable. As the tanks are steadily being improved to make them more effective in warfare, those who man them must be made as formidable as their tanks.

During training, this British Tommie keeps his balance high above a city street.

On parade, the tank soldier resembles—and often is—a soldier of one of the former crack cavalry regiments; for the Royal Armored Corps consists of the Royal Tank Regiments and all the Cavalry Regiments in the British Army.

At camps where men of the Royal Armored Corps are toughened to their jobs, exhaustive and intensive training is always in progress to turn recruits into "tank-minded" men. These men are taught to take their places in the crews, to honor their corps and its traditions, and to stand the strain of armored warfare.

The period of training, which lasts for several weeks, turns the raw recruits into tank drivers, gunners, wireless operators, fitters, and motorcyclists. Preliminary to joining the training regiments, the men take a six weeks course in the General Service Corps, where, while undergoing drill and weapons training, they are tested by psychiatrists to ascertain the jobs for which they are best fitted.

A tank is a messy monster, and the mechanic's job is never done. In the tank parks and repair-bays, close association with grease and oil is unavoidable, and these get into the men's back hair; but in the camps, where the trainees operate in slush and casual water, although there is plenty of mud, there is no muddle.

The men swarm up Jacob's ladders on the assault course; swing by ropes across rivers; scale cliffs and slide down them; cross swift streams on slippery logs; climb trees and drop from ropes, and plunge into underground labyrinths where they swim under muddy water in the dark. They come out grinning and covered with slime—their only covering a pair of thin shorts.

The tunnel they penetrate is sixty feet long, bored and built at the suggestion of the recruits themselves, whose ages range from eighteen-and-a-half to twenty-nine years. For the first forty-nine feet, the tunnel is two feet wide and eighteen inches high. Through this part, the soldier does a squirming crawl over dank earth. Then he takes a deep breath, drops into icy water thick with mud, and swims the last fourteen feet completely submerged.

The tunnel course is regarded as a sovereign test for claustrophobia—that dread of confined spaces which must never be part of the make-up of a tank soldier.

The men of the tanks work in crews consisting of a driver, a gunner, a wireless operator, and a commander.

The driver must learn to take his $80,000 worth of steel and equipment up hill and down dale without mishap. On a recent obstable track a good driver charged his tank at an earthen bastion, poised it on the brink of a seven-foot drop and held it there for a moment, then let it drop gently to the ground on the other side. He never put a tread wrong. He took the first fence perfectly—a nasty slope covered with logs and other impediments—and eased his tank down the descent as if rocking his crew to sleep. Having taken an almost vertical barrier as skilfully as a fly on a wall, he came down gracefully at the water-jump, crept quietly through, and swept up the farther side. The last obstacle was a steep hill topped by a ditch which was protected by a dense hawthorne hedge. He could not see what was on the other side; but the tank paused with its nose in the air and came down on an even keel.

Training tank gunners is equally important but distinctly different. Instant reaction must be developed, lest the enemy get his shot in first.

For all tank crew members, physical fitness is imperative. "You don't know how heavy is the strain of modern battles," says an experienced officer. "We are looking for two things—guts and durability—to make these lads into real kill-the-Boche blokes."

Training puts four inches on men's chests if they are under twenty-five years old, and takes four off their stomachs if they are above that age. After two months of such training, a recruit's first battle-dress no longer fits him.

Scientific feeding is closely studied. On a sample day, breakfast is bread and margarine, sausage, bacon and beans, porridge, and tea; dinner is roast beef, Yorkshire pudding, two vegetables, rice and prunes, and tea; tea is bread, butter, jam, cakes, cold ham, chip potatoes, baked beans and sauce, and tea; supper is bread and margarine, fish cakes, chip potatoes and cocoa.

All training is carried out in the open air, and the camps are really schools rather than camps. Instruction is of very high caliber and is imparted by expert non-commissioned officers. It is even possible for the trainees finally to attain Sandhurst Military College and their commissions.

Whence come the recruits?

The Royal Armored Corps does not care, so long as the men are of the nature, quality, and substance demanded by the exigencies of tank warfare. On the whole, it is better to have come from a good garage than from the best college. But the Royal Armored Corps is composed of neither blimps nor snobs. If you are an Argentine volunteer or a policeman you will be equally welcome; and if your uncle happens to be a major-general it will not be counted against you. Into the same hopper all will go. The machine grinds exceeding small; and from the mixture that feeds it, there emerges in the course of months a level array of tank soldiers worthy of all the skill and care that has been spent upon them.

"Scaling Jacob's ladder" is a part of routine training. British training has become increasingly intense.

*British Information Service.

From the use of dummy ammunition, there grew the term "dry run"—a troop activity simulating rehearsal. From today's realistic training, the 1st Cavalry Division coined new phrase—

"Damp Run on Battle"

*by Major General Innis P. Swift**

ALL reports indicate that the battle efficiency of troops—even the actual lust for battle—rises immensely after the first taste of battle, regardless of whether the immediate result is success or set-back. Working on the theory that a small taste of battle now will lessen the shock of the real taste later, or even produce the beginning of a cultivated taste, the 1st Cavalry Division trains realistically for combat.

Training requirements are based on lessons learned from Stalingrad, Tobruk, and Guadalcanal. From them, we know that, in spite of the mechanization of modern warfare, the individual soldier is still the important element in the field army. We know that he must possess a high grade of physical endurance; that he must be skilled in the use of varied weapons; that he must be accustomed to fitting himself into the team-work of all the other elements of his particular group; that he must have confidence in the ability and courage of the other members of his team; and that he must have the confidence of his own courage and ability to "take it."

"The first baptism of fire is the final phase of training."
Secretary of War Stimson.

"Sweat now, that you may not bleed later."
Major General George S. Patton, Jr.

It is well known that the greatest shock to troops is their first baptism of fire, with the attendant full realization of all the grim hazards of battle. Our Army has sought to prepare the individual soldier in every way possible to withstand that shock in such a manner that he may continue to fight with the minimum of demoralization and the maximum use of all his faculties.

Battle Training Area

To bring this realistic kind of training to all personnel of the 1st Cavalry Division, a large battle training area has been developed east of Fort Bliss, Texas. The numerous box canyons in this area make it possible to use service ammunition of all types at numerous installations, without the dislocations and interruptions imposed by considerations of safety and restricted impact areas.

The accompanying sketches and air-photos indicate some of the numerous training installations or stations. These are enlarged, expanded and elaborated upon as the training progresses. The only limitations are in the imagination, energy, and ingenuity of the participating troops. Every bulletin of the war is likely to bring forth a new idea for the development and use of the battle training area. In general there are eight principal stations as follows:

1) The Mock Village, dubbed "Little Tokyo."
2) The Infiltration Course.
3) The Close Combat Firing Instruction Course.
4) The Unarmed Combat Instruction Area.
5) The Special Weapon Instruction Area, including booby traps, hand grenades, rifle grenades, land and antitank mines, home-made Molotovs, smoke, and "sticky" grenades, protective measures and gas.
6) The Field Firing and Platoon Combat Range.
7) The Camouflage Demonstration and Instruction Course.
8) The Stalking Range, which includes tank stalking, attack by stealth, and a course for application of close combat fire, combining fire and movement.

The area is generally assigned to a regiment for a period of one week, and this is divided to accommodate squadron combat teams in turn, each for three days. In this manner, the entire regiment obtains training on the course, and the squadrons become accustomed to working with their normal combat team attachments. Each squadron marches dismounted to and from the area, with arrivals and departures so timed that the area is in constant use. The movements to and from the area are planned as tactical exercises comprising at least 50% of work at night.

The bivouac area, which is about one mile from the main area, in itself is an important training installation. The bivouac is tactical and requires black-out and camouflage discipline, out-posts, sleeping in slit trenches, night command post raids, operation of messes under battle conditions, and individual cooking.

Every officer and soldier, having first completed preliminary training, including mechanical training, physical conditioning and known distance firing, will know what it is to live in this area for a few days; and what is more, he will probably return to it time and time again, during his current training.

Each of the stations is operated by a trained crew, consisting of one officer and the necessary number of enlisted assistants. These crews are prepared generally by having them visit with the preceding unit and work on the various courses, so that they become skilled prior to the arrival of the troops they are to instruct.

Units arriving at the area are divided into the number of groups appropriate to the number of stations. In this way, all groups commence training at all stations simultaneously and, as one visitor put it, "There is never a dull moment."

Groups progress from station to station in rotation, until every group has completed the training at every station. Group No. 1 starts at station No. 1, and finishes at station No. 8; Group No. 5 starts at station No. 5, and finishes at station No. 4. It generally takes at least two full days to run a squadron combat team through the entire course.

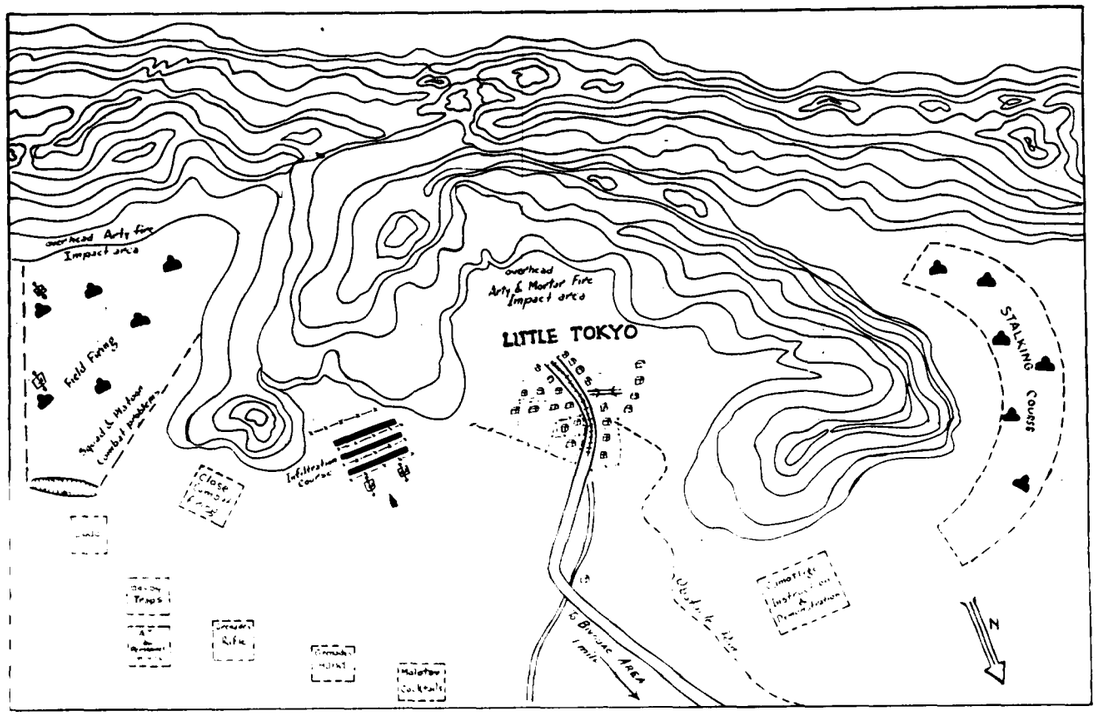
"Little Tokyo"

A visitor to the battle training area would probably be taken first to Little Tokyo, the mock village. Located in a box canyon, Little Tokyo consists of buildings mocked up from salvage lumber, and represents a very realistic little tough spot, tucked away in the hills. It is here that detailed demonstration and instructions are given in methods of forcing entry into the village under the fire of supporting weapons and with the assistance of demolitions. Then comes a house-to-house campaign to clear the village of the enemy. "Dry runs" are made in order to instruct in all details before ball ammunition is used. Demonstrations are staged in which the overhead supporting fire, artillery, mortars, and machine guns soften up the enemy strong points for the assault detachment.

The heavier fires are placed as close to the village as possible without causing its actual and complete demolition; the lighter fires are directed into the village itself at appropriate targets installed there. A system of wire

"The men are lined up at a firing point facing irregular terrain, dotted with stationary and surprise silhouette targets."

*Commanding, First Cavalry Division.



entanglements protecting the approaches to the village, requires the use of Bangalore torpedoes to facilitate the advance of the assault detachment. Pillboxes and machine gun emplacements are actually knocked out by 37mm fire, pole charges, flame throwers, and grenades. The assault detachment advances through a natural gully under the overhead fire of supporting weapons, and mortars provide a smoke screen to facilitate the final advance of the assault detachment from the gully and into the village itself.

The air is filled with smoke, dust, and the acrid smell of powder. (If this description sounds dramatic, remember that the purpose and intent of the course is to present the dramatic confusion of battle in such a village.) When the supporting fires are lifted on signal, the leader of the assault detachment dispatches his first team into the nearest building. Prior to this time, he has divided his squad or detachment into pairs or threes that will work together and in a pre-determined relative position to the base of the squad as it moves. The basic group of three men, working in a triangular formation, appears to be the most satisfactory for security, coördination, and control of the detachment as a whole. Regardless of the direction of the movement, there is always one man as a *point* with the other two covering and supporting him. Upon approaching a building, the point man throws in a grenade and, lying prone close to the building, is covered until the grenade discharges. Then, taking precautions against booby traps on windows and doors, he enters the building as rapidly as possible.

Up to this time, he has been covered by his teammates from possible sniper fire from other buildings. Upon his signal, the other men of his team in turn enter the building rapidly and prepare to proceed to the rest of the buildings by similar methods. In this system, the one moving is always covered by the other two. Meanwhile, similar teams are entering other buildings, so that eventually the street is crossed and the house-to-house campaign progresses on both sides of the street. There are plenty of booby traps and numerous fleeting targets representing snipers at windows, doors, and roof-tops. Aggressiveness and thoroughness are the key-notes of this instruction; speed is desirable, but is subordinated to thoroughness.

In Little Tokyo, the cavalryman, amidst the actual sounds of battle, is introduced to the reality of carrying out a mission in the most warlike setting possible, this side of the war itself. It is here that he begins to sit-in on the real game, so that he will have a chance for his chips when the cards are down.

Infiltration

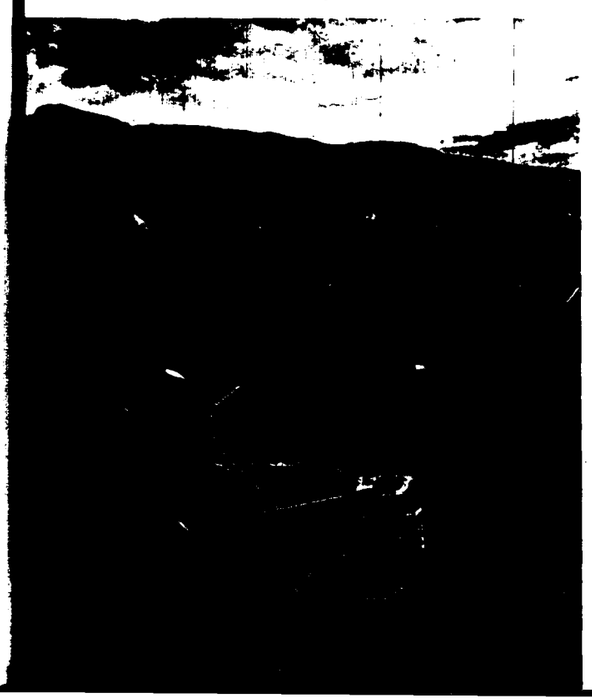
The next station to be visited would probably be the near-by infiltration course. This course consists chiefly of a series of alternate trenches and low barbed-wire,

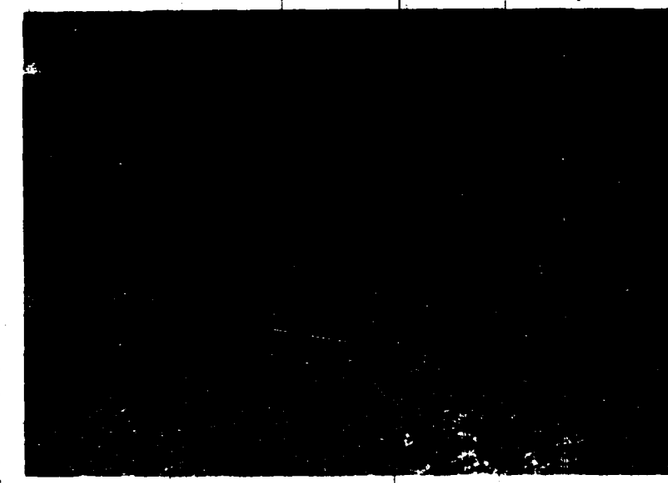
with shell holes, rocks, thorny brush, yucca plants and cactus scattered throughout. It is all hard and rocky ground; it is a crawling course throughout, and even without the firing and explosions is a nasty bit to go through. Two or three machine guns are mounted in line at the finish on platforms with bars. The bars prevent depressing below a safety limit tested by actual firing, and the guns deliver fire over the approaching troops at a height of eighteen to twenty-four inches above the parapets of the three trenches. Small bombs are placed in the scattered shell holes and are detonated electrically from a control tower.

Prior to this phase of training, the troops have spent a good deal of time learning to crawl under wire on various obstacle courses. Nevertheless, the training here also includes instruction on methods of crawling and keeping the body as close to the ground as possible. The technique of turning from belly to back before trying to go under barbed-wire, is demonstrated and practiced. The wire is very low—practically on the ground. This makes it necessary for a man to use his hands to lift the wire in order to go under. Men are cautioned not to crawl into the shell holes because they contain explosives; they are also cautioned that a hand, a knee, or a foot that is raised too high will probably get a bullet in it. Kneeling silhouettes, and sometimes balloons, are placed throughout the course to show where the fire is going. The course accommodates a platoon.

After all preliminary instructions have been completed, the men are lined up approximately thirty yards from the first trench. On command or signal, they run

"Machine guns open fire and keep a steady stream of hot lead constantly overhead."





"The instructor first demonstrates and then instructs the men in the use of a natural crouch with the weapon held tightly to the body."

at top speed for the first trench, hurdle a two-foot wire fence en route, drop prone in the trench, and start crawling. As an additional realistic caution to hit the dirt, a bomb is detonated as the line reaches the first trench. Machine guns open fire and, keeping a steady stream of hot lead constantly overhead, traverse over the course. The ⅓ dynamite stick bombs are detonated as they are passed. This tends to break up small groups that sometimes form at tough spots. There is no pause in the second trench. As a matter of fact, there is seldom any lagging anywhere; the impulse seems to be to go ahead constantly.

Upon reaching the last trench (almost under the muzzles of the machine guns), men remain there prone until the last man arrives. At this point, "sticky" grenades are thrown into the trench with warning, and the men come charging out, grinning through grimy faces, yelling and cursing, and assault the dummies at the machine gun positions. The men are dirty, bruised, and scratched. Their class X clothing, issued for the occasion, is torn to shreds. Their nostrils and mouths are clogged with dust. They know that they have been under actual fire!

Officers and men who have gone through this course shoulder to shoulder have a new confidence and respect for each other. There is a cocky assurance about them as they go on to other training, and they seek opportunities to go through the course again. They have learned how to go under fire, by actually going under it. The participation of officers is another step in their doctrine to "lead physically."

Two cautions about the course are important in order to prevent unnecessary injuries. First, test the sheaf of fire from each machine gun thoroughly, so that it may be close, but at the same time, perfectly safe for the man

who crawls properly. Second, clean out shell holes when charges are laid for each run, so that flying rocks and other fragments will not add an unnecessary and unintended hazard in the course. The charge should be laid on sand or soft earth. The properly laid charge may be set off within a few inches of a crawling man with no more serious effect than a good, hard jolt.

Close Combat Firing

Around a high rocky spur from the infiltration course is the close combat firing course. Everybody takes to this type of firing as a duck takes to water, because it is lively, and produces surprising results. This instruction prepares the soldier to fire his weapon instantly and by reflex when he moves in close combat at night, or in thick country. Firing is done with such weapons as the carbine, the pistol, the submachine gun, and the light machine gun. The work is stimulating, and skill develops rapidly.

The methods and phraseology of instructors are tough. Men are taught that the only safety is the trigger finger. Pieces are never locked. One NCO instructor demonstrated vividly what happens when the safety is on, in a pinch, and then said to his men in a doleful tone, "Mamma ain't got no little boy no more."

The men are lined up at a firing point facing irregular terrain, dotted with stationary and surprise silhouette targets at varied ranges from about fifteen to two hundred yards. Instruction is given on the range that is best suited to the weapon. The instructor first demonstrates and then instructs the men in the use of a natural crouch with the weapon held tightly to the body, so that it is at all times pointed the same as the man's nose.

When the men have finished the preliminary training, they practice with live ammunition and fire from fixed firing points on a firing line. Later, they move forward as a squad in assault, and during movement, fire at surprise targets. Firing at slight noises such as the creak of bobbing targets is included in this course. The ingenuity of instructors develops many interesting devices for this purpose.

Field Firing Range

About six hundred yards north of the close combat firing course is a large valley or cove in the mountain, which is used for field firing, musketry problems, technique of fire, and squad and platoon combat problems. The limits to directions of fire in this area are much more generous than the usual combat range. This permits fire and movement, the maneuver of squads within the platoon for flanking fire, and even a change of direction of the platoon as a whole. Fixed and surprise targets, controlled from pits, are placed in simulated defensive positions throughout the area. Overhead artillery and mortar fire is also used in this area for combined training.

Unarmed Combat

Upon returning from the field firing range, a group of soldiers can be seen moving at double-time (as all

"The men practice all kinds of disabling holds, throws, and blows."

groups do in going from station to station) toward the unarmed combat instruction area. Here, the men are instructed in "dirty fighting"; it is definitely not a course in *judo*. The instructors demonstrate and have the men practice all kinds of disabling holds, throws, and blows that it is believed can be used effectively by the average man. They are taught to fight in the manner that is most natural to the individual, but they are cautioned that this type of fighting is the last resort and that the most effective way to kill is with a weapon.

The important thing in this course is to commence the breakdown of the American soldier's instinctive sportsmanship which inclines him to give the other fellow a break. Here, he is taught that the American soldier who goes up against a Jap or a German with a sporting attitude is a dead soldier. Another advantage in this kind of work, not to be overlooked, is that it adds to the physical fitness, strength, and toughness of the individual.

Special Weapons

Next is the special weapons instruction area, which is subdivided into a number of different stations. These include a mine field, where demonstration and practice in the laying of the field is conducted. Most of the work is with antitank mines. There is a booby trap demonstration where various types are shown, and their construction explained and practiced. There is also a course in which anything picked up, and wires tripped over, sets off a charge. The most effective demonstration of this course is given by the "booby squad," which goes through the course doing everything wrong.

Further along is a rifle grenade course, in which grenades are fired at mock-up targets at varied ranges. Every man gets to fire the AT grenade on this course. Near-by are courses where instruction is given in the various methods of throwing hand grenades.

Another area is devoted to instruction in how to make and throw Molotov, smoke, and sticky grenades. Some of these home-made grenades are retained by the individual manufacturer and used later on the tank stalking range. Specially selected teams from engineer and chemical warfare troops assist in the instruction in this area. These teams put on the demonstrations which are suited to their particular function in combat.

Camouflage

The camouflage demonstration area includes installation, set up by engineers to show camouflage of gun positions, machine gun nests, and small ammunition dumps. Camouflage discipline is emphasized by the restriction of traffic to established trails. Soldiers going through this course are given camouflage suits and are required to demonstrate that they can approach to within ten or fifteen yards of observers and conceal themselves effectively. The ground and vegetation are so well suited to the demonstration that an observer can turn his back while the men are thirty yards away and when asked to turn around finds that the men have disappeared; when the men rise, he sees that they are practically under his feet.

Tank Stalking

The last principal area located in a valley separated from Little Tokyo by a high rocky ridge, is the stalking range. This range is designed for application with live ammunition under tactical conditions of the instructions received at various other demonstration and instruction courses. The tank stalking course consists of a tank park, mocked up from rocks, which is raided, in turn, by squads that have finished the course of instruction in the various home-made grenades.

Conclusion

Some of these courses are well established and have turned out hundreds of graduates; others are still in their infancy and will develop as time goes on. New ideas, fresh from the front, may produce additional methods to prepare men for the grim shock and confusion of battle. Whatever they are, they will be designed to produce men who can use their heads and use their weapons, because they will not be demoralized by sights, sounds, and smells that are entirely strange to them. Men are not afraid of familiar things; it is the mystery and doubt of strange things that tear at their courage.

When our trooper faces the first blast of enemy fire, he can say to his own soul, "Well, here it is; I know what it is like, and I know what to do." His realistic training will begin to pay dividends. He will have a chance for his white alley; he will go forward with courage and confidence in himself and his comrades. His "Damp Run" will have prepared him for battle!

"Here the men are instructed in 'dirty fighting.'"

"Quick On the Trigger"

by Colonel Walter F. Siegmund, Air Corps

We have drifted away from the technique of the greatest individual fighting men in our history—our pioneer forefathers, who carved out this great nation with the frontier six-shooter, the lever-action rifle, and the Bowie knife. The speed and accuracy with which they whipped their guns and shot the head off a rattlesnake, or drilled a bad man or savage, meant life or death. That was an age of kill or be killed.

Now, we are back again to an age of the rattlesnake, bad man and savage, and we must revert to the tactics and technique of our forefathers who wiped them out in their day.

SINCE the beginning of time, the element of surprise has been the foremost factor in warfare, and now, combined with mobility, speed, and fire power it makes modern warfare. The airplane has set the pace. It fulfills the mission of reconnaissance, observation, counterair attack, bombing, and transportation of personnel and supplies. It has changed naval warfare, and has cut down the days, weeks or months of artillery preparation of the last war. It has spread war over all areas and made the entire face of the earth the battle front. The tempo of war has been stepped up to a terrific pace as compared with the past.

But what of the individual soldier with his weapons? With all of the revolutionary progress in the tactics and technique of war, much remains to be done in training the individual fighting man in the art of gunmanship with the pistol, submachine gun, carbine, or weapons of similar character.

"Soldiers Must Be Made Into Gunmen"

Gunmanship of pioneer days has passed into mountain-top to mountain-top game shooting with a high-powered rifle and the telescope. Pistol shooting has become a holding and squeezing game, with the object of putting all the shots in the same hole. Some marksmanship has been practiced by a hunter rushing into an area where there is a heavy concentration of game, trusting to luck that a buck would run by, getting a shot in, and lugging the carcass out before somebody accidentally plugged him with a 30/30.

Others have joined the multitude who bedecked themselves with padded shooting jackets and gadgets, and after an amazing combination of pulling rabbits out of a dope book, judging or misjudging the wind, breathing, squinting and trigger squeezing—have sung out, "I fired only ten shots, and I got eleven bull's eyes in my target!" All of this is good, *but* it does not make versatile close combat gunmen.

The Cavalry Mounted Pistol Course was the only carry-over from the Wild West, and as an old horse soldier, I have prepared a combat obstacle course for the training of troops armed with the pistol, submachine gun, carbine, and weapons of similar character, to enable them to meet the conditions of close personal combat warfare, particularly in the orient where the Japs practice all the arts of the snake, rat, and the various members of the cat family.

Soldiers must be made into gunmen—gun pointers, instead of gun aimers. It is recognized that troops generally, and snipers particularly, must be trained in the fine arts of placing a bullet in the right spot with all of the aids available. But once the rank and file run into ambush, engage in jungle fighting or its equivalent, they fight where it's man to man, kill or be killed, and the technique of Wild Bill Hickok and of Billy the Kid is absolutely necessary to survive.

A Course of Military Gunmanship

A course for training with the pistol, submachine gun, and carbine has been constructed for the use of the Overseas Replacement Training Group, Army Air Forces Technical Training Command at Kearns, Utah.

The chart accompanying this article includes sufficient descriptive material for the operation of the course. Variations as to obstacles, number of obstacles, and target locations on the course, may be made depending upon the available facilities and terrain. The course must be laid out in a horseshoe form to insure one general direction of fire and at the same time, afford fire to the left and to the right. The course should not be longer than 125 yards, and the time limit should not be in excess of 2 minutes, depending on terrain, footing and type of obstacles.

In laying out the course, the general direction of fire should be to the front from the centrally located control booth. A line, drawn from tip to tip of the horseshoe across the open end, should be to the right of, and parallel to the direction of fire. Distance to targets should not exceed 25 yards.

Where large bodies of troops are to be trained, a series of these courses may be laid out with full regard to safety measures.

In the drawing, 15 targets are set up. When firing the carbine, a full clip of 15 cartridges and 15 targets should be used; or fewer targets, if desired, will allow 2 or more shots on any target. When firing the Thompson submachine gun, a full clip of 20 cartridges and 15 targets will afford 5 extra shots, which may be fired full automatic or otherwise on any of the targets designated by the instructor. When firing the automatic pistol, 2 clips of 7 cartridges each, and 14 targets, or fewer targets if desired, will afford 2 or more shots on any target.

Operation of Course

The scorer sits in the control booth. At the blast of the whistle, the soldier starts his run. After he clears the course, the scorer blows a whistle, and the pasting and marking detail run out (one man to each target) and each marker pastes his target, and calls out "Hit or miss on No. 1—Hit or miss on No. 2, etc." Each marker runs back to a line in the rear of the control booth after he has completed his work.

After the markers and pasters have all cleared the course, the scorer blows a whistle and the next man takes off.

A loud-speaker installed in the control booth will provide supervision, instruction, and correction from that point.

For safety measures, the control booth should be timbered against accidental discharge of weapons. If the control point is in the open, a sand bag nest, dugout, or other natural cover will suffice.

A competent noncommissioned officer should be in charge of weapons at the starting point. He will hand the soldier his weapon and clips. The soldier will proceed to the starting point, load his piece, take off the safety, and at the blast of the whistle, will proceed. The safety must be put on before the soldier leaves the ditch (obstacle No. 6) and left on through the crawl (obstacle No. 7), then taken off for firing over remaining obstacles. He will return his weapon and empty clips to the noncommissioned officer in charge at the finish.

Great caution must be exercised in the instruction of the soldier in regard to the method of carrying the weapon. If the man is a right-handed shooter, he must be instructed that on the first half of the horseshoe course, when the weapon is being fired to the right, it must be carried in a raised position in the right hand and *not across the body*. When he completes the first half of the horseshoe, and starts on the last half and is firing to the left, he must then shift the weapon across the body, and hold the carbine and Thompson submachine gun with *two hands*. This procedure is reversed if the man is a left-handed shooter. It is obvious that this procedure is necessary to prevent an accidental discharge of the piece toward the control booth, and in the opposite direction of the direction of fire.

In the event of a malfunction of the weapon, the soldier should stop on the course, raise his weapon and call, "Malfunction," and remain until relieved by the noncommissioned officer in charge. He should then return to the starting line, be given another weapon, and proceed over the course.

Dry practice runs should be held with combat field equipment and weapons to develop shiftiness on foot, dexterity with weapons and physical hardening in order that the soldier may gradually be brought up to the actual firing. The usual preliminary training with arms and firing on the regular type of range should be accomplished prior to firing on the combat firing obstacle course.

Below is a suggested method of scoring. It is based on a rating of 50% for a possible number of hits made, and 50% if the officer or board of officers conducting the firing declare a perfect performance. Judging should be on the basis that the course has been completed within the specified time limit; upon the manner in which the soldier handles his weapon, and negotiates the obstacles; and the ferocity, determination, craftiness and wiliness of his performance.

As an example, in determining the final rating, a man using the pistol makes 13 hits, which gives him 86%, as far as the firing record is concerned. If the judgment of the officers gives him a 100% performance, and he has completed the run within the time limit, his final rating will be the sum of 86% plus 100%, divided by 2, or 93%, which qualifies him as an expert. And as a further example, if he makes less than 9 hits, irrespective of his performance rating, and completion within the time limit, he will not be considered qualified. In other words, hits are a matter of fact; his performance, a matter of the directors' judgment.

Local conditions, available material, as well as terrain, and the ingenuity of individuals give a wide latitude in variations and innovations in the construction of a course and in firing procedure. The guiding principles, however, should be those that will result in hard, tough,

agile, mentally and physically alert, *deadly* gunmen, with full confidence in themselves and their weapons to the end that the individual soldier is unconquerable.

Procedure With the Pistol

1. At the starting point, the noncommissioned officer in charge will hand the soldier a pistol and two empty magazines. (For actual firing, two magazines loaded with seven rounds each will be supplied.)

2. The soldier will immediately assume the position of *Raise Pistol* and insert one magazine. At the blast of the whistle he will execute *Load Pistol*, without engaging the safety lock; then proceeding over the course, he will carry the pistol at *Raise Pistol* at all times except when actually firing.

3. The 1st and 2nd obstacles will be hurdled, and the first two targets fired on while running.

4. The 3rd obstacle will be cleared as a hand vault, and the 4th obstacle broad jumped. As the 4th obstacle is cleared, the soldier will go down on his knee, and fire on targets 3 and 4 from that position. When firing on more than one target from the same position, the direction of movement will be to the front.

5. After completing obstacle No. 5, the soldier will crouch low and fire from the hip on targets 5 and 6 from a crouching position. (During dry runs the next man will leave the starting point at this time.)

6. He will then jump into the trench (obstacle No. 6), and fire from the cover of the trench on target No. 7. Since this will be the last round in the pistol, the slide will remain locked in the open position. While under the protective cover of the trench, the soldier will remove the empty magazine by applying pressure on the magazine catch. The loaded magazine will then be inserted, the slide released by pressing upon the thumb piece of the slide stop, *and the safety put on*. From this point on, the pistol will be carried at *Raise Pistol* but will be pointed to the left away from the control booth. (In the case of left-handed trainees the procedure will be reversed. The first half of the course will be run with the pistol pointed to the right across the body and the last half at *Raise Pistol*.)

7. The soldier will then slip from the trench and run low to obstacle No. 7, where he will go to the prone position and negotiate the obstacle by using the "jungle crawl." Upon emerging from the undergrowth, *the safety will be taken off*, and target No. 8 will be fired on from a prone position.

8. Rising and running into the cover of obstacle No. 8, he will see target No. 9 on his left and will fire from a standing position.

9. As he comes out of the thicket, he will drop to his knee and fire on target No. 10.

10. As he moves off, target No. 11 will be sighted above him to the left, and he will fire on it with a quick shot from a standing position.

11. The soldier will then cross the stream ahead by running over a fallen tree, obstacle No. 9, and as he hurries toward the protection of the fallen logs, he will fire on targets 12, 13, and 14 with three running shots.

12. After clearing obstacles 10 and 11, he will return to the starting point. The weapon will be kept at *Raise Pistol*, the magazine will be withdrawn, and the pistol and both empty magazines returned to the noncommissioned officer in charge.

13. The soldier who has just completed the course will then return to his squad, and the next man will proceed to the starting point.

Procedure With the Carbine

1. At the starting point, the noncommissioned officer in charge will supply the first man with a carbine and one empty magazine. (For actual firing one magazine loaded with 15 rounds will be supplied in lieu of the empty magazine.)

2. The soldier will immediately grasp the carbine with the right hand as a pistol and will carry it to a position similar to, but slightly lower than *Raise Pistol*, and will insert the magazine. At the blast of the whistle, he will load the carbine by pulling the slide handle all the way to the rear and allowing it to snap forward. While carrying the carbine at the modified position of *Raise Pistol*, he will then proceed over the course.

3. The 1st and 2nd obstacles will be hurdled, and the first two targets fired on with pistol shots while running.

4. The 3rd obstacle will be cleared as a hand vault, and the 4th obstacle broad jumped. As the 4th obstacle is cleared, the soldier will go down on his knee, and will fire on targets 3 and 4 from the shoulder while kneeling.

5. After completing obstacle No. 5, the soldier will fire on targets 5 and 6 from the hip. (During dry runs the next man will leave the starting point at this time.)

6. He will then jump into the trench (obstacle No. 6), and fire from the shoulder from the cover of the trench at target No. 7. The piece will then be locked on *Safe* by pushing the safety slide fully to the right. At this point, the piece will be dropped from the position of *Raise Pistol* and carried in both hands diagonally across the body. This carrying position will be used for the balance of the course. (In the case of left-handed trainees, the procedure will be reversed. The first half of the course will be run with the piece in both hands in the diagonal position, and the last half at *Raise Pistol*.)

7. The soldier will then slip from the trench and run low to obstacle No. 7, where he will go to the prone position and negotiate the obstacle by using the "jungle crawl." As he emerges from the undergrowth, he will unlock the piece and fire on target No. 8 from a prone position.

8. Rising and running into the cover of obstacle No. 8, he will see target No. 9 on his left and will fire from the shoulder at a standing position.

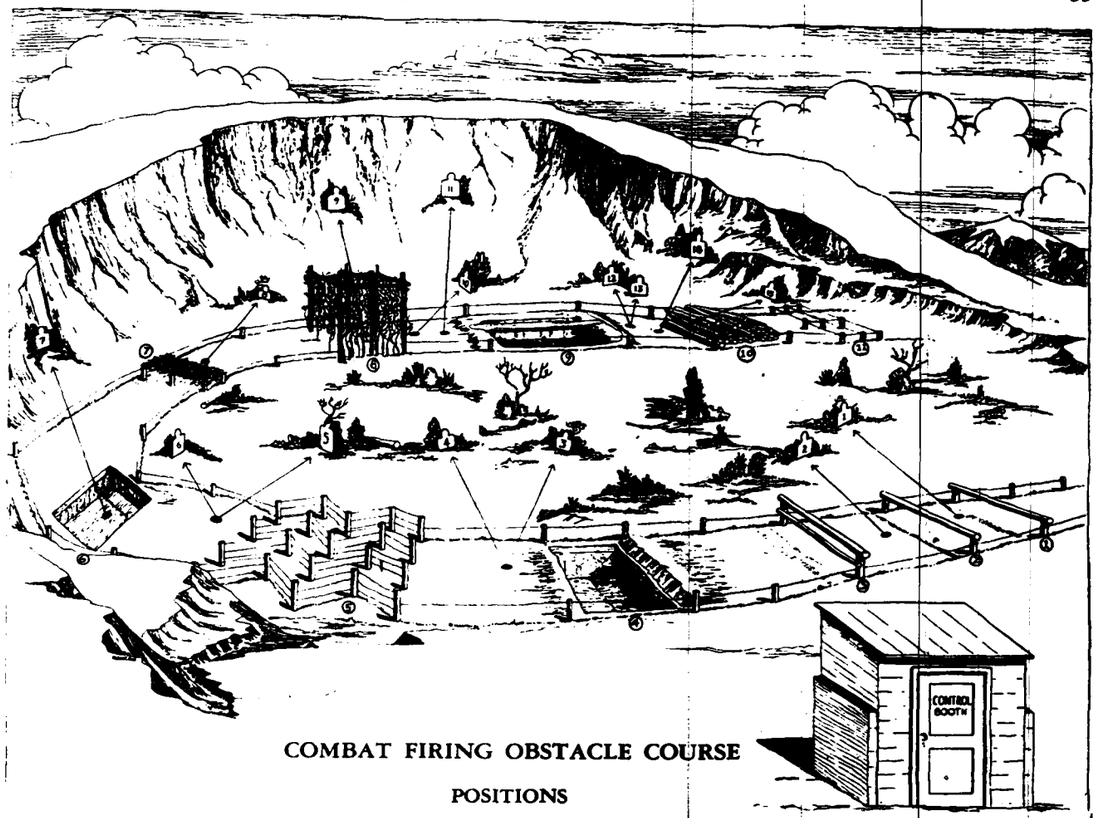
9. As he comes out of the thicket, he will crouch and fire on target No. 10 from the shoulder in a crouching position.

10. As he moves off, target No. 11 will be sighted above him and fired on with a quick shoulder shot from a standing position.

11. The soldier will then cross the stream ahead by

METHOD OF SCORING

	Pistol	*Carbine*	*Thompson Submachine gun*
100%	14 Hits—Possible	15 Hits—Possible	20 Hits—Possible
86%	13 Hits—Expert	13 Hits—Expert	17 Hits—Expert
75%	11 Hits—Sharpshooter	11 Hits—Sharpshooter	15 Hits—Sharpshooter
62%	9 Hits—Marksman	9 Hits—Marksman	12 Hits—Marksman



COMBAT FIRING OBSTACLE COURSE

POSITIONS

Carbine . . .	*Submachine gun* . . .	*Pistol* . . .
1 & 2—Pistol shots running	1 & 2—Standing from shoulder	1 & 2—Running
3 & 4—Kneeling from shoulder	3 & 4—Kneeling from shoulder	3 & 4—Kneeling
5 & 6—Standing from hip	5 & 6—Standing from hip	5 & 6—Crouching
7—Crouching from shoulder	7—Crouching from shoulder	7—Crouching
8—Prone	8—Prone from shoulder	8—Prone
9—Standing from shoulder	9—Standing from shoulder	9—Standing
10—Crouching from shoulder	10—Crouching from shoulder	10—Kneeling
11—Standing from shoulder	11—Standing from shoulder	11—Standing
12 & 13—Pistol running	12 & 13—Standing from hip	12, 13 & 14—Running
14—Standing from shoulder	14—Standing from shoulder	15—Prone
15—Prone from shoulder	15—Prone from shoulder	(Pistol to be swung on target at various angles. Direction of movement to front)

proceeding over a fallen tree (obstacle No. 9), and as he hurries toward the protection of the fallen logs, he will fire on targets 12 and 13 with two running pistol shots, then hesitate long enough to fire on target No. 14 from a standing shoulder position.

12. He will then take cover behind the log pile and fire on target 15 with a prone shoulder shot over the top log. Next he will clear obstacles 10 and 11 and return to the starting point. The weapon will be kept at the *Raise Pistol* position, and the magazine will be withdrawn. The piece and empty magazine will then be returned to the noncommissioned officer in charge.

13. The soldier who has just completed the course will then return to his squad and the next man will proceed to the starting point.

PROCEDURE WITH THOMPSON SUBMACHINE GUN

1. At the starting point, the noncommissioned officer in charge will supply the first man with a tommy gun with bolt closed and one empty magazine. The noncommissioned officer will inspect the piece to be sure that the fire control lever is set at *Single*. (For actual firing, a magazine loaded with 20 rounds will be supplied.)

2. The soldier will immediately assume the position of *Raise Arms* and insert the magazine. At the blast of the whistle, by retracting the bolt, he will cock the piece, and then carrying it at *Raise Arms*, he will proceed over the course.

3. The 1st and 2nd obstacles will be hurdled, and the first two targets fired on from the shoulder while standing.

4. The 3rd obstacle will be cleared as a hand vault, and the 4th obstacle broad jumped. As the 4th obstacle is cleared, the soldier will go down on his knee, and fire on targets 3 and 4 from the shoulder in a kneeling position.

5. After completing obstacle No. 5, the soldier will crouch low and fire from the hip on targets 5 and 6. (During dry runs the next man will leave the starting point at this time.)

6. He will then jump into the trench (obstacle No. 6), and fire from the cover of the trench on target No. 7 with a shoulder shot. The piece will then be set on *Safe*. At this point, the piece will be dropped from the position of *Raise Arms* and carried diagonally across the body by grasping the fore grip with the left hand. This carrying position will be used for the balance of the course. (In the case of left-handed trainees, the procedure will be reversed. The first half of the course will be run with the piece in a diagonal position, and the last half at RAISE ARMS.)

7. The soldier will then slip from the trench and run low to obstacle No. 7, where he will go to the prone position and negotiate the obstacle by using the "jungle crawl." As he emerges from the undergrowth, he will *unlock the piece* and fire on target No. 8 with a prone shoulder shot.

8. Rising and running into the cover of obstacle No. 8, he will see target No. 9 on his left and will fire from the shoulder while standing.

9. As he comes out of the thicket, he will crouch low and fire from the shoulder on target No. 10.

10. As he moves off, target No. 11 will be sighted above him to the left and fired on from the shoulder.

11. The soldier will then cross the stream ahead by running across a fallen tree (obstacle No. 9), and as he hurries toward the protection of the fallen logs ahead, he will hesitate long enough to fire on targets 12 and 13 with rapid hip shots. Swinging to the front, he will sight target 14 and fire on it from the shoulder.

12. He will then take cover behind the log pile and fire on target 15 with a prone shoulder shot over the top log. After clearing obstacles 10 and 11, he will return to the starting point. The weapon will be kept at *Raise Arms*, the magazine will be withdrawn, and the piece set on *Safe*. The piece and the empty magazine will then be returned to the noncommissioned officer in charge.

13. As there are only 15 targets on the course, when the soldier is actually firing the Thompson submachine gun with 20 cartridges in the clip, the instructor will designate any target on the course which may be fired on full automatic, and thus use the extra 5 cartridges in the clip.

14. The soldier who has just completed the course will then return to his squad and the next man will proceed to the starting point.

NOTES FOR USE OF COURSE

1. Mechanically operated bobbing and surprise targets may be used depending on facilities and terrain.

2. Variation in types of obstacles should be confined to such characteristics that will not destroy the primary object of developing versatile gun handling.

3. Length of course should not exceed 125 yards.

4. Distance from firing points to targets should not exceed 25 yards.

5. Hits on targets should count 50 per cent of rating. Performance and "way of going" should count 50 per cent of rating.

6. Time of run per man should not exceed 2 minutes.

7. Method of control and scoring, same as mounted pistol course.

8. Preliminary training on regular range should precede actual firing on combat firing obstacle course to familiarize men with functioning and firing of weapons.

9. Series of dry runs with weapons and combat field uniform and equipment should be run before troops are allowed to fire.

10. For dry runs, as many men as can be instructed and controlled may be on the course at one time. Obviously in firing, only one man on course at a time.

11. A loud speaker in control booth will facilitate supervision of instruction and firing.

Motorcycle Endurance Run

*by Lieutenant Bernard A. Walsh**

THE largest motorcycle school in the United States is operated by the Motorcycle Department of the vast Armored Force School at Fort Knox, Kentucky.

It teaches students to take cycles apart and find out what makes them tick. The soldiers are taught to do everything from repairing a puncture to straightening a bent frame.

Riding is incidental in the school's instruction. Men are required to be able to ride only well enough to test the vehicles they repair. Most of them, however, have found that riding is fun, and they want a chance to continue the sport while training.

Extra-curricular activities, popular with officers and men of the school's motorcycle department, include occasional endurance runs. Typical of these was the most recent, in which 105 mud-spattered, rain-soaked enthusiasts rode, pushed, and lifted their heavy cycles over 61 miles of northern Kentucky's sticky red clay.

The course followed secondary roads on the Fort Knox reservation and near-by areas. A two-day thaw that followed snow and cold had made the course a morass of mud. Then to test to the limit the mettle of these messengers of mechanized warfare, a cold rain beat down during the latter stages of the contest.

At one point more than 30 machines were mired in the same quarter-mile-long mud hole. Some of them bogged down permanently at this point and failed to finish.

The run was over a route unknown to the contestants, who were assisted only by a crude map and an occasional road sign. The tough going was designed to equal the worst conditions to be found in combat areas. In the words of an officer who laid out the course, "If the men can follow secondary roads, go through woods and mud with a poor map, they can be trusted to get from here to there in battle."

Chief objectives of the endurance run were these:

1. To test the condition of men and machines.

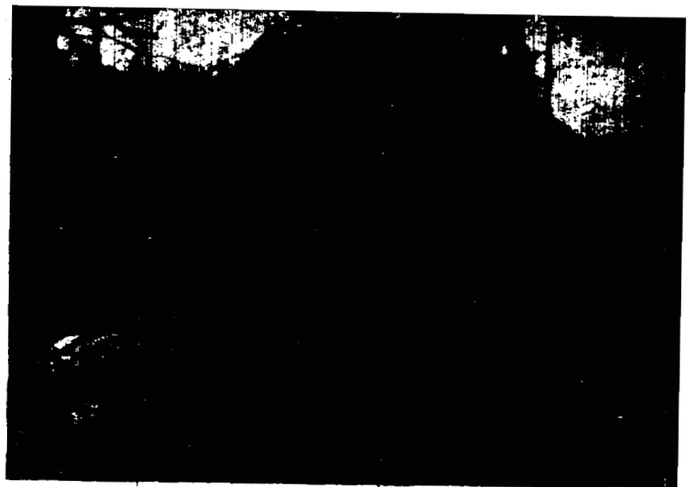
2. To test the ability of individuals to follow an unfamiliar route guided only by the most simple directions.

3. To test the ingenuity and ability of the soldiers to get the most out of their machines with the expenditure of a minimum amount of gasoline.

4. To impress on the armoraider mechanics the necessity of keeping motorcycles in condition for the difficult tests they must face in combat.

The run was started at 10 o'clock on a Sunday morning, and riders took off at one-minute intervals on alternate courses. Even-numbered cyclists followed the reverse of the route taken by the odd-numbered men. It was well after 3 P.M. before the early finishers began arriving.

*Armored Force School.



Two cycleraiders wrestle through a sticky spot on the Armored Force School's endurance run. At times as many as four or five riders teamed up to push their clay-captured mounts through "General Mud's" tougher traps.

The ride was not a race but a competition against calculated time. The schedule called for riders to average 15 miles an hour. But these plans were made without consulting the weather man. The winner's elapsed time was five hours and seven minutes, an average of some 12 miles an hour.

Each man's score was computed in points, every rider starting with 1,000. A point was deducted for every minute late or early in arriving at a check point, of which there were six; two points were deducted for each minute early a rider left a check point, and 100 were lost for missing a check point.

In addition, a point was trimmed off the rider's score for every ounce of gasoline expended over an amount estimated in advance to be sufficient for the course. It was his saving on gasoline that gave victory to the winner, who lost only one point for excessive gas consumption, while most of his competitors lost from 50 to several hundred.

Chief complaint of all riders was that the sticky clay collecting between the front wheel and fender, packed so tightly that the wheel couldn't rotate. One cyclist reported he was forced to stop 50 times to clean his wheel.

One of the few who found a way to overcome the mud menace explained his success in these words: "I rode through all the water I could find and let the water clean my wheel for me." He had to stop only once to scrape off the clogged mud.

There were only four instances of mechanical failure. Each consisted of a burned-out clutch resulting from inexpert riding.

In summing up results of the run, it was definitely proved that if a machine is ridden and handled properly, it will negotiate the most difficult terrain.

Preventive Maintenance Personnel

*by Major Henry G. Bell, Cavalry**

INSPECTIONS reveal that in each 100 military vehicles selected at random there are approximately 1700 defects because of a *lack of preventive maintenance.*

What is preventive maintenance? It is the maintenance that must be performed to make sure that vehicles are always available to move men, guns, ammunition, and supplies. Preventive maintenance is "the ounce of prevention *and* the stitch in time."

Who performs preventive maintenance? Drivers and mechanics in the troop, squadron, and regiment—under the supervision of their officers and noncommissioned officers.

When is preventive maintenance performed? Daily, weekly, monthly, or every 1000 miles, and semi-annually or every 6000 miles, as a general rule.

Why is it that so many defects are found in our military vehicles when, to begin with, they are the best vehicles any army possesses? The answer is improper *selection, training,* and/or *supervision* of drivers and second echelon maintenance personnel.

Selection of Drivers

Most men, with proper training and supervision, make good drivers. There are a few, however, who because of physical defects or poor judgment will never become good drivers. These should be weeded out early in the training period, regardless of how hard they try or how good otherwise they may be.

Training of Drivers

During their basic or unit training, most drivers have undergone the *minimum* training as outlined in FM 25-10 or TM 21-300. In many cases, they have memorized the list of prescribed duties of the driver and will recite them to their superiors verbatim. They can drive excellently on secondary and better roads.

A military driver, at the end of an eighty-six hour course, usually cannot be classed as an expert driver. Training must continue on every march, every short trip for rations or supplies, every small problem, every phase of maneuvers, and every battle engagement. When the going gets tough, the duties of a driver are doubled and redoubled; his training for the first time has become intense and real, and his appreciation of good maintenance begins.

Many drivers lack sufficient training in negotiating shallow streams, deep ruts, gullies and ditches, stumps, logs and small trees, sand, mud and soft ground, thickly wooded areas and narrow, crooked roads. The use of traction aids such as chains, corduroy mats, brush, winches, and snatch blocks has been omitted in the driver training program of some organizations.

Road reconnaissance in combat areas will usually reveal that bridges and road crowns are in poor condition. A lack of training in difficult operation results in the worst kind of vehicle abuse, causes an extra burden on second echelon maintenance units, and reduces the time that should be devoted to preventive maintenance operations.

Supervision of Drivers

Corporals, sergeants, platoon leaders, troop and higher commanders fail to supervise and inspect driver performance properly. The 1700 defects in each 100 military vehicles is the evidence.

The place and time for thorough supervision and inspection of driver performance is the same as for driver training. Supervision is necessary on every march, every trip for rations and supplies, every small problem, every phase of maneuvers and every battle engagement.

The driver is with his vehicle one hundred per cent of the time when it is in operation. He performs the most important part of preventive maintenance, and the success or failure of a mechanized unit depends largely on expert driver performance. The secret of good driver performance is *expert supervision* and *inspection* by all concerned.

Selection of Second Echelon Maintenance Personnel

On June 11, 1942, a committee, made up of representatives from service schools and replacement training centers, met at Headquarters, Replacement and School Command, Birmingham, Alabama, and discussed matters pertaining to the training of second echelon motor specialists. They recommended that for prospective students of service school motor courses, the *minimum* qualifications should constitute the following:

1. For Officers' Motor Course.
   - (a) Troop grade and age.
   - (b) Qualified vehicle operator.
   - (c) Desirous of attending the course.
   - (d) A minimum mechanical aptitude test score of 110.
   - (e) Possession of mechanical background as evidenced by one or more of the following:
     - (1) College training in mechanical engineering.
     - (2) Experience in the operation and maintenance of commercial motor vehicle fleets.
     - (3) Any other comparable experience.
   - (f) Graduation from an Officer Candidate School or from an Officers' Basic Course of a Special Service School (desirable but not mandatory).
2. For Enlisted Motor Course.
   - (a) Qualification as motor vehicle operator.
   - (b) Desirous of attending the course.
   - (c) A minimum mechanical aptitude test score of 90.
   - (d) A minimum AGC test score of 90.
   - (e) A grammar school education or its equivalent.
   - (f) Indicated ability to perform duties of a noncommissioned officer.

Four out of ten students now enrolled in the Cavalry School Motor Course do not have motor vehicle operators' permits and cannot be permitted to operate a vehicle. This means that motor officers and motor mechanics cannot be trained thoroughly in two very important operations: road testing and trouble-shooting.

To become efficient motor mechanics, men must have mechanical aptitude to a marked degree. If they do not have it, they cannot possibly absorb necessary information. Students have been sent to the Cavalry School Motor Course with a *mechanical aptitude test* score of 51 and an AGC test score of 44. In such cases, either one of two things must be done: Send the student back to his organization, or give him hours and hours of individual instruction. The latter will result in a lowering of the standard of instruction for the rest of the class.

A man who is unreliable and of little use in an organization will not make a good mechanic. It has been tried. It is a waste of transportation and precious time, and a hardship on students who want to learn, for any organization to send a man to a service school motor course, if he does not meet the minimum requirements previously listed.

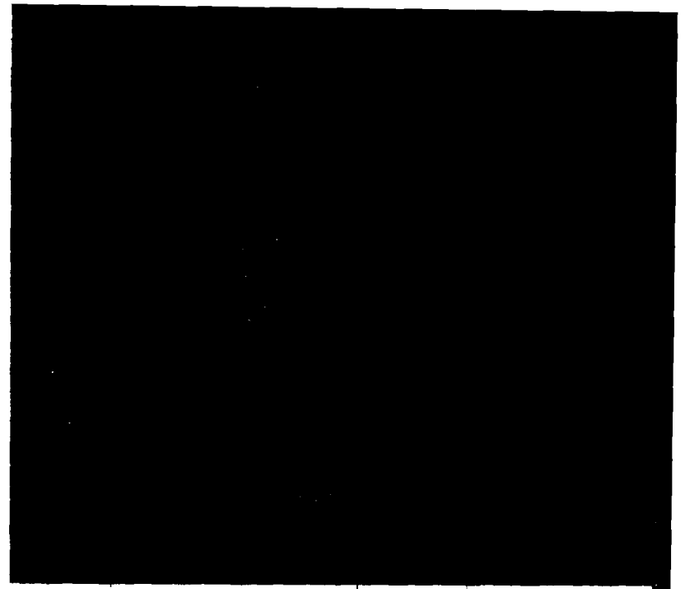
Training of Mechanics at The Cavalry School

The method and scope of instruction on all unit assemblies and sub-assemblies of the motor vehicle is in general as follows:

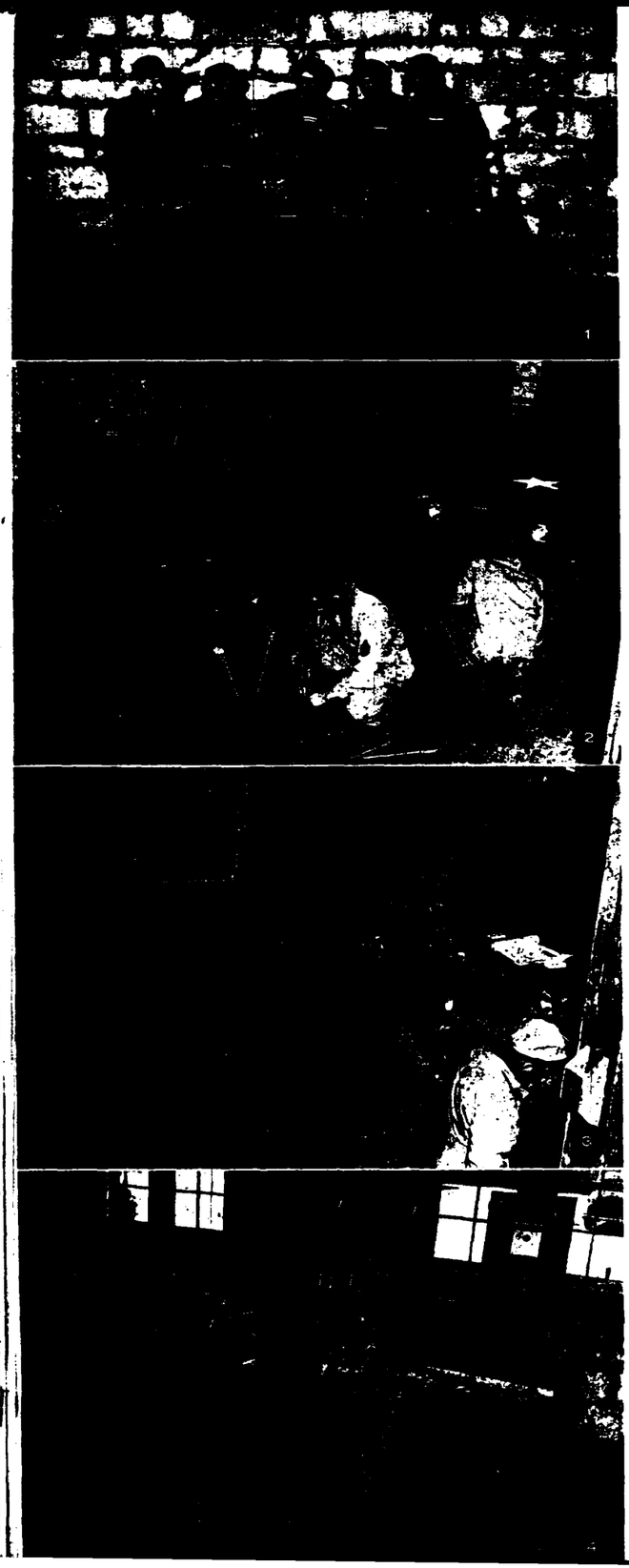
The construction and functioning are explained to the student by the instructor with the aid of charts,

*Instructor, Department of Motors, The Cavalry School.

Students in the advance course practice maintenance in the field.



Group of students in engine course study tune-up and trouble shooting.



models, cutaways, and vehicles. The student then studies the construction, functioning, adjustments, and maintenance of disassembling and reassembling a dead unit. When a certain type of unit is thoroughly understood by the student, he performs a 1000 mile and 6000 mile maintenance operation on a similar unit installed in a live vehicle. After construction and functioning of the unit is understood by the student, and he has performed the 1000 mile and 6000 mile maintenance operations, common troubles are placed in the unit for the student to diagnose and repair or replace. This method of instruction applies to each unit studied by the student, whether it be a generator, engine, transfer case, or spring.

The course of instruction consists of 12 phases of one week each (except the fifth phase which is three days in length). The different phases are coördinated under three principal groups: namely, the chassis group, engine group, and operations and maintenance group.

1. *Chassis Group.*

1st Phase Instruction includes the use, care, and maintenance of second echelon tools and equipment; care and maintenance of field ranges; repair of radiators; painting; soldering; welding (oxyacetylene and electric arc) and blacksmithing. Students are schooled in fundamental principles, and with practice should become proficient.

2d Phase Instruction introduces the motor vehicle and includes the study of clutches, transmissions, transfer cases, winches and pintles, bearings and propeller shafts. Figure 1 shows instruction on a front-mounted winch.

3d Phase Instruction includes the study of driving axles and axle gears, steering joints, springs and shock absorbers, steering gears, wheel alignment, wheels and tires (Figure 2).

4th Phase Instruction includes the study of hydraulic, vacuum booster, hydrovac, air, electric, and hand brakes. Instruction on hydraulic brakes is shown in Figure 3.

2. *Engine Group.*

5th Phase Instruction includes study of the construction of internal combustion engines, principles of their operation, engine valves and valve actuating mechanisms, and engine lubricating and cooling systems. See Figure 4.

6th Phase Instruction includes the study of fuel and electrical units, fuel systems, carburetors, storage batteries and starting motors, generators and generator regulation, and the ignition system (Figure 5).

7th Phase Instruction includes the study of engine tune-up and trouble shooting. All units studied in the 5th and 6th phases are brought together at this time. Sequence and thoroughness of engine tune-up and trouble shooting procedures are the main items stressed.

3. *Operations and Maintenance Group.*

8th, 9th, and 10th Phase Periods are spent in the shop performing 1000 mile and 6000 mile maintenance operations on vehicles from the field. Maintenance is performed on motorcycles, half-tracks (Figure 6), and wheeled vehicles (Figures 7 and 8).

11th Phase Periods are devoted to maintenance in the field. During this week a 1000 mile and a 6000 mile maintenance operation is performed.

12th Phase Period, like the 11th, is devoted to field operations and includes a 1000 mile maintenance operation, loading vehicles for rail movement, diagnosing troubles on the march, a day of replacing units (ranging from fuses to springs and transfer case grease seals), and a two and one-half day march. The march usually covers a total distance of only twenty-five miles, because most of the students' time is devoted to march maintenance, including everything from unit replacement to emergency roadside repairs. Four hours of blackout march maintenance also is included. During two hours of this period, no lights of any kind are used, and all troubles must be diagnosed and repaired in darkness. During the last two hours of darkness, a small light is used when repairs are made, but blackout is made complete by using burlap bags and a tarpaulin to cover the vehicle undergoing repair. During the march, use of various field expedients is practiced and the proper use of winches and snatch blocks, A-frames, corduroys, mats, anchors, stakes, and any makeshift equipment is stressed.

Supervision of Mechanics

Students graduating from the Cavalry School Motor Course have a foundation which, with practical experience, will enable them to become highly proficient in their field. Because of the short time allotted for the course, instruction has been fast and, to some, furious. Many things are confusing in the graduate's mind. Close supervision and advice by motor officers and motor sergeants are necessary to get them oriented, and such supervision will pay big dividends.

Such things as the proper use of tools and equipment, checking of electrical and fuel units, adjustments, scopes of 1000 mile and 6000 mile maintenance operations, road testing, and trouble shooting require months of practice before a mechanic can become truly proficient.

Conclusion

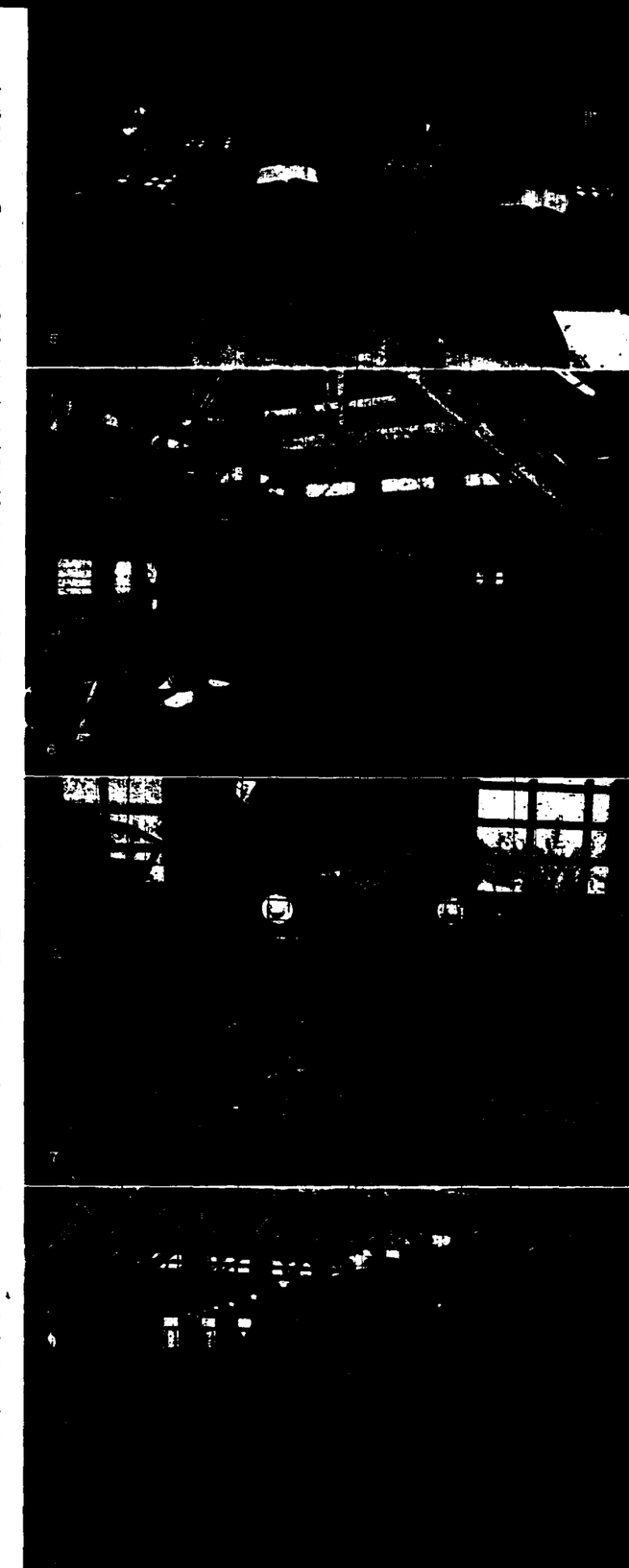
It is believed that defects in our military vehicles can be reduced to an average of four or five per vehicle—

If drivers are more carefully *selected*, and more thoroughly *trained* in difficult operations;

If close *supervision* and *inspection* of driver performance is made by officers and noncommissioned officers;

If prospective motor officers and motor mechanics are *selected* on the basis of the *minimum requirements* previously stated;

And *if* more assistance is given to graduates of motor courses by the motor officers and motor sergeants upon their return from school.



Training Drivers at the CRTC

EDITOR'S NOTE: *In the Motors Department at the Cavalry Replacement Training Center there are two separate schools—the Motor Mechanics School, which teaches maintenance and repairs; and the Motors School which instructs men to drive tanks, scout cars, motorcycles, light and heavy trucks, and bantams. Articles on the Motor Mechanics School and Motorcycle Training appeared in the March-April issue of* THE CAVALRY JOURNAL. *This article deals primarily with that course in the Motors School pertaining to the training of the other motor vehicle drivers.*

IN the Motors School, trainees are assigned to the vehicles for which they are best suited. Physical capabilities and past experience are the usual factors deciding the one to which a man is assigned.

Perhaps the most rigid requirements are for prospective tank drivers. Not only are ruggedness and strong backs essential to withstand the shock and shake up that the men receive, but good eyesight without the use of glasses is also necessary because of the limited visibility from the vehicle. These factors are "musts" for all tank drivers. The tank school, more than any other department, loses men because they lack sturdiness and the ability to "take it."

Starting with a film strip on basic driving, the trainees practice maneuvering over all types of terrain. In this, much emphasis is placed upon the proper gear selection. During the last two weeks of the course, tank men participate in a field exercise for Cavalry School students. They use live ammunition, and really train "under fire." The tank course is concluded with a graduation cross-country ride with blind ports.

In choosing men for scout car training, height is necessary so that the driver may see over his vehicle. Just as aggressive combat is emphasized in tank training, so does reconnaissance play a big part in the operation of the vehicle. After the men have mastered nomenclature, functioning, and basic driving, they are schooled to be "sneak and peek" experts. During the last few weeks, emphasis is placed on tactical exercises that combine both mounted and dismounted action. At this time, a practical application is given to all theory that has been studied.

While the two courses for training drivers in light and heavy trucks have much in common, they differ sharply in several respects. In work with the six-by-six, emphasis is placed on defense against all types of attack. In the smaller vehicles, reconnaissance comes first.

In addition to basic driving, during the first six weeks, the men receive instruction in map reading, orientation on the ground, camouflage and explosives. The remainder of their course consists of tactical training in field exercises and road marches.

There seems to be something fascinating about the quarter-ton truck. If the trainees had their way, probably about ninety per cent of the drivers would take the bantam course. Although this vehicle is easier to learn to drive than other types, trainees are given much more extensive instruction in tactics, security and map reading. All drivers must know these subjects well, as there is no way of knowing where they will go or what their duties will be, with this all-purpose vehicle.

Three tactical night exercises are held during the second three weeks. Close order drill calls for as much precision and snap as if the men were dismounted. The final week involves several bivouac and march outpost problems in which all-round security is stressed.

Each of the seven courses given by the Motors Department does a thorough job in turning out efficient drivers and skilled mechanics. The men know that they are to become battle replacements and are eager to take their place in combat. They have confidence in their vehicles, and are fortified by the strength that knowledge brings.

Book Department

JOURNEY AMONG WARRIORS. By Eve Curie. Doubleday, Doran & Co. $3.50.

This is much more than a panorama of the battle fronts of the world. It is an overwhelmingly human account of the people who make up not only the fighting fronts, but the supporting production fronts, of the Allied nations. It could have been written only by a person reared in a world that knew no boundaries but scientific truth, yet whose heritage was rooted in two conquered nations.

Untinged by private opinion, this magnificently written book gives the reader an extraordinary grasp of the essentials of each nation's political and social problems, as found among the people of all classes. With a shrewd detachment, Miss Curie has studied the various countries, and with warm-hearted enthusiasm she has described what she has seen. Her exceptional ability to describe personalities with vivid understanding rather than dazed awe, makes even the most famous of her companions alive and vital. This human quality is a definite contribution to the reader's comprehension of national problems.

Miss Curie's picture of Russia is powerful, moving, and honest—in many ways the best with which we have been presented. This is partially due to the unprecedented privileges granted her in the Soviet Union. She went into villages but two days back in Russian hands, and of the inhabitants she said: ". . . I felt suddenly very close to them, perhaps because I was French and because my mother came from Poland. I was sadly rediscovering something which the French and Polish people had known for generations: that only a country which had stood foreign invasion really knew what war was."

From the Middle East, through Syria to Russia and on to China and India, she journeys with an unwavering enthusiasm that carries her reader on the crest of her own intensity.

Her brilliant writing, shrewd observation, and superb management of her material make Miss Curie's book the most important contribution of its kind to war literature.

BETWEEN THE THUNDER AND THE SUN. By Vincent Sheean. Random House, Inc. $3.00.

Continuing the pattern of the war begun in Spain, this book will be welcomed by those who read with sympathetic interest *Personal History* and *Not Peace But a Sword*. Less violent in its denunciations, it nonetheless carries the same firm convictions found in the earlier books.

It commences with a picture of the dying European world that was a familiar background of such characters as Maxine Elliott, Forbes Robertson, Shaw and a Winston Churchill giving his former king a lesson in English democracy. This brief prelude is in strong contrast to the mad confusion of the fall of France, and the ensuing Battle of Britain with its stunned rejection of defeat.

Every mile of his trip home via China, the Philippines, and Wake and Midway Islands, revealed the unpreparedness, not only of munitions and men, but of minds, for the coming war.

Mr. Sheean is in no sense a military observer, but he is a passionate liberal and humanitarian, and as such, he views the war in its influence upon human values.

THEY CALL IT PACIFIC. By Clark Lee. Viking Press. $3.00.

Clark Lee had what might be described as a "ringside seat" for the fall of the Philippines, and it wasn't a pretty show.

Primarily a newspaper man, he has made the maximum use of his training and opportunities. The result is a thrilling account of the magnificent defense put up by the men who were finally forced to surrender at Corregidor, but more particularly of *the men who made that retreat possible, the 26th Cavalry*.

As a matter of historical record, this book will probably remain of tremendous value long after the news-interest is past. Mr. Lee's observations in China and Japan, prior to November, 1941, gave him an excellent background on which to base his analysis of the Philippine situation, and enabled him to see the problems with greater clarity than would have been possible without his oriental contacts.

This book covers for the Pacific islands what Vincent Sheean's *Between the Thunder and the Sun* covers for Europe. These two books give a comprehensive, coördinated picture of what is happening to the world that would be difficult to obtain, even if time permitted, from a thorough reading of every day's news.

THEY CAME AS FRIENDS. By Tor Myklebost. Doubleday, Doran & Co., Inc. $2.50.

This comprehensive story of the spirit of the Norwegians and their struggle to hold fast to their democratic ideals is timely, informative, and interesting. It covers the days of the early conquest in 1940, when the Germans "came as friends" and blindly believed that the Norwegians would extend them a hearty welcome because they were of a similar bloodstrain, but the patient stubbornness of the Norsemen came very close to defeating their conquerors.

The thoroughness with which the medical, labor and ecclesiastical groups united in their fight against the invader, contributed much towards coördinating the underground rebellion under experienced leaders.

The author has drawn an understanding picture of the Norwegian people, whose fundamental characteristics during their enslavement have been exemplified in their determination to survive and their willingness to suffer, and continue to suffer, in order that their sons may fight on against the enemy.

U. S. A. Second Lieutenant's Handbook

By LIEUTENANT JOHN R. CRAF

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America's Battlefronts

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Seven Came Through

By CAPTAIN EDWARD V. RICKENBACKER

Captain Rickenbacker's own story of the twenty-one days that he and his crew were lost at sea.

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

HOW TO SHOOT THE U. S. ARMY RIFLE. *The Infantry Journal.* $.25.

The Infantry Journal has produced an excellent manual, graphically illustrated, on *How to Shoot the U. S. Army Rifle.* The pictures and text are well coördinated and should prove valuable to any man training for combat service.

✓ ✓ ✓

I SEEK MY PREY IN THE WATERS, THE COASTAL COMMAND AT WAR. By Squadron-Leader Tom Dudley-Gordon. Doubleday, Doran & Co., Inc. $3.00.

TORPEDO! STORIES OF THE ROYAL NAVY. By Commander Gilbert Hackforth Jones, R.N. William Morrow & Co., Inc. $2.50.

These are two exciting books on the war—factual stories of the sea and the air over the sea.

I Seek My Prey in the Waters is the result of the experiences of three R.A.F. officers whose observations include the sinking of the *Bismarck*, the torpedoing of the *Lutzow*, the capture of a U-boat by a Lockheed Hudson off Iceland, and many other incidents of this war.

Torpedo! is an effort to bring alive the men of the Royal Navy. They are not supermen, but men to whom the sea is home. The stories are exciting, tragic, humorous—even as the lives of the men are made up of these reactions.

✓ ✓ ✓

ARMY BRAT. By Tommy Wadelton. Coward-McCann, Inc. $1.75.

Tommy Wadelton is growing up. Unlike his two previous books (*My Mother is a Violent Woman* and *My Father is a Quiet Man*), which were autobiographic in nature, *Army Brat* is primarily fictional, although many characters, such as the Chinese houseman, Sui Jen, are drawn from life.

The story takes an "Army Brat" from his boyhood days in a motherless home to the time when, as a Lieutenant in the Army Air Force, he goes to China to fulfill his debt to Sui Jen, the finest influence in his early youth.

The story is delightfully told, and retains much of the humor of former books by this young author—whose first published story appeared in THE CAVALRY JOURNAL in 1939.

✓ ✓ ✓

MASTERS OF MOBILE WARFARE. By Eldridge Colby. Princeton University Press. $2.00.

Contending that, although mechanization enables armies to move faster, it has not altered the basic principles of mobile warfare, Mr. Colby draws lessons from three of the military masters of all time: Marlborough, Frederick the Great, and Napoleon.

This little volume is an interesting study, well written and illustrated with small but excellent maps.

✓ ✓ ✓

IT'S 'ARD TO GO WRONG IN THE CACTUS. By Kay Grant. William Morrow & Co., Inc. $1.00.

An Australian girl has written this zany book of poetry that deals principally with American soldiers and Australian girls.

From it, we judge that the American doughboys have made a hit with the girls from "down under."

THROUGH HELL TO DUNKIRK. By Henry de la Falaise. Military Service Publishing Co., $2.50.

This is another eye-witness account of what one man saw of the Battle of Flanders and the evacuation at Dunkirk.

The author is a graduate of the Sorbonne and served in the French army from 1915-1918. During the latter part of January, 1940, he was attached by the Headquarters of the Franco-British Military Mission of Liaison in Arras to the 12th Royal Lancers.

In this account, the author has successfully avoided the dullness frequently found in books written in the form of a diary. The characters are very much alive, and the incidents move swiftly and consecutively to their disastrous climax.

✓ ✓ ✓

THE FIRST CENTURY OF FLIGHT IN AMERICA. By Jeremiah Milbank, Jr. Princeton University Press. $2.75.

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